MAKING WORK PAY:

COMBINING THE BENEFITS OF THE EARNED INCOME TAX CREDIT AND MINIMUM WAGE

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HIGHLIGHTS OF MAIN FINDINGS

The minimum wage and Earned Income Tax Credit (EITC) are two major policies in the United States aimed at improving living standards for low-income workers and their families. Minimum wage laws establish a wage floor for employers, while EITC payments supplement the earnings of low-income workers with government support. These two policies are frequently presented as substitutes, or even in competition with one another, because of the differences in their approaches. This study explores an alternative view: that the minimum wage and EITC work most effectively in tandem, generating greater benefits for low-income workers than is possible when each measure operates alone. We examine evidence between 1997 and 2007 on a state-by-state basis, focusing on conditions for single mothers with a high school degree or less. This is a group in U.S. society likely to benefit disproportionately from both relatively high minimum wages and EITC benefits.

The main findings of our study include the following:

- **Both the minimum wage and EITC are associated with higher employment levels.** The main argument against the minimum wage is that it may cause job losses by raising the costs of doing business. But we found that improving wages with a 10-percent minimum wage hike actually increased by 1 to 2 percent the proportion of low-credentialed single mothers both seeking and finding jobs. In addition, a 10-percentage point increase in a state's EITC benefit rate raises average weekly employment levels for low-credentialed single mothers by between 1 and 2 hours.
- **The minimum wage and EITC strengthen each other's positive effects.** A 10-percent minimum wage hike, on its own, raises weekly earnings for low-credentialed single mothers by between 8 and 11 percent. An above-average 14-percent EITC rate operating at the same time builds on these gains, raising earnings an additional 3 to 4 percent. This likely occurs because the higher employment levels supported by relatively generous EITC benefits broaden the number of single mothers whose pay improves with a minimum wage hike.
- **Both policies must be increased well beyond current levels to "make work pay."** A 10-percent minimum wage hike combined with an above-average 14-percent state EITC rate would raise the income of a representative low-wage single mother by about $2,100 — from about $21,100 to $23,200. Still, $23,200 falls fully 44 percent below the basic budget income level of $41,400 for a 3-person family. It is therefore imperative to build from the complementarities between the minimum wage and EITC to establish decent living standards for all U.S. employees.

SUMMARY

The minimum wage and Earned Income Tax Credit (EITC) are both large-scale economic policy interventions in the United States aimed at improving living standards and opportunities for low-income workers and their families. These two policies are frequently presented as substitutes, or even in competition with one another, because they differ sharply in how they approach this same goal. This paper puts forth an alternative view: that these policies can work in a complementary way, generating greater benefits for low-income workers when they operate in tandem at a high level. In fact, as we demonstrate in this paper, without both policies operating at a high level, it will be extremely difficult for the U.S. economy to deliver on the goal of "making work pay," i.e. creating jobs that afford workers and their families a minimally decent standard of living.

In recent years states have been experimenting with different statewide minimum wage rates and EITC benefit levels. For example, some have kept their minimum wage rates as low as the federal rate and do not offer any state-level EITC benefit (e.g., North Dakota). Other states have raised their wage floor substantially above the federal rate and also boost low-income households' incomes with a relatively large EITC benefit (e.g., Vermont). To see which policy combination produces the best economic outcomes, we compare workers' employment levels, wages, and earnings across the United States from 1997 to 2007.

We focus, in particular, on how these policies impact the social group most likely to gain from the policies. These are single mothers with a high school degree or less. Single, female-headed, households have one of the highest poverty rates, and, as parents raising children, these women would be eligible for the most generous EITC benefits when they work. Moreover, nearly one in five single mothers with a high school degree or less earn wages low enough to be affected by a minimum wage hike. In fact, during the mid-1990s, getting single mothers off welfare and into paid employment motivated the simultaneous increase of the federal EITC program and minimum wage, in conjunction with the elimination of the welfare program, Aid to Families with Dependent Children. If these programs work as intended, they should, at minimum, improve the earnings of these women.

We find that both policies improve the economic situation for low-credentialed single mothers. Specifically, we find that a 10-percent increase in the minimum wage alone draws one to two percent more single mothers into employment, increases weekly work hours among those employed by under one hour, while raising the pay rates of the lowest wage workers just over three percent. The evidence is weaker for EITC policies, but our estimates suggest that a 10-percentage point higher state EITC rate, by itself, raises employment rates between one and two percentage points, and increases weekly work schedules between one and two hours.

When we next consider the policies' overall impact on these women's weekly earnings, we find that the most effective strategy for improving the living standards of single mothers with a high school degree or less is for both state minimum wage and EITC policies to operate at high rates. Our measures indicate that a 10-

percent minimum wage hike, by itself, raises earnings among these women by 8 to 11 percent. These large increases reflect the fact that already-employed women are earning more, as well as the fact that other women are becoming newly employed. Their earnings rise by another 3 to 4 percentage points when this minimum wage hike is combined with a relatively high state EITC rate—14 percent—for a total rise in earnings of 11 - 14 percent. These figures suggest that a high state EITC rate amplifies the earnings gains supported by higher minimum wage rates by raising employment levels among single mothers even more, and as a result, increasing how much and how many single mothers benefit from the higher pay supported by higher minimum wages. In other words, the benefits of one policy compound the benefits of the other.

These findings suggest meaningful earnings gains for these women. For example, our estimates of the combined impact on wages and hours imply that the annual pay of the typical low-credentialed single mother working in a low-wage job would rise nearly $2,000, from about $15,800 to $17,700.[1] For such a worker, federal EITC and state EITC benefits would add about $5,500. This would bring this woman's total earnings, including EITC benefits, to $23,200. Single mothers who newly enter the workforce into a similar job in response to higher minimum and EITC rates, of course, experience a much more dramatic change, since their starting point is zero earnings and zero EITC benefits. Still, their new level of earnings, federal and state EITC benefits altogether are not nearly enough to meet the basic needs of a small family of three. According to an estimate by the Economic Policy Institute, a three-person household with one adult typically requires $41,400 to support a decent, yet modest, standard of living.

Overall then, within the range of current state policies, minimum wage laws and EITC policies each work to amplify the strengths of the other policy and therefore work most effectively in combination to raise the earnings of low-credentialed single mothers. Still, current state policies fall far short of what these women and their households need to achieve a minimally decent living standard. If these policies are to achieve the goal of "making work pay" both of their rates must be raised considerably higher than what states have implemented to date.

Policy rates at such levels would push us into unchartered territory. We may see another type of complementarity emerge as a result. Specifically, dramatic expansions of the two policies may exacerbate the weaknesses associated with each of them, and require the other policy's strengths to compensate. For example, at some point, a higher minimum wage could discourage businesses from hiring. Alternatively, a much larger EITC may enable workers to accept jobs at wages they would otherwise regard as inadequate and therefore encourage employers to lower their pay rates. To the extent the EITC leads to lower wages among the already least well-paid workers, the benefits of the EITC are being eroded.

With such countervailing pressures, we can see how at even higher minimum wage and EITC rates, the *combination* of both measures would still be more effec-

[1] Unless otherwise noted, all dollar figures are in 2010 dollars.

tive in establishing and maintaining decent minimum living standards for working families in the United States than one policy operating alone. However, we do not observe any significant negative effects from either policy—either reduced employment in the case of the minimum wage or lower wages in the case of the EITC, and therefore we are unable to explore this directly.

In the end, to significantly expand decent life opportunities for people in the U.S. will require a wide range of policies. Central to this project are affordable housing and health care, accessible, high-quality education and childcare services. Also key are macroeconomic policies with a firm commitment to achieving and maintaining something resembling a fully employed labor market. "Making work pay"—the question on which we have focused in this paper—is clearly a crucial element of this project. Achieving this goal will be extremely difficult without combining the benefits of the EITC and the minimum wage.

INTRODUCTION

The minimum wage and Earned Income Tax Credit (EITC) are both large-scale economic policy interventions in the United States aimed at improving living standards for low-income workers and their families. In 2009, 27.4 million families in the U.S. received a total of $55.1 billion in cash assistance through the federal EITC program, making it the single largest anti-poverty program within the federal government.[2] The most recent set of raises in the federal minimum wage increased the rate from $5.15 per hour at the beginning of 2007 to $7.25 per hour as of July 2009, generating raises for roughly 10 million workers.[3] These two policies are also both operating widely at the state level, as well as at the local level in some cities, such as San Francisco.[4]

By setting a mandated floor for wages, minimum wage laws are targeted at preventing labor market forces from pushing wages down to levels where working people and their families cannot live minimally decent lives. The United States living wage movement, which first emerged in the mid-1990s, certainly captures the spirit animating minimum wage laws, which is to ensure that all workers earn at least enough to meet the basic needs of themselves and their families. The purpose of the EITC is also to establish a minimally decent income level for

[2] The 2009 figures, reported by the Tax Policy Center, are the latest available data provided by the Statistics of Income Division of the Internal Revenue Service. See: www.taxpolicycenter.org/ taxfacts/ displayafact.cfm?DocID=37&Topic2id=40&Topic3id=42 (accessed October 19, 2011). In 2010, federal spending on SNAP (formerly known as Food Stamps) soared due to the fallout of the Great Recession and actually exceeded EITC spending.

[3] According to past research which analyzed data from 1982 to 2002, minimum wage increases have, on average, impacted about 10 to 15 percent of the employed labor force through mandated wage increases and ripple effect wage increases (Pollin, Brenner, Wicks-Lim, and Luce, 2008). In 2007, according to the Bureau of Labor Statistics, about 146 million members of the labor force held jobs which would imply that the recent federal minimum wage hike would increase the wages of 14 to 21 million workers. However, 30 states (including D.C. as a state) had state minimum rates higher than the federal rate as of January 2007. About 40 percent of the labor force resides in these states. Therefore, we estimate that the recent minimum wage hike generated raises for roughly 8 to 12 million (60 percent of 14 million).

[4] San Francisco's local earned income credit program is called the "Working Families Credit."

low-wage workers and their families. But it achieves this aim through a different route—by allowing wage levels to be set by the market, but offering a tax subsidy to low-income workers to supplement what they are earning on the job.

The minimum wage/living wage and the EITC are frequently presented as substitutes or even in competition with one another because of their different approaches to achieving their shared goal. For example, in the debates that took place across the country on living wage proposals, opponents frequently criticized mandated wage floors by arguing that increasing the benefits of the EITC would prove far more beneficial to low-income workers and their families.[5] By the same token, minimum wage and living wage supporters cautioned against large expansions to EITC policies because of their concern that such policies would end up making taxpayers responsible for providing workers a minimally decent income and enable employers to pay poverty wages.[6]

But another view of the relationship between minimum wage laws and the EITC has also been advanced.[7] This view is that a decent minimum wage rate—i.e. something akin to a living wage standard—and a reasonably generous EITC should be regarded as complementary policies.

Potential complementarities are possible precisely because each policy uses a different approach to make work pay. There are two basic ways that these policies may work together so that the overall benefits for working families of both programs, acting in combination, is greater than the benefits that can accrue from either measure as a stand-alone policy.

First, the strengths of one measure can build upon the strengths of the other to amplify each policy's positive impacts.[8] Take for example, the fact that past research has typically observed that single mothers gain employment at a greater rate when they receive a substantial EITC benefit. If these women gain employment in jobs also affected by minimum wage hikes, then a minimum wage hike could improve their situation even more—not only would they be working more, they would be working more at higher pay. The policies therefore can create even better employment opportunities when combined.

The second way that these policies may achieve better outcomes in combination is that the strengths of one policy measure may counterbalance the weaknesses of the other. Such would be the case if the income subsidies provided by EITC policies enable employers to pay poverty wages. A robust minimum wage policy could prevent such a practice.

This study explores these potential complementarities between the minimum wage laws and the EITC—why, as an analytic proposition, we think they are likely to exist; and whether, in practice, we can actually observe them having some impact. We also take up these questions with a broader purpose in mind, which is to understand how to maximize the effectiveness of these two programs in supporting tangible benefits for low-wage workers and their families.

To observe the impact of these two policies, we take advantage of the fact that in recent years states have been implementing different statewide minimum wage rates and EITC benefit levels. For example, some states have kept their state minimum wage rates as low as the federal rate and do not offer any state-level EITC benefit (e.g., North Dakota). Other states have raised their state wage floor substantially above the federal minimum and also boost low-income households' income with a relatively large EITC benefit (e.g., Vermont). We compare workers' employment rates and earnings across the United States from 1997 to 2007 to see which policy combination produces the best economic outcomes.

We focus our attention on the demographic group mostly likely to gain from the policies. These are single mothers with a high school degree or less. Single-female-headed households have one of the highest poverty rates—on average, 32 percent compared to

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[5] See for example, Formby, Bishop and Kim (2010).

[6] See for example, Bernstein (2002).

[7] See for example, Bluestone and Ghilarducci (1996) and Bernstein (2007).

[8] Jason Levitis and Nicholas Johnson make such a case in their 2006 policy brief, "Together, State Minimum Wages and State Earned Income Tax Credits Make Work Pay."

12 percent across all households. As single parents, these women would be eligible for the most generous EITC benefits when they work. Moreover, nearly one in five single mothers with low education credentials earn wages low enough to be affected by a minimum wage hike. Therefore, if these programs work as intended, we should observe the economic situation of these women improve.

We first find that each policy has its own positive impact on the economic situation for low-credentialed single mothers. Specifically, we find that a 10-percent increase in the minimum wage alone draws one to two percent more single mothers into employment, increases weekly work hours among those employed by under one hour, while raising the pay rates of the lowest wage workers just over three percent. The evidence is weaker for EITC policies, but our estimates suggest that a 10-percentage point higher state EITC rate, by itself, raises employment rates between one and two percentage points, and increases weekly work schedules between one and two hours.

We next consider the overall impact of each policy on these women's weekly earnings. We find that a 10-percent minimum wage hike, by itself raises earnings among single mothers with low education credentials by 8 -11 percent as the result of employment and wages gains. This large increase reflects the gains of already-employed single mothers simply earning more as well as previously jobless single mothers becoming newly employed.

However, the most effective strategy for improving the living standards of single mothers with low education credentials is to raise both state minimum wage and EITC rates together. The earnings of these women rise by another 3 to 4 percent when a 10-percent minimum wage hike is combined with a relatively high state EITC rate, i.e., a state EITC rate 10 percentage points above the average, for a total rise in earnings of 11 - 14 percent.

Taking all our findings together, these figures suggest that, by themselves, higher minimum wages draw more single mothers into employment and raise the pay rates of the lowest wage workers. Higher state EITC rates compound these earnings gains by raising employment levels among single mothers even more. This increases how much single mothers can benefit from the higher pay supported by higher wage floors.

Earnings gains of this size are substantial. For example, we estimate that the annual pay of the average low-credentialed single mother working in a low-wage job would rise nearly $2,000, from about $15,800 to $17,700. Her federal EITC and state EITC benefits add about $5,500. This brings her total earnings, including EITC benefits, to $23,200. Single mothers who newly enter the workforce into the same type of job in response to higher minimum and EITC rates, of course, experience a much more dramatic change, starting from zero earnings. Still, their new level of earnings, federal and state EITC benefits altogether are not nearly enough to meet the basic needs of a small family of three. According to an estimate by the Economic Policy Institute, a three-person household with one adult typically requires $41,400 to support a decent, yet modest, standard of living.[9]

These findings lead to two clear conclusions: First, within the range of current state policies, minimum wage laws and EITC policies work to amplify the strengths of the other policy so that combined, they operate most effectively to raise the earnings of low-credentialed single mothers. Second, current state policies fall far short of what these women and their households need to achieve a minimally decent living standard. If these policies are to achieve the goal of "making work pay," both of their rates must be raised considerably higher than what states have implemented so far—something on the order of double the current rates.

Policy rates at such levels would push us into unchartered territory, and we may see other types of complementarities arise as a result. Specifically, dramatic expansions of the two policies may exacerbate the weaknesses associated with each of them, and require the other policy's strengths to

[9] EPI calculates basic budget income thresholds separately for areas within states. To get a national average figure, we population-weighted EPI's figures to estimate state-level income thresholds and used the median state figure.

compensate. For example, decent minimum wage standards are understood to raise wages for low-wage workers but, at some point, a higher minimum wage could discourage businesses from hiring. With the EITC, by contrast, low-wage workers and their families benefit from the direct income supplement, raising the benefits of working without requiring employers to raise their pay rates. But the fact that workers know they can receive the EITC subsidy may push them toward accepting jobs at wages they would otherwise regard as inadequate. To the extent the EITC does indeed lead to lower wages among those already among the least well-paid workers, the benefits of the EITC are being eroded.

Given these countervailing pressures, we can see how the *combination* of both measures would be more effective in establishing and maintaining decent minimum living standards for working families in the United States than one policy operating alone. However, we do not observe any significant negative effects from either policy—either reduced employment in the case of the minimum wage or lower wages in the case of the EITC, and therefore we are unable to explore this type of complementarity directly with the available data.

In the next section of this study, we present some of the most directly relevant background material on how these programs operate, both at the federal- and state-government levels. This then sets the stage for section three, in which we review analytically the relative strengths and weaknesses of both policy initiatives and the potential benefits of combining the two policies. We underscore the importance of this question by describing the challenges that exist to enable working families to reach a basic decent living standard—even after allowing for what are generally regarded as fairly generous levels of both EITC and minimum wage standards. In section four, we describe in detail the methodology introduced briefly above that we used to empirically explore the questions at hand.

In section five, we present the main results of our empirical tests. We examine three distinct but interrelated criteria for evaluating the impact of statewide EITC and minimum wage policy changes on low-credentialed single mothers: 1) the impact on employment levels; 2) the impact on wages; and 3) the impact on weekly earnings. We use regression analysis in this section, a standard empirical modeling technique that enables us to test how much job creation, wages or earnings might have changed in response to minimum wage and EITC policy changes *after controlling for other potential influences* on employment, wages and earnings. In section six, we offer some conclusions, both in terms of the analytic questions at hand, and our empirical methodology and findings.

BACKGROUND

Federal and state Earned Income Tax Credit programs

The federal EITC program grew out of the Nixon-era debate around welfare reform. From its inception, the EITC has been regarded as an alternative to traditional welfare programs. This is because it provides income transfers with a work incentive built into it: by setting benefit levels as a percentage of the recipient's earnings, EITC benefit levels generally rise as workers work more. During 1975, the first year that the EITC operated in the U.S., the credit rate was equal to ten percent of earnings, up to a maximum level of $400 (which equals just over $1,600 in 2010 inflation-adjusted dollars). Just over six million families claimed the credit in 1975, totaling to $1.3 billion in total EITC distributions (or $5.3 billion in 2010 dollars; U.S. House Ways and Means, 2004).

During the 1980s and into the early 1990s, the federal EITC program expanded dramatically, under both Republican and Democratic administrations. The consensus in Washington, DC policy circles was that the EITC had proven itself successful as a way of providing support to low-income workers and their households, and doing so through encouraging work. As we noted above, by 2009, 27.4 million families received EITC support. Altogether the EITC provided $5.3 billion in tax relief and $55.1 billion in tax rebates for a total of $60.4 billion of support. This means that the government sent $55.1 billion back to families in the form of EITC refund checks.[10] The average check sent was therefore about $2,010 in 2009. In 1986, Rhode Island enacted the first state supplement to the federal EITC programs with its own program. By 2010, 23 states plus the District of Columbia were operating supplemental EITC programs.

[10] These 2009 figures, reported by the Tax Policy Center, are based on data provided by the Statistics of Income Division of the Internal Revenue Service and are the latest available. See: www.taxpolicycenter.org/taxfacts/displayafact.cfm?DocID=37&Topic2id=40&Topic3id=42 (accessed Oct 23, 2011).

The interaction between state and federal EITC programs

The federal EITC program provides the framework around which nearly all of the state measures are organized. The formula for determining eligibility depends on the tax filer's earnings and whether she (or he) has qualifying children in her (or his) household.[11] Although some childless tax filers are eligible for EITC credits, those with qualifying children receive the most generous EITC credits.[12]

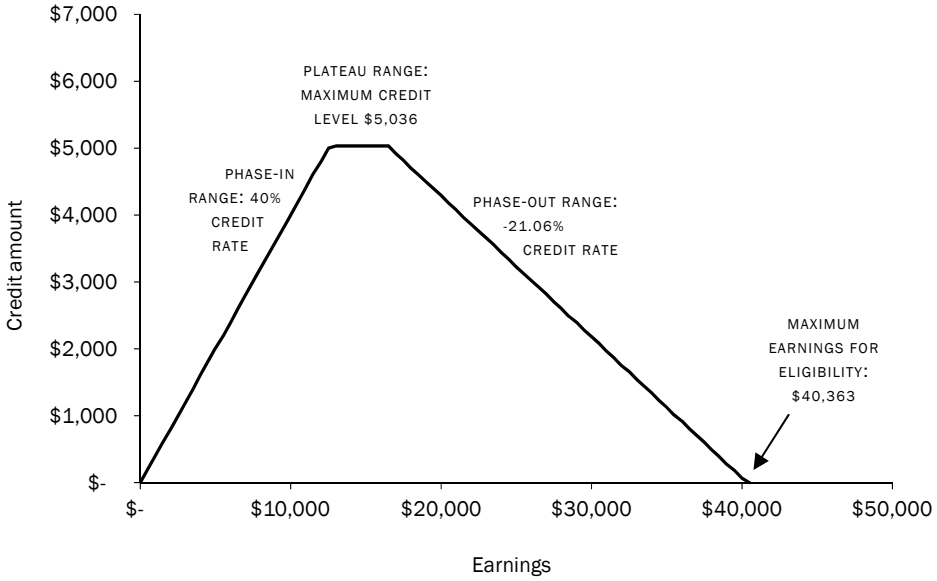
The receipt of EITC benefits is based on one's earned income level, with workers falling into three broad ranges of payments. To begin with, there is a "phase-in" range, where the EITC credit is simply calculated as a fixed percentage of one's earnings. Then there is a "plateau"—the range of earnings where a worker has reached the maximum EITC credit amount and her additional earnings do not trigger any further credit increases. Finally there is a "phase-out" range in which the worker's EITC credit declines at a fixed rate until it reaches zero. The amount of the worker's EITC credit also depends on the structure of her family. EITC benefits are the most generous for households with two or more children and least generous for households with no children.

In Figure 1 (page 8), we present the 2010 federal EITC schedule for households with two qualifying children. For these households, the phase-in range extends between zero and $12,550. The credit rate is 40 percent. That is, the federal EITC credit is equal to 40 percent of earnings between zero and $12,550. As

[11] Hereafter, for the sake of simplicity, we will make exclusive use of the female personal pronoun in situations where we need to assume a gender-specific identification. But in doing so, we do not mean to suggest that the EITC should be considered as primarily a program for women.

[12] Qualifying children generally include those under 19 years old, or up to 24 years old if enrolled in college full-time, and who live with the tax filer for more than half of the year. The other basic requirements are that the tax filer has some positive earnings and does not exceed a threshold for investment income. Qualified tax filers face one of three sets of EITC parameters: one for childless workers, a second for workers with one qualifying child, and a third for workers with 2 or more qualifying children. For a history on how these requirements have evolved, as well as more detail on the requirements, see Hoffman and Seidman (2003).

FIGURE 1: 2010 FEDERAL EITC CREDIT SCHEDULE FOR FAMILY WITH TWO QUALIFYING CHILDREN



shown in the figure, the maximum federal EITC credit is equal to $5,036 (i.e., 40 percent of $12,550). Once one's earnings exceed $12,550, the EITC credit remains at this maximum amount of $5,036—this is the "plateau" range. Earnings of $16,450 mark the beginning of the phase-out range—EITC credits begin to fall as earnings rise above this amount. The EITC is deducted at a rate of about 21 percent. That is, 21 percent of every dollar earned above $16,450 is subtracted from the maximum EITC credit of $5,036.[13] When one's earnings reach $40,363, the amount is equal to zero. The EITC is calculated basically the same way for households with fewer or no children. However, for these households the EITC schedule extends over a more limited range of earnings and the credit rates are lower.[14] This structure of EITC credits affects whether the program encourages recipients to work more. For unemployed workers, the EITC has an unambiguously positive work incentive since it would simply raise their potential take-home pay from becoming employed, regardless of whether their earnings places them in the phase-in, plateau, or phase-out range.

For individuals already employed, any EITC benefit still adds to the income they get from earnings. But the phase-in range in particular, gives workers an incentive to work more since the size of the EITC benefit grows as they earn more. In the plateau and phase-out ranges, the EITC no longer operates as an incentive to work *more hours* since the size of the EITC credit no longer increases if the worker earns more. Individuals already employed may also choose to work fewer hours if there is an EITC credit available. This is because the income gain from the EITC provides the worker with the opportunity to work fewer hours while still getting a higher income than she would if she had to depend only on her wages for income. For example, a worker may reduce her hours just enough so that her income with the EITC

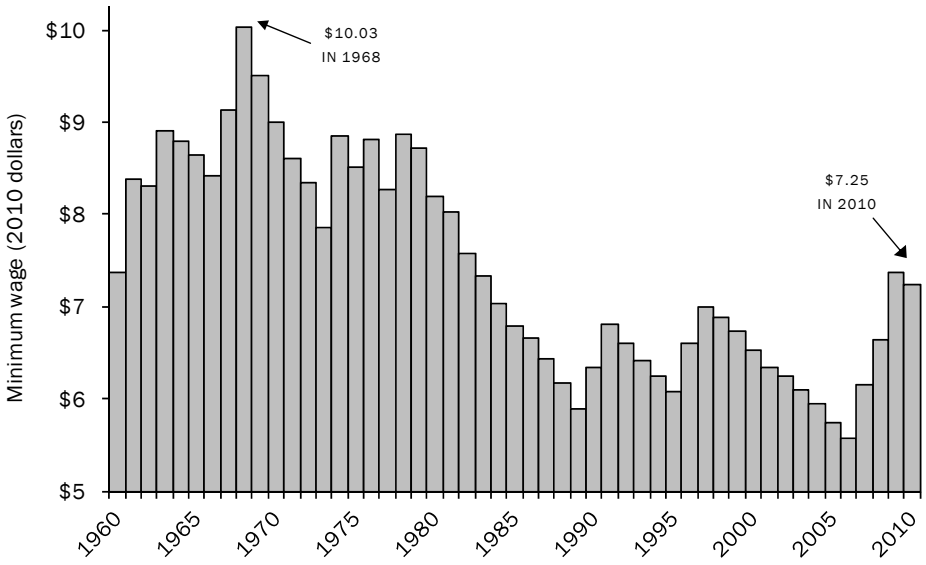
[13] The exact rate of deduction is 21.06 percent beyond $16,450.

[14] For one–child households, the phase-in range extends between zero and $8,970 with a credit rate of 34 percent. Therefore, the maximum benefits for this household would be $3,050 (i.e., 34 percent of $8,970). The plateau range is from $8,970 to $16,450. In the phase-out range, EITC benefits are reduced by 15.98 percent of any earnings above $16,450, falling to zero when they reach $35,535.

Childless households receive the least generous benefits. For these households the phase-in range extends to $5,980 and the credit rate is 7.65 percent. The maximum credit possible is therefore $457. The phase-out rate is also 7.65 percent. These households with earnings above $13,460 receive no EITC benefit.

Married couples filing taxes jointly follow basically the same EITC schedule but with somewhat higher income thresholds. Finally, the 2009 American Recovery and Reinvestment Act temporarily provides additional credits for households with three or more children.

FIGURE 2: THE REAL VALUE OF THE FEDERAL MINIMUM WAGE, 1960 TO 2010



credit is the same as her income prior to receiving the EITC credit. Having more time away from the job can be helpful to any worker, but can be particularly helpful for workers raising children, who have substantial non-paid work to get done at home.

For nearly all the states operating their own EITC programs, the state credit is calculated simply by multiplying the federal EITC credit by the state rate. For example, a DC resident with two qualifying children who earned $13,000 in 2010 would be eligible for a federal EITC rate of 40 percent. This person's federal EITC credit would therefore be the maximum amount for that year, or $5,036. The state credit in DC was 35 percent in 2010. Therefore, this family's state credit would be 35 percent of $5,036, or $1,763.[15]

Federal and state-level minimum wage laws

Minimum wage laws regulate what is the lowest hourly wage rate an employer may pay any worker covered by the Fair Labor Standards Act (FLSA).

Roughly speaking, workers who earn the minimum wage make up about five percent or less of the U.S. workforce.[16] However, minimum wage increases also tend to provide raises for workers earning above the new minimum. This "ripple effect" occurs when employers provide raises to workers above the minimum wage rate in order to maintain a stable wage hierarchy before and after a minimum wage increase. Such ripple effects can extend the impact of these laws to another roughly ten percent of the workforce (Pollin et al., 2008).

[15] Only a handful of states diverge from this formula. Minnesota has different rates depending on income and family type, Wisconsin has different rates for different family types, and New Jersey limited its state credits to households with incomes below $20,000 until 2006. For other exceptions, see "A Hand Up," published in various years by the Center for Budget and Policy Priorities (Johnson 2000, 2001; Llobrera and Zahradnik, 2004; and Nagle and Johnson 2006). In 2010, state EITC credit rates ranged between 3.75 percent in Rhode Island and 45 percent in Minnesota (for certain family types). There is one other important difference among state EITC programs: some only provide nonrefundable EITC credits. While based on the same formula as other state programs, nonrefundable credits can be used only to offset tax liabilities. They do not provide a cash payment to households. In 2010, Delaware, Maine, Rhode Island (a small portion of Rhode Island's state EITC is refundable, equal to 3.75 percent of the federal EITC credit), and Virginia had nonrefundable EITC credits.

[16] The minimum wage law covers most, but not all, workers. The Fair Labor Standards Act requires a federal minimum wage for an estimated 90 percent of workers. See: www.dol.gov/ whd/regs/compliance/whdfs14.pdf (accessed January 14, 2012). A variety of workers are exempt from minimum wage regulations, including: farmworkers on small farms, casual babysitters, newspaper deliverers, salaried executive, administrative, and professional employees and outside sales workers. See: www.dol.gov/elaws/esa/flsa/screen75.asp.

In Figure 2, we plot the movements in the real value of the federal minimum wage from 1960-2010 (in 2010 dollars). As the figure shows, the federal minimum wage rate reached its highest value in 1968 at about $10.00. Even after the latest 3-step increase over 2007 to 2009, the minimum rate level of $7.25 in 2010 is still 28 percent below the 1968 peak.

Some states have responded to this erosion of the federal minimum wage by putting in place state-level standards that exceed the federal rate. By 2010, 14 states and the District of Columbia operated with their own statewide rates in excess of the federal minimum. Though there are exceptions, the coverage of these state minimum wage laws generally overlap with the federal coverage. When state and federal rates differ, the higher standard prevails.

STRENGTHS, WEAKNESSES, AND COMPLEMENTARITIES

The minimum wage and EITC are focused on the same goal of raising living standards for low-income workers and their families. However, they do so in distinct ways. As a result, they are also distinct in terms of their relative strengths and weaknesses. The question we are asking here is whether these differences cause the two measures to operate more effectively in combination rather than as stand-alone policies. There are two basic ways they may do so: the strengths of one policy may either build upon the strengths of the other policy, or, alternatively, compensate for the other policy's weaknesses. We will also consider these basic questions in the context of how much it costs to maintain a family at a decent living standard in the United States, and how minimum wage laws and EITC benefits might combine to help bring low-wage working families up to this standard.

We consider the main distinctions between these two policies on the basis of two issues: who is receiving the benefits and who is paying for these benefits.[17]

Who benefits?

The EITC is targeted primarily to benefit low-income workers raising children. Unless someone is gaming the system, in 2010, no household that exceeds $48,352 in earnings will receive benefits.[18]

The structure of EITC benefits targets support specifically to workers for which the benefits of minimum wage laws tend to be inadequate in two ways. First, the largest EITC benefits go to workers raising children who have income needs that far exceed what

[17] The relative effects of minimum wage laws and the EITC should also be evaluated according to other criteria as well, including workers' motivation and self-esteem; the timing and convenience of receiving payments; and the relative take up rates. We are unable to explore these questions in this study. These issues are discussed briefly in Pollin (2007) and Pollin et al. (2008). More attention on these topics should clearly be central themes of future research.

[18] This is the highest earnings threshold among the various household categories used to determine EITC benefits in 2010. Specifically, this is the maximum earnings threshold for married couples filing taxes jointly and that have three or more qualified children.

any current minimum wage can support. Also, EITC benefits are available for workers who earn wages too high to be affected by minimum wage hikes, but work too few hours to earn an adequate level of income.

In the case of the minimum wage, some families with higher incomes can benefit. This can occur for families which include secondary earners—such as a student working part-time—whose pay is within the range of the minimum wage, while the family's primary earner brings home a much higher level of income.

EITC policies can help increase the extent to which low-income households benefit from the higher pay rates supported by minimum wages. They can do this by encouraging more low-income workers, who typically earn low wages, to get into the workforce or work longer hours by supplementing their earnings. If such employees work more in response to a generous EITC policy, even more low-income workers will then be able to reap benefits from minimum wage hikes.

EITC can also provide significant benefits for business owners. When an EITC program operates in conjunction with a poverty-level minimum wage, the EITC becomes a means of allowing businesses to attract an adequate workforce while still paying poverty-level wages. This can create a perverse situation, in which wages could fall enough so that, even with their EITC supplements, workers may not end up with higher incomes, because their wages will have fallen so low.[19] Minimum wages can limit how low wages can fall, and can thereby prevent EITC benefits from going primarily to low-wage employers instead of low-income workers.

Who pays?

The EITC is financed directly by taxpayers—it is, effectively an income transfer via the tax system from primarily middle-class taxpayers to low-income workers and their families. As a result, fiscal budget considerations limit how high EITC rates can rise—spending on large EITC benefits can force cutbacks in other government programs or require significant tax hikes. Moreover, if high EITC rates enable employers to pay poverty-level wages, then this situation shifts onto the public the costs of alleviating the poverty of even workers holding full-time jobs, including by increasing demand for public subsidies such as the Supplemental Nutrition Assistance Program (SNAP, formerly called Food Stamps) and Medicaid.

By contrast, the minimum wage is, most directly, a transfer from business owners to their lowest-paid employees. Of course, businesses will certainly attempt to pass on their increased labor costs to consumers by raising prices, and are frequently able to do this without turning away their customer base.[20] Whether the businesses themselves or their customers absorb the rise in labor costs, the net impact on government budgets of a higher minimum wage will be positive. This is because a higher minimum wage will mean lower government subsidies on all forms of government assistance to low-income people, including Medicaid, SNAP, and the EITC. Higher earnings also generate more income tax revenue for governments. To the extent that businesses will be able to raise prices without reducing their sales in response to higher labor costs, this increase in sales revenue will also mean an increase in sales tax revenue for governments.

A minimum wage will promote wage increases that business owners will have to pay (though perhaps also, again, pass on to consumers through price increases). At some point, such wage increases can discourage businesses from hiring more workers. We know from extensive research on this question that relatively modest increases in the minimum wage—in the range of 20-30 percent at a time—does not cause any significant job losses.[21] But there is certainly a point—perhaps in the range of a 70-80 percent increase or perhaps higher still—where this minimum wage increase will discourage businesses

[19] Two studies, Leigh (2010) and Rothstein (2010) find evidence of slower wage growth when EITC benefits expand. We also consider this issue in some detail below.

[20] See Aaronson (2001) and Aaronson, French and MacDonald (2008).

[21] See Pollin et al. 2008, pp. 216-217, for a brief survey of the literature on this topic. We also take up this issue more fully below.

from hiring low-wage workers.[22] At this tipping point for the minimum wage—where further wage increases will discourage employment—the overall effect will be positive for workers who have jobs but negative for those shut out of employment opportunities.

Overall then, there are two broad channels through which these policies can work in complementary ways. First, the benefits of one policy can amplify the benefits of the other. EITC benefits encourage higher employment levels among low-income households, many of whom can also benefit from minimum wage hikes. In other words, with both policies operating at high levels, low-income workers will be encouraged to work more for higher pay. Second, the strengths of one policy can compensate for the weaknesses of the other. Minimum wages can put a backstop on wages and limit any tendency for large EITC benefits to push wages down. EITC benefits can raise the incomes of poor households without the risk of discouraging businesses from hiring more workers, as in the case of a minimum wage set too high. In these ways, the two policies combined can generate greater improvements in the economic situation of low-income households than would be case with one policy operating alone.

Getting families to a decent basic living standard

The importance of capturing the potential complementarities between the minimum wage and EITC becomes clear when we consider these policies within the broader context of living costs and living standards in the United States today. What does it take to achieve a decent, if modest, living standard; and how close to that standard do low-wage workers come, even with the support of relatively high minimum wage standards and EITC support?

To help shed light on this question, it will be useful to introduce a measure of "basic family budgets" as developed by researchers at the Economic Policy Institute. This basic budget line is significantly higher than the official U.S. poverty line. It is a measure that, according to James Lin and Jared Bernstein (2008), "represents the annual family income required to maintain a safe and comfortable, but modest standard of living." Under this basic family budget, a family will be renting their home, with the rent set at the lower 40 percentile level of the market price in their community. The family's food expenses are based on the U.S. Department of Commerce's "low cost plan," which is a basic diet that assumes almost all food is prepared in the home. Similarly modest allocations are also made for health care, childcare, and transportation. Expenditures on clothing, entertainment, personal care, reading materials, educational materials, and other miscellaneous items, equal in total only 24 percent of the family's housing and food budgets.

Based on this measure of the basic family budget, we now consider how a low-wage worker fares relative to this living standard. For purposes of comparison, we consider conditions for a single mother with two children living in Burlington, Vermont. We choose Vermont because, as we will see in detail below, it offers one of the most generous levels of overall policy support in the U.S. for low-wage workers through its combination of a statewide minimum wage and a state EITC supplemental to the federal EITC.[23]

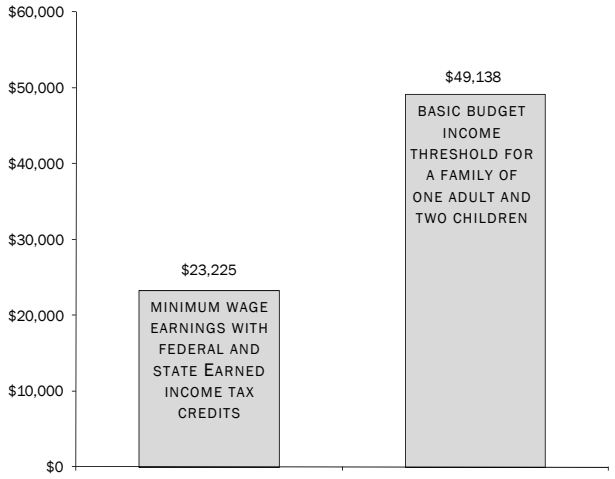
In 2010, the minimum wage in Burlington was $8.06. This is 11 percent above $7.25, the current federal minimum. If a minimum wage worker in Burlington was working full-time for a full year, including either no time off for vacation or a fully-paid vacation over the course of the year, she would earn $16,765 from her wages. With this level of paid income, she would still be eligible for $4,970 in federal EITC support—just a bit under the maximum level of $5,036. On top of this, she would also receive Vermont's own 30 percent EITC supplement. This would provide

[22] See a detailed analysis of the "minimum wage tipping point"—the largest minimum wage increase that can be implemented without causing employment losses—in Wicks-Lim and Thompson (2010).

[23] Only D.C. exceeds Vermont in terms of the combined policy support with a minimum wage rate of $8.25 and a state EITC rate of 35 percent. However, the cost of living in D.C. far exceeds the average level in other areas for a family of three in the U.S.—by 54 percent—and so does not provide a representative example of how minimum wage and EITC policies may get the average worker up to a minimally decent living standard. The cost of living in Burlington, Vermont, on the other hand, has a cost-of-living that is only 14 percent above the average in other areas.

FIGURE 3: COMPARING MINIMUM WAGE INCOME TO BASIC FAMILY BUDGET INCOME THRESHOLD

Single mother with two children
Burlington, Vermont 2010



another $1,491, bringing the total of federal plus state-level EITC support to $6,461. If we combine her wages and full federal plus state EITC benefits, her total income comes to $23,225.

According to the EPI's basic budget line, this family needs $49,138 to be living at the basic budget standard—i.e. at an income level "required to maintain a safe and comfortable but modest living standard." That is, even under one of the most generous combinations of a state-level minimum wage standard and state-level EITC supplement, a full-time single mother in Burlington and her two children would still be living 53 percent below the basic family budget line. Figure 3 summarizes this comparison between the total income of a minimum-wage earning single mother in Vermont with two children—including her federal and state-level EITC benefits—and the income level she and her child would need to live at Burlington's basic budget standard.

It is unlikely that either an increase in the state-level minimum wage or EITC state-level supplement could, by itself, rise sufficiently high to bring this working family close to the basic budget line. This is precisely because, in doing so, the negative effects associated with these two policies could become increasingly significant. Thus, even if we assume this Vermont mother were to continue receiving the near maximum level of total EITC support in Vermont of about $6,500, she would still need to receive a wage rate of $20.50 an hour, working full time over the course of a full year, to bring her family income to the basic family budget line.[24] That is, her wages would have to rise by 154 percent over the 2010 Vermont statewide minimum of $8.06 an hour. An increase of this magnitude could well lead to discouraging businesses from hiring low-wage workers.

Nevertheless, it is evident that both significantly higher minimum wages along with significantly more generous EITC support are both needed to bring low-wage working families to a "safe and comfortable but modest living standard." In other words, to get anywhere near a decent living standard will most likely require expanding both policies *at the same time* in order to get a maximum level of support, and also to minimize any negative effects.

[24] Note also that if this Vermont mother earned a $20.50 hourly wage, her earned income level exceeds the income eligibility threshold for the federal EITC for her family size, or just under $38,000. In other words, at a $20.50 wage rate this family would actually not receive any EITC benefit—federal or state.

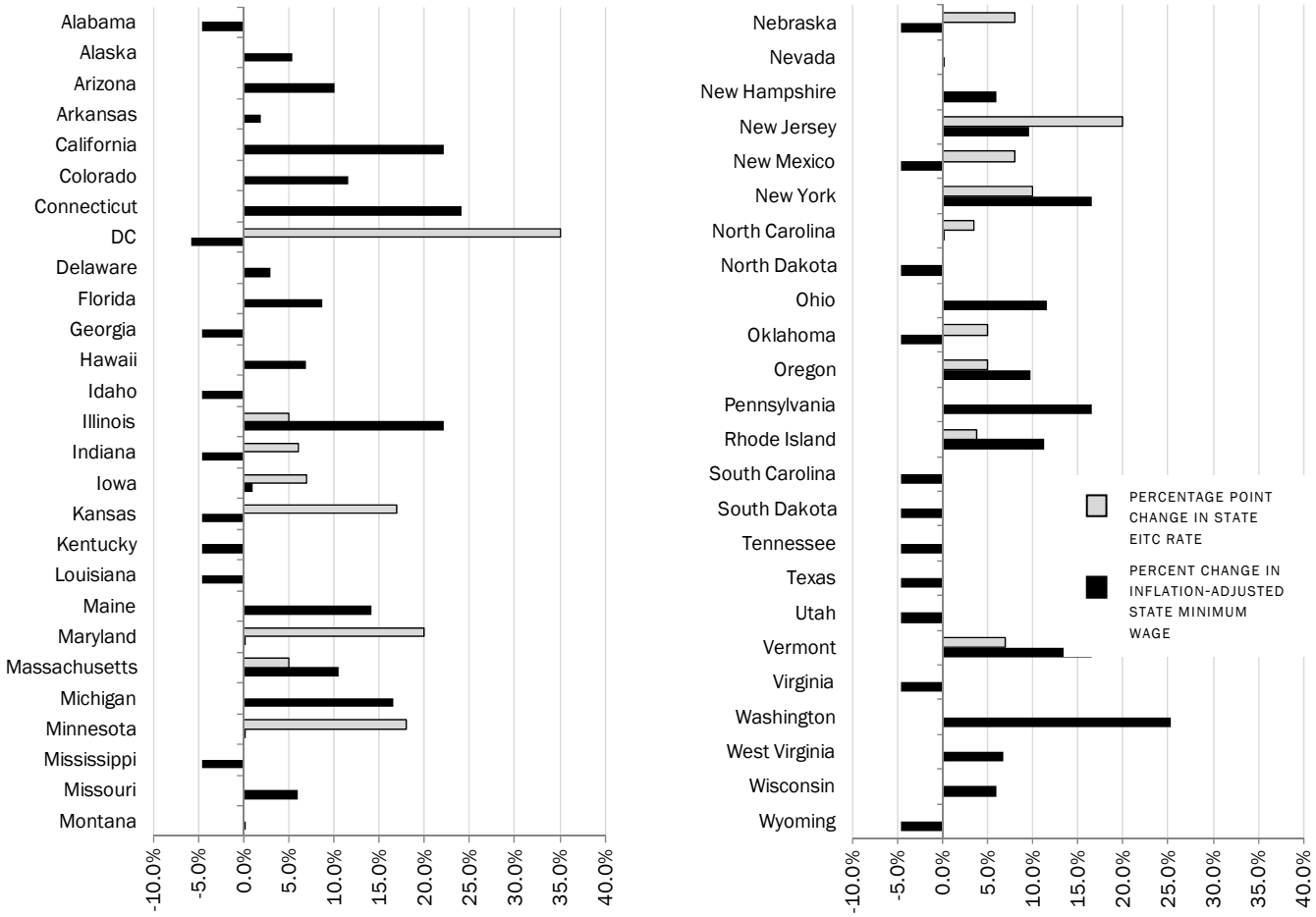
RESEARCH APPROACH

In recent years, a majority of states have implemented alternative combinations of state-level minimum wage and EITC policies. As of January 2012, 18 states and the District of Columbia have minimum wage rates that exceed the federal rate and 23 states and the District of Columbia have their own EITC programs (20 are refundable and 3 are non-refundable). We use this variation in policies across states to observe whether there is a consistent pattern of better or worse conditions and opportunities for low-income workers when states experience a change in neither, one, or both policies.

Figure 4 provides a picture of the variety of policy changes that states experienced over the years of 1997 to 2007. With regard to minimum wage rates, we show how much the inflation-adjusted value of the prevailing minimum wage in each state has changed. Whether this rate has risen or fallen over these years depends both on (1) whether a state decides to raise the minimum rate and (2) how much inflation erodes the real value of the minimum wage. As we will see, inflation eroded the real value of the wage floor in states that chose not to raise their minimum rates. We also show in Figure 4 the percentage-point change in each state's refundable EITC rate in the states with their own policy.

Starting with Alabama, we can see that the real value of the minimum wage that prevailed in this state from 1997 to 2007 fell by nearly five percent. This is because this state simply followed the lead of the federal government and only raised its minimum wage rate from $5.15 to $5.85 in nominal dollars (i.e., unadjusted for inflation) — an amount insufficient to keep up with inflation over these years. In terms

FIGURE 4. CHANGES IN STATE EITC RATES AND INFLATION-ADJUSTED STATE MINIMUM WAGE RATES FROM 1997 – 2007



of a state EITC policy, Alabama did not implement any additional state EITC program. Thirteen other states followed the same policy route as Alabama.[25] Twenty other states only raised their state minimum wage rates.[26] Among these, Washington implemented the highest minimum wage increase of just over 25 percent. The District of Columbia raised its state EITC rate the most, from zero to 35 percent, but it did not raise its state minimum. Five other states implemented smaller state EITC rate increases without increasing their state minimum wage rates.[27] The remaining eleven states raised both their state minimum rates above the federal rate and their state EITC rates.

Taken altogether, these states' experiences allow us to observe the impact of a wide variety of combinations of these two policies on low-income workers. Among the states that raised their state minimum rates at least once between from 1997 to 2007, the average overall increase is 10 percent. Among the states (including DC) that raised their state EITC rates, the average increase is 11 percentage points.

We look specifically at the years between 1997 and 2007 in order to maintain the focus of our analysis on the long-term policy impacts of minimum wage laws and the EITC. We want to exclude two particular economic events in our study because each produced a dramatic, but short-term, degree of turbulence in the low-wage labor market. These short-term effects would likely make it more difficult to observe the effects of the policy interventions per se. The two events are: the overhaul of the U.S. welfare system by the 1996 Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) and the inception of the Great Recession in 2008, the most severe economic downturn since the Great Depression.

In 1996, the Clinton Administration and Republican Congress agreed to eliminate the 52-year old federal welfare program chiefly designed to support single mothers and their children, Aid to Families with Dependent Children (AFDC). AFDC was replaced by the Temporary Aid to Needy Families (TANF) program which limited the availability of cash transfers to poor families by introducing time limits and work requirements as conditions for the receipt of aid. This caused an unprecedented rise in labor force participation among single mothers.[28] The Great Recession, on the other hand, generated historically high, double-digit unemployment rates, eliminating work opportunities for a large swath of the workforce. Even by 2012, three years past the official end of the recession, the national unemployment rate remains above eight percent. We should be able to more easily observe how these two the EITC and minimum wage affect low-income workers during the years in between these two major episodes.

Focus on low-credentialed single mothers

As we noted at the outset, we examine the effects of the various EITC/minimum wage policy combinations as they affect one social group in particular—single mothers whose educational attainments are a high school degree or less. We refer to this group as "low-credentialed single mothers."

There are good reasons to concentrate our attention on this particular group for our study. To begin with, 32 percent of female-headed households fall below the severe official poverty line. Over half (58 percent) falls below 200 percent of the federal poverty line—a reasonable low-income threshold.[29] This 58 percent figure is notably higher than other family types, such as those headed by married couples (20 percent). The figures are even more stark when we consider the basic budget line. Among one-parent households in 2008 (the latest figures available), 60 percent of families with one child, 75 percent of families with two children, and fully 92 percent of families with

[25] These states include: Georgia, Idaho, Kentucky, Louisiana, Mississippi, North Dakota, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, and Wyoming.

[26] These states include: Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Hawaii, Maine, Michigan, Missouri, Montana, New Hampshire, Ohio, Pennsylvania, West Virginia, Wisconsin, and Washington.

[27] These states include Indiana, Kansas, Nebraska, New Mexico, and Oklahoma.

[28] Blank and Schmidt (2001).

[29] See data from the U.S. Census Bureau at: www.census.gov/ hhes/ www/cpstables/032010/pov/new04_100_01.htm.

three children, could not meet their basic needs. Therefore, focusing on single mothers provides us with a picture of the effectiveness of both the EITC and minimum wage programs as measures to improve the lives of a group that experiences a high degree of poverty.

This question of how the EITC and minimum wage laws affect the lives of the poor became especially important in 1997—the first year of the data in our study. Along with overhauling the U.S. welfare system, the federal government also increased both the minimum wage and EITC coverage. This combined increase in the federal EITC and minimum wage was designed to "make work pay" for people who were being taken off the welfare rolls—particularly single mothers—and encouraged to move into the labor market. The logic behind these policy choices is clear: the high rates of poverty among these women combined with the fact that they are raising children means that many would be eligible for the most generous EITC benefits when they work. Moreover, over the years of this study, we estimate that about one in five single mothers with low educational credentials earn wages low enough to be affected by a minimum wage hike. Thus, if these policies achieve any of their intended effects then we should see the economic situation for this demographic group improve. By focusing on conditions for low-credentialed single mothers and their families, we are able to obtain an especially sharp picture of how well the EITC and minimum wage policies have succeeded in "making work pay" in terms of job opportunities, wage levels, and overall earnings.

Methodology and data

Our basic analytic tool for assessing these impacts of the minimum wage and EITC is regression analysis. This is a standard statistical technique that enables us to test how much job creation, wages, or earnings might have changed in response to state-level changes in these policies after taking into account other potential influences. To be specific, many factors other than the minimum wage or EITC could be at play here, including fluctuations in the national economy, demographic shifts within states, and changes in state policies that, for example, affect the ability of single mothers to participate in the labor market. With regression analysis, we are able to control for these other potential influences. This enables us to isolate with a high degree of reliability the relationships that most interest us, i.e. how changes in the statewide minimum wage laws and EITC benefits affect employment, wages, and overall earnings. All of the estimates we report on how these two policies influence the economic outcomes of single mothers are generated through by regression analysis.

Within regression analysis, one of the ways that we evaluate the reliability of the influences we observe is through the measure of "statistical significance." For example, we present results on the "statistical significance" of our estimate of how much a rise in the minimum wage affects the earnings of low-credentialed single mothers. By measuring statistical significance, we are assessing how well any given relationship—such as the relationship between a rise in the minimum wage and earnings—holds up on a consistent basis over a large number of observations. For a complete description of how we generate our regression results, please refer to the Technical Appendix at the end of this report.

We also provide two measures of how minimum wage and EITC policy changes may affect the economic outcomes of our focus group of single mothers. We first provide a measure of what happens starting from immediately after a change in either the minimum wage rate or EITC credit rate. This estimate assumes that there is no delay between the change in a policy and its impact on workers. Since we cannot be certain that this is always the case, we then also provide a measure of whether economic outcomes change starting one year after a rate change. This may better capture policy impacts if it takes a year for the policy changes to take effect. For example, an increase in an EITC rate may not affect workers' behavior at all until the tax filing season that follows the policy change, when most workers will actually see how the credit rate changes their income subsidy.[30]

[30] We use an additional technique to make sure that what we observe

Data. We use publicly available data from the Current Population Survey (CPS), a survey administered monthly to about 60,000 households nationwide by the U.S. Census Bureau for the Bureau of Labor Statistics of the U.S. Department of Labor. The CPS is a standard data set that provides, for example, the basis for the widely reported national unemployment rate. The data set is designed specifically to track individuals' work activities, and a subset of the surveys referred to as the Outgoing Rotation Group (ORG) includes a detailed set of questions to measure workers' wages and weekly earnings precisely. Another important feature of the CPS for this study is that households included in the survey are chosen so that they are representative of the entire state population, and this enables researchers to use the CPS to study state-level policy changes. Finally, the CPS collects enough information about each person's household members so that we can identify whether an individual lives with their own children, the age of their children, as well as whether they are in school. Each of these characteristics is important with regard to determining EITC eligibility.[31]

among our focus group of single mothers can reasonably be linked to minimum wage and EITC policies, as opposed to general trends in the low-wage labor market. This technique is to look at another group of workers that we would expect to be affected differently by a minimum wage hike and/or EITC policy expansion but who compete for jobs in the low-wage labor market. We look at the impact of these policies on such a group of workers to place an additional layer of scrutiny on our results. We provide a full discussion of these results, what economists typically refer to as a "robustness test" in the Technical Appendix.

[31] Some other studies of the EITC have used the March files of the CPS since they contain data on individuals' work activities and earnings, and overall household income (Rothstein 2010; Leigh 2010; Neumark and Wascher 2007; Eissa and Liebman 1996). However, in contrast to the basic monthly survey which asks about current (past two weeks) work and earnings, the supplemental questions in the March survey asks about individuals' work activity and earnings during the past calendar year. The March questions therefore require respondents to recall from the past year whether they worked, how much they worked, and their overall level of earnings. As a result, the March survey responses are more subject to reporting errors. Moreover, these questions are asked once per year rather than monthly so that the sample sizes from the March CPS files are much smaller than even the data from the ORG files. We think that the basic monthly files are better suited for measuring the impact of minimum wages and the EITC on individual's work activity and their earnings. Moreover, the much larger number of observations from the basic monthly files or even the ORG files provides us with much more information from which to observe policy impacts.

RESEARCH FINDINGS

Employment effects

A central matter of concern regarding both minimum wage and EITC policies is their impact on employment. Will low-income workers gain or lose in employment opportunities as a result of a change in either the minimum wage or EITC? The benefits of either a higher minimum wage or EITC will be lost if these policy changes lead to a significant decline in job opportunities. By the same token, if employment opportunities should increase in correspondence with either a minimum wage or EITC increase, then these initiatives can indeed benefit low-wage workers and their families as intended. It will also be important to examine whether, working in combination, a change in the EITC and minimum wage will have different effects than if only one or the other policy change takes place.

Minimum wages and employment. The issue here is straightforward: do minimum wage mandates create the perverse effect of reducing employment opportunities for low-wage workers? That is, once employers are faced with a mandate to raise wages beyond what they would voluntarily choose to pay, they could then decide to cut back on their employment of low wage workers. This could mean either reducing the number of existing low-wage employees, cutting back on these workers' hours, or holding off on new hires.

Economists have researched this issue of employment effects of minimum wages over many years and at great length. As of today, there is still not a full consensus as to what the evidence concludes. Nevertheless, the weight of evidence strongly supports the conclusion that, if there are any negative employment effects from raising minimum wages by relatively modest incremental amounts—in the range, say, of 20 percent at one time—that these effects are weak. This view of the evidence was accurately summarized by Professor Richard Freeman, the senior labor economist at Harvard and the National Bureau of Economic Research, when he observed in 1995 that "The debate is over whether modest minimum wage increases have "no" employment effect,

modest positive effects, or small negative effects. It is not about whether or not there are large negative effects" (1995, pp. 830-834).[32,33]

In fact, some research has found that raising minimum wage rates can improve the employment situation for workers. For example, minimum wage and living wage laws have been repeatedly observed to reduce turnover among workers, promoting greater employment stability for low-wage workers.[34] Raising the minimum wage can also draw more people into the workforce as paid employment becomes a more attractive option. Both of these effects are particularly relevant for our focus group of low-credentialed single mothers. Childcare can be hard to obtain if one's work schedule fluctuates due to frequent job changes. Moreover, the cost of childcare may simply eliminate many low-wage jobs as an economically viable option. In 2010, the U.S. Census Bureau reported that more than two in five (43 percent) of low-income, single mothers are out of the labor force because they are taking care of their home and family.[35] Finally, minimum wage hikes can even raise employment levels. Employers that have to raise their wages in response to a rising minimum wage may need to scale up their business activity, and therefore expand their workforce, in order to raise their revenue enough to cover the additional labor costs and still make a comparable profit.[36]

EITC and employment. In contrast with the minimum wage, the EITC is designed explicitly to encourage employment opportunities for low-income workers. This is because the EITC would not encourage higher wages at all. Because workers' wages are supplemented by their EITC payments, if anything, the EITC encourages workers to accept jobs at lower pay levels coming from their employers. Thus, from the perspectives of both employers and workers, the EITC builds in incentives for higher levels of employment.

The research on this positive employment effect has been extensive. It has consistently found that, for people at income levels that place them within the phase-in range of the EITC, receiving EITC benefits correlates strongly with a rise in the proportion of workers holding jobs. The findings show that, in connection with receiving EITC benefits, more people both seek jobs and end up obtaining them.[37]

How the EITC influences the number of hours workers choose to work is more ambiguous, as we discussed earlier. For all workers, any EITC benefit increases their income from work. This additional income that the EITC provides can act as an incentive to work either more or less. On the one hand, workers whose income puts them in the phase-in range of EITC benefit schedule, each additional hour of work increases their EITC benefit and for this reason they may choose to work more. On the other hand, some workers may choose to work fewer hours since the EITC may raise their income enough that they can work less *and* effectively bring home as much as they would have without the EITC benefit.

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[32] More recently, economists have been able to examine this question with more rigorous techniques. In 2010, Professors Arindrajit Dube, T. William Lester, and Michael Reich, used a new method that allowed them to observe what happened to low-wage workers working basically under the same labor conditions with one exception: some lived in a state that raised its minimum rate and some lived in a state that did not. They did this by comparing the employment outcomes for low-wage workers in counties on either side of the border of a state that raised its minimum wage. Any differences in the employment situation for low-wage workers could therefore be linked with a high degree of confidence to the different state minimum wage policies. These researchers found no negative employment effects.

[33] A survey of professional labor economists in 1998 on this issue is supportive of Professor Freeman's conclusion. Specifically, the survey found that "The median labor economist reported that a 10-percent increase in the minimum wage would be associated with a 1 percent decrease in teenage employment," (1998, p. 1393). That is, even with teenagers—the population group whose employment opportunities would be most heavily affected by changes in the minimum wage laws—the negative employment effect would be very modest. This then also means that, in the view of most professional labor economists, the impact on employment opportunities for the labor force as a whole of a minimum wage increase would be negligible.

[34] For example, see Dube, Lester and Reich (2011).

[35] See 2010 U.S. Census Bureau Detailed Poverty Table 24, "Reason For Not Working or Reason For Spending Time Out of The Labor Force — Poverty Status of People Who Did Not Work or Who Spent Time Out of the Labor Force: 2010." See: hwww.census.gov/hhes/www/cpstables/032011/pov/new24_100_01.htm (accessed October 14, 2011).

[36] Economists refer to this type of firm as a "monopsony employer." See for example, Card and Krueger (1995) or Manning (2003).

[37] See for example, Eissa and Liebman (1996) and Meyer and Rosenbaum (2001).

For a worker whose earnings place them in the phase-out range of the EITC benefit schedule, the EITC may actually act as a disincentive to work any *additional* hours since his/her EITC credit shrinks with each additional hour of work. In such cases, a worker may also choose to work less. This is especially true for a worker who has a partner that also works and therefore may be able to provide job-related health benefits as well as take on the role of primary wage earner. Put another way, the choice to work fewer hours is easier for secondary wage earners. For our focus group of low-credentialed single mothers who are likely to be the primary wage earners in their household, the EITC will most likely act as an incentive to work more hours.

Measuring effects on employment opportunities. What is the combined effect of these policies on employment opportunities? Do the positive employment effects for low-income workers from EITC programs provide a counterweight to the modest negative employment effects that, in at least some situations, could possibly result from increases in the minimum wage?

We answer this question by first examining employment opportunities in terms of what proportion of our target population of low-credentialed single mothers have jobs. This measure is the employment to population ratio, or what is sometimes termed the *employment rate*. The employment rate is the most basic measure of employment opportunities in any given labor market setting—a country, a city, or in this case, in different states within the U.S.

Of course, the *unemployment rate* is a more familiar measure of job opportunities. But the unemployment rate is influenced by changes in the proportion of people who are participating in the labor market, the *labor force participation rate.* The labor force participation rate includes those with jobs as well as those who are unemployed and are out looking for work. The change in the labor force participation rate could itself be influenced by changes in the minimum wage and the EITC. For example, a rise in the minimum wage might encourage more people to enter the labor force and look for work, given the possibility to receive better pay. If the workers enter the labor force, but don't find a job, then the unemployment rate has gone up. But in such a situation, unemployment has gone up only because more people are looking for jobs, not because fewer people have them.[38]

Considering possibilities such as this, it will be useful to examine movements in the labor force participation rate itself, along with changes in the employment rate, as we attempt to sort out the effects of changes in minimum wage and EITC policies on labor market conditions.

Beyond these considerations, a major gap with the employment rate and labor force participation rate is that they only count whether or not people have jobs. They take no account of how many hours people are working at their jobs. People working, say, 10 hours per week are counted equally as being employed and as labor force participants as those with full-time jobs. Clearly, it will be important to know whether a change in either minimum wage or EITC policies affects the number of hours people are working. For either of these policies to unambiguously increase how much people are working, the policies must raise the average number of weekly hours worked. Thus, as a final indicator of employment effects, we look directly at changes in hours worked with policy changes.

Employment levels. We begin in Table 1 by presenting figures on employment levels among low-credentialed single mothers over the entire time period that we study. This provides a general picture of the employment situation for our focus group.

TABLE 1. AVERAGE EMPLOYMENT RATES FOR LOW-CREDENTIALED SINGLE MOTHERS, 1997-2007

	Employment rate	Labor force participation rate	Average weekly hours
Low-credentialed single mothers	67.1%	74.5%	24.7 hours

We can see that the majority of low-credentialed single mothers were employed with an employment to

[38] We found evidence of such an effect when Santa Fe, New Mexico adopted a citywide minimum in 2004. See Pollin et al. (2008), chapter 14.

population rate of 67 percent. Another 7 percent of this population of women is seeking employment but do not have jobs, implying an unemployment rate of 9 percent.[39] If we average weekly hours across all low-credentialed single mothers—i.e., including both those employed and working at least some hours, as well as those not employed and therefore working zero hours—the average weekly hours is 24.7 hours. We can infer from this average that among the 67 percent of employed single mothers that have at least some weekly hours, their average weekly schedule is 37 hours.[40]

We now consider how employment conditions changed when EITC and minimum wage rates changed over 1997-2007. Our basic findings are presented in Tables 2 and 3.

Specifically, in the top half of Table 2, we present the impact of a 10 percentage point increase in a state-level EITC rate on each employment measure. We chose to show the impact of a 10-percentage point increase because it is about the average-sized rate change among states that implemented policy increases over 1997 to 2007.[41] Recall that a 10-percentage point increase in a state's EITC rate effectively represents up to a 4-percent increase in after-tax income. This increase is modest, but not trivial: a full-time worker earning the $7.25 federal minimum earns about $15,000 annually. A 4-percent income supplement equals $600.

In the bottom half of Table 2, we present the impact of a 10-percent rise in the real value of the minimum wage. We chose to show the impact of a 10-percent minimum wage hike because, as with the EITC state rate changes, a 10-percent minimum wage hike is about the average-sized increase among states that raised their minimum wage over 1997 to 2007.[42]

[39] (74 percent in the labor force-67 percent employed)/74 percent in the labor force = 9 percent unemployed.

[40] 24.7 hours weekly/67 percent employed = 37 hours weekly among employed.

[41] See Figure 4.

[42] See Figure 4.

TABLE 2. IMPACT OF MINIMUM WAGE AND EITC INCREASES ON EMPLOYMENT LEVELS FOR LOW-CREDENTIALED SINGLE MOTHERS

Policy change	Change in employment rate		Change in labor force participation rate	
	Percentage pt. change	Statistically significant?	Percentage pt. change	Statistically significant?
State EITC rate increase by 10 percentage points				
Immediate effect	+1.1%	No	+0.2%	No
Effect after one year	+2.1%	No	+0.9%	No
State minimum wage rate increase by 10 percent				
Immediate effect	+1.2%	Yes	1.1%	Yes
Effect after one year	+1.5%	Yes	+0.7%	Yes

Employment impacts. Beginning with the impact of EITC rate increases, we see that, overall, there were no consistent effects on employment. Specifically, the impacts on the employment rate, the participation rate in the labor force, though positive, were statistically insignificant. This means that while we do see some positive movements in these employment indicators—an increase in the employment rate and a more modest increase in labor force participation, these patterns are not consistent enough to draw any reliable conclusions.[43]

In Table 3 (page 22), we show the impact of an EITC and minimum wage change on the average number of hours worked. Here we observe a modest increase in the average number of weekly hours that is statistically significant: low-credentialed single mothers tend to work just over an hour more per week one year after a 10-percentage-point rise in a state's EITC rate. This third employment measure captures any rise in average hours due to a higher level of employment as well as a rise in average hours by the already-employed adding hours to their work schedules. If we assume a 10-percentage point rise in a state's EITC rate raises employment rates by 1-2 percent as we estimate in Table 2, this by itself

[43] These estimates in Table 2 are positive and comparable in size to those found in other studies (e.g., Leigh 2010).

would not account for the entire 1.1 hours increase in the average work week we estimate in Table 3. A 1.1 hours increase in the average work week implies that employed workers—the newly employed included—added 1-2 hours to their schedules.[44]

Based on this measure, EITC policies have a consistently positive effect on the employment of low-credentialed single mothers.

TABLE 3. IMPACT OF MINIMUM WAGE AND EITC INCREASES ON WEEKLY HOURS WORKED FOR LOW-CREDENTIALED SINGLE MOTHERS

Policy change	Change in average weekly hours*	
	Change in hours	Statistically significant?
State EITC rate increase by 10 percentage points		
Immediate effect	+0.7 hours	No
Effect after one year	+1.1 hours	Yes
State minimum wage rate increase by 10 percent		
Immediate effect	+0.6 hours	Yes
Effect after one year	+0.7 hours	Yes
Additional impact of 10 percent increase in state minimum wage when state EITC rate is high		
Immediate effect	+0.2 hours	No
Effect after one year	-0.2 hours	No

**Average weekly hours are measured across all low-credentialed single mothers, those employed and those not employed. The high state EITC is equal to 14 percent. This is approximately the average state EITC rate of 4 percent plus the average EITC state rate increase of 10 percent.*

Why don't we observe a consistent increase in employment similar to other studies? The likely explanation is a technical one: our more extensive controls for regional economic trends may make it more difficult for our statistical technique to discern the effects of EITC increases. This is because state EITC rates tend to simply rise over time, a pattern similar to other local economic trends such as economic growth. This is in contrast to minimum wage rates, which can rise and fall depending on whether states raise their rates to keep up with inflation. As a result, our regression analysis may link changes in employment rates caused by EITC rate changes instead to general trends in regional economic growth. However, if we do not take account of regional trends, we could incorrectly link better employment outcomes caused by local labor market trends to higher EITC rates. In fact, when we do our regression analysis with fewer regional controls we do observe slightly larger and statistically significant, positive employment effects. As a result, our approach is a conservative one—only trends that can be clearly linked to EITC rates should show up as statistically significant in our estimates.

Overall, the most reliable conclusion is that states that increased their EITC rates experienced a modest improvement in employment outcomes for low-credentialed single mothers as measured by the average number of hours worked.

Similar to what many other researchers have found in the past, we do not find evidence that minimum wage rates reduced employment. In the range of what states have adopted, minimum wage increases actually appears to support employment gains for our focus group of low-credentialed single mothers. In particular, more low-credentialed single mothers join the labor force and get into jobs when minimum wage rates rise. This may reflect the fact, as we noted above, that these women face significant barriers to entering paid employment. Raising the pay of minimum wage jobs could improve their ability to take, as well as maintain, such jobs.[45] The average hours

[44] A 1-percentage-point employment rate increase would raise average overall weekly hours by less than one hour assuming that the jobs gained average 37 hours per week (1% x 37=0.37). The remaining increase in average overall weekly hours therefore can be contributed to a rise in the average hours worked among those employed. For example, if employed single mothers worked 1-2 more hours, this would raise average hours across all single mothers between 0.7 and 1.4 hours [(67.1% employed+ 1% more) x 1 more hour per week = 0.7 hours].

[45] We are only aware of two other studies that have looked at the impact of minimum wage increases on single mothers specifically. Sabia (2007) finds evidence of employment loss linked to minimum wage increases, and Neumark and Wascher (2007, revised 2009) finds no impact on employment. Neither study includes as comprehensive a set of controls for local labor market characteristics as the present study (i.e., both year-specific regional effects, as well as state-specific time trends). Allegretto, Dube, and Reich (2011) demonstrate that when both types of controls are included in a regression model negative employment effects tend to disappear.

worked also rises, if more modestly, with higher minimum wage rates. After taking account of how much average hours would rise as a result of the employment gains alone, our estimates imply that the work schedules among *employed* workers increased, at most, by an hour.

The absence of negative employment effects, and instead, positive effects on hours and employment introduces the possibility of another way that combining both policies can improve the employment situation for single mothers, even more than each policy operating separately. This would occur if a high EITC rate encourages women, who become newly employed after a minimum wage hike, to work more hours than they would in the absence of a high EITC rate. In effect, the greater level of work hours encouraged by the EITC would amplify the positive employment effect of the minimum wage. In other words, the same increase in the employment rate from a given minimum wage hike would raise average hours more in states with a generous EITC since, once employed, single mothers in such states work more hours than in states without a state EITC in place.[46]

We test this directly and show the results in the bottom panel of Table 3. Specifically, we show how much more low-credentialed single mothers would work, on average, if a state's minimum wage rate increased by 10 percent in a state which also had an above-average state EITC rate of 14 percent. Our estimates of this potential "interaction" effect are positive, but small and not statistically significant. In other words, the evidence is too weak for us to confidently conclude that minimum wage and EITC policies would work together to increase employment levels even more than they would operating separately.

Overall, the conclusions we can reach by observing employment patterns is as follows:

1. The EITC appears to have basically no consistent impact on employment opportunities with regard to employment and labor force participation rates. On the other hand, single mothers with a high school degree or less did modestly increase the number of hours they worked.

2. States that raised their minimum wage did not, as a result, reduce employment opportunities. In fact, we observe that higher minimum wages *improve* employment opportunities for low-credentialed single mothers.

Wage effects

In the previous section, we saw that both policies can improve the employment situation for our focus group of low-credentialed single mothers. But how much will this rise in the number of available jobs or longer work schedules benefit this group of workers and their families? To a large extent, the answer to this question depends on how much workers are paid. We therefore examine in this section how increases in the minimum wage and the EITC affect wage rates.

One scenario is straightforward: low-credentialed single mothers will benefit most if their wages rise at the same time that more work becomes available to them. But now consider a more mixed scenario—the number of available jobs is expanding, but the wages workers are paid in these jobs are either stagnant or falling. This situation is likely to benefit those who were previously unemployed but can now obtain a job. For these workers, a labor market with stagnant or lower wages still means having the opportunity to go to work and get paid something.[47] But this is not

[46] Here is a simple example: If a minimum wage hike raises the employment rate by 2 percent in a state where single mothers work 35 hours on average, then overall average hours will increase by 0.70 (2 percent x 35 hours). If single mothers instead average 40 hours with a generous state EITC rate, then a minimum wage hike that raises employment by 2 percent will raise average hours by 0.80 (2 percent x 40 hours).

[47] However, this situation is not necessarily beneficial even to the previously unemployed. The newly employed workers will face increased costs of living by accepting a job, including childcare and transportation expenses. They also will have less time to perform their unpaid household labor. As such, if the wages they receive for their newly obtained jobs are very low, and these low wages are not adequately supplemented by the EITC, the workers could end up worse off through accepting a job. Why would workers accept a job under these circumstances? The most straightforward answer is that they are likely to be at least marginally better off in terms of income, even while they could be worse off in terms of managing their unpaid household labor. They could also accept a bad employment situation in the hope that this situation could improve over time, however undesirable conditions

the case for working mothers who were already employed. These workers will be made worse off to the extent that wages are stagnating or declining for the jobs they already have. Overall, it is obviously crucial to observe how much minimum wage laws and the EITC—considered separately or in combination—affect wages of low-credentialed single mothers.

We do have previous evidence on which to draw in considering both of these policies, acting alone. Not surprisingly, minimum wage increases, acting alone, do indeed raise wages for those at the low end of the labor market.[48] The research to date regarding the EITC and wages is not extensive. But two recent scholarly studies have found that a higher EITC does tend to contribute to either a decline in wages or at least slower wage growth for high school dropouts or single mothers.[49]

Here, we will consider the effects of each policy. In particular, we will want to see if a higher minimum wage floor raises wages among our target group, and whether higher EITC rates lowers wages. If we do observe such patterns, we will then want to see whether these two policies act as counterweights so that raising minimum wage rates can prevent EITC rates from significantly lowering wages.[50]

Wage levels. We begin in Table 4 by presenting some baseline data on wage rates for our focus group of low-credentialed single mothers. In the first row, we show that the average real wage among all low-credentialed single mothers during 1997-2007 is about $12.50. In row 2, we show how their average wage compares to the average among all hourly-paid workers within these states. Our focus group earns below-average wages with an average wage about 15 percent lower than their statewide average. Yet, as we show in row 3, their average wage is substantially higher—90 percent higher—than the average minimum wage. Overall then, our focus group of low-credentialed single mothers were situated in the lower-half of the wage distribution, but well above the lowest wage rates, within their respective state labor markets.

TABLE 4. AVERAGE WAGES AND WAGE DISTRIBUTION AMONG LOW-CREDENTIALED SINGLE MOTHERS, 1997-2007

	Low-credentialed single mothers	Low-credentialed single mothers employed in low-wage jobs
Average wage rate	$12.47	$9.54
Average wage rate relative to average hourly wage	84%	65%
Average wage rate as % of minimum wage	190%	145%
% earning near minimum wage	19%	41%

Notes: 2010 dollars. The average wage of hourly workers is $14.77; the average real minimum wage is $6.57. We define "near-minimum wage" workers as those workers earning at or below 125% of their state's minimum wage rate.

That said, a significant segment of these low-credentialed single mothers earn wages low enough to benefit from an increase in the minimum wage. Of course, when the wage floor rises, employers are mandated to give those earning the minimum wage a raise. Minimum wage laws also induce employers to give raises to workers who earn rates just above the minimum wage. These "ripple effect" raises result from employers' efforts to maintain the same

may appear initially. They may also simply wish to be away from the house part of the day, participating in the labor market.

[48] Work affirming this finding include Dinardo, Fortin, and Lemieux, 1996; Lee, 1999; Wicks-Lim, 2005.

[49] Leigh (2010) examines this question regarding high school dropouts, and finds a negative effect on wages. Rothstein (2010) examines the situation for "low-skill" single mothers and finds that wages are increasing more slowly than would otherwise be expected.

[50] This specific question has been almost completely neglected in the literature thus far. There are two exceptions: Leigh (2005) and Neumark and Wascher (2007; revised 2009). Leigh finds some evidence that these two policies can serve as counterweights. Neumark and Wascher find basically no interaction effect on the wages of "low-skilled" adults and teenage boys. However, they do find that a higher minimum wage exacerbates a negative EITC affect on the wages of teenage girls. They suggest that this latter effect occurs due to a high level of substitutability between teenage girls and "low-skilled" single mothers entering the workforce at higher rates due to larger EITC benefits. We do not find the same effect in our analyses (see Technical Appendix) despite using basically the same data. The difference may be due to our stronger set of regional controls—Neumark and Wascher do not include region-year controls to control for regional shocks to the labor market. As we note in the Technical Appendix, such controls have been shown to be important in order to avoid mistaking the effects of local labor market trends with policy effects (e.g., Allegretto, Dube, and Reich, 2011).

wage hierarchy in their firms before and after a minimum wage hike. As we show in the last row of Table 4, about 19 percent of low-credentialed single mothers earn wages close enough to the minimum to receive mandated or ripple effect raises from an increase in the minimum wage. [51]

To observe the impact of a minimum wage hike on these workers who are most likely to benefit from a minimum wage increase, we present figures for low-credentialed single mothers in low-wage jobs in column 2. These jobs include: food preparation and serving related occupations, building and grounds cleaning and maintenance occupations, and personal care and service occupations. The figures in column 2 show that among these occupations, low-wage low-credentialed single mothers earn about $9.50, on average. This figure is 35 percent lower than the statewide average hourly rate, and 45 percent above the state minimum. Among these women, about 41 percent earn wages low enough to be affected by minimum wage rates.

Wage impacts. In Table 5 we observe the impact of raising minimum wage or EITC rates on the wages of these two groups of low-credentialed single mothers.

TABLE 5. IMPACT OF MINIMUM WAGE AND EITC INCREASES ON WAGE LEVELS FOR LOW-CREDENTIALED SINGLE MOTHERS

Policy change	Low-credentialed single mothers		Low-credentialed single mothers in low-wage occupations	
	Percentage change	Statistically significant?	Percentage change	Statistically significant?
State EITC rate increase by 10 percentage points				
Immediate effect	-0.1%	No	+2.4%	No
Effect after one year	+1.3%	No	-0.3%	No
State minimum wage rate increase by 10 percent				
Immediate effect	-0.2%	No	+0.3%	No
Effect after one year	+0.5%	No	+3.4%	Yes

[51] For estimates on the "ripple effect" of minimum wage hikes, see chapter 11 in Pollin et al. (2008).

As expected, we see that increasing the minimum wage has the effect of raising wages among single mothers in low-wage occupations in particular (columns 3 and 4), rather than low-credentialed single mothers generally (columns 1 and 2). When a state minimum wage rate increases by 10 percent, low-wage low-credentialed single mothers can expect their wages to rise, on average by 3.4 percent. There is no consistent negative impact on wages due to a larger EITC benefit, however, among either group. In other words, within the range of EITC rates that states have implemented, we do not observe wages stagnating or falling when states provide more generous EITC benefits.

Overall, the figures in Table 5 indicate that state EITC policies have yet to reach a point of negatively affecting wages in any consistent way. We may need to observe even higher EITC rates than what states have chosen between 1997 and 2007 to observe negative wage effects from the EITC. It also follows, therefore, that so far, when states have used minimum wage and EITC policies in combination, minimum wage hikes simply improve the wages of the lowest paid workers, without having to protect against any countervailing forces generated by EITC benefits. The implication of this last observation is that both of these policies could expand beyond their current levels and continue to improve, or at least not worsen, the wages of low-credentialed single mothers.

Overall, the conclusions we can reach by observing wage patterns is as follows:

1. States that raised their state EITC rates did not experience a slowdown in wage growth, either among low-credentialed single mothers generally or those who are employed in low-wage occupations in particular. The range of EITC rates that states have adopted so far has not produced negative wage effects.

2. Increasing minimum wage levels has a consistently positive impact on those low-credentialed single mothers who work in low-wage occupations. The average low-credentialed single mother, on the other hand, earns a wage that is beyond the reach of the influence of minimum wage laws.

Impact on overall earnings

In this section, we now look at how policy-induced changes in both dimensions of work—wage rates and employment levels—combine to raise the earnings of low-credentialed single mothers. This is, ultimately, the articulated goal of both minimum wage and EITC policies, to "make work pay." That is, the policies should reduce poverty and raise living standards of low-income workers and their households, principally by raising the amount of earnings workers can bring home from their jobs.

The results thus far clearly establish that EITC and minimum wage policies each improves, or at least does not worsen, the situation among single mothers in terms of both wages and employment. Put another way, our findings from the last two sections suggest that, at least within the range of minimum wage and EITC rates that states have implemented so far, neither policy has triggered the potential negative effects on employment or wages anticipated. Minimum wage increases appear to draw more workers into employment, rather than pushing them out, while raising the pay rates of the lowest wage workers. EITC programs also increase how much paid work these women are engaged in, and do not appear to push wages down.

Recall our earlier discussion of how EITC policies can help to strengthen minimum wage benefits among low-income households. The absence of negative effects on wages or employment maximizes the potential for these policies to work in this other complementary way. If EITC policies raise employment levels of low-income individuals who typically earn low wages *without* pushing their wages down, then the ability of minimum wages to raise their earnings will be strengthened—rather than offset—by high EITC rates. In the same way, if minimum wage hikes raise wages *without* reducing employment levels, the ability of EITC policies to promote greater work activity among low-income individuals will be strengthened—not reduced—by high minimum wage standards.

Earnings levels. Before we examine the impact of the policies on earnings, we provide in Table 6 some average earnings figures to anchor our estimates of policy effects that follow. The first entry in Table 6 of $311 is the average weekly earnings across all low-credentialed single mothers. This average reflects the fact that 33 percent of these women have no earnings because they do not hold jobs, and the remaining 67 percent who have jobs earned $483 on average.

TABLE 6. AVERAGE WEEKLY EARNINGS AMONG LOW-CREDENTIALED SINGLE MOTHERS, 1997-2007

	Average weekly earnings, including those without jobs	Average weekly earnings among employed only	Estimates annual earnings among employed only
Low-credentialed single mothers	$311	$483	$21,722

Note: 2010 dollars. Annual earnings estimate based on average of 45 weeks worked per year estimated for low- credentialed single mothers from 1997-2007 CPS ADF files.

To get a sense of the annual income that these weekly earnings add up to—among those that work—we need an estimate of the number of weeks that the average employed low-credentialed single mother works.[52] The average weeks worked among our focus group of low-credentialed single mothers is 45 weeks per year. Using this estimate, we can calculate that those who are employed earning $483 per week for 45 weeks per year earn $21,722 annually. This level of earnings equals 124 percent of the official poverty line for a family of three in 2010, and nowhere near the average basic family budget for a 3-person family of $41,400. Of course, those women without employment are even worse off. In other words, as we reported above, the typical low-credentialed single mothers can be described as low-income.

Earnings impacts. In the first two sections of Table 7 (page 27) as in the earlier tables, we show how each policy affects earnings on its own. What stands out from this set of results is that a 10 percent minimum wage increase can be linked to large improvements

[52] Unfortunately, the CPS data we have been working with up to now does not include such a measure. However, we can estimate this figure from a supplemental part of the CPS survey, over the same time period, called the Annual Demographic Files of the CPS.

in average earnings, between 8 and 11 percent. These earnings gains are broadly consistent with the higher employment rates, greater work hours, and increased wage rates linked to minimum wage hikes that we have previously observed.

TABLE 7. IMPACT OF MINIMUM WAGE AND EITC INCREASES ON WEEKLY EARNINGS FOR LOW-CREDENTIALED SINGLE MOTHERS

Policy change	Change in earnings	
	Percentage change	Statistically significant?
State EITC rate increase by 10 percentage points		
Immediate effect	-0.4%	No
Effect after one year	+8.1%	No
State minimum wage rate increase by 10 percent		
Immediate effect	+7.8%	Yes
Effect after one year	+11.0%	Yes
Additional impact of 10 percent increase in state minimum wage when state EITC rate is high		
Immediate effect	+3.5%	Yes
Effect after one year	+1.2%	No

Notes: Average weekly earnings are measured across all low-credentialed single mothers, those employed and those not employed. As in Table 3, we use a value of 14 percent for the "high state EITC" rate.

Higher state EITC rates do not appear to impact earnings on their own. The earlier results in Table 3 that links a rise in work hours due to higher EITC rates may be behind why we see some positive movements in earnings one year after an EITC rate increase. But this pattern does not occur regularly enough or cannot be differentiated from other economic trends sufficiently to generate a statistically significant result. It may also be the case, however, that the existing range of state EITC rates *by themselves* do not provide enough support or encouragement for single mothers to join the workforce to affect earnings enough to be measurable.

The last set of rows in Table 7 shows the results of our test of whether EITC programs and minimum wage policies operate *more effectively* in combination rather than as stand-alone policies. In particular, we show how much of an impact a 10-percent minimum wage hike would have if a relatively high EITC rate is in place. As we noted in our discussion above, single mothers who typically compete for low-wage jobs will be drawn into jobs by a rise in minimum wage rates. These same women, who tend to be the main wage earners in their households, will also likely gain from EITC benefits since they work at relatively low pay rates. As a result, we would expect that a high minimum wage combined with a relatively generous EITC policy would provide encouragement to single mothers to work in greater numbers and longer hours.

Our figures in Table 7 suggest that this complementary relationship between the two policies is important.[53] Specifically, we estimate that weekly earnings would increase 3 to 4 percentage points more if a state raises its minimum wage 10 percent and has a high EITC rate of about 14 percent as opposed to the average EITC rate of 4 percent. In other words, raising a minimum wage would raise the average earnings among single mothers another 3 to 4 percent more in states that have an above-average EITC rate compared to states that do not. This is unsurprising since we have already observed in the previous analyses that a relatively high EITC rate does in fact raise employment levels among single mothers, and that the minimum wage raises the pay for single mothers in low-paying jobs.

In sum, our findings suggest that minimum wage hikes on their own raise the earnings of low-credentialed single mothers substantially. But, such policy changes benefit single mothers even more if there is also a generous EITC policy in place.

[53] The estimate of this interaction effect has a p-value of 0.11—slightly outside conventional levels of statistical significance. However, the body of evidence from the earlier sections supports the presence of an interaction effect. In particular, we saw earlier that employment levels among single mothers increase (see Tables 2 and 3) with higher EITC rates. As a result, we would expect to see evidence of greater earnings gains associated with higher EITC rates. And, as explained in the main text, we would expect the earnings gains to rise even more with higher minimum wage rates if this higher level of employment is focused among single mothers in low-wage positions.

IMPLICATIONS FOR ACHIEVING DECENT LIVING STANDARDS

In this section, we consider the impact of EITC and minimum wage policies on the overall living standards of our focus group of single mothers. Recall that EITC policies also raise these women's after-tax income, not just their earnings. A high EITC rate of 14 percent would add an income subsidy of up to six percent of earnings (14 percent of the federal EITC credit of 40 percent equals 6 percent). In other words, the figures in Table 7, will understate the overall impact of a high EITC rate on the overall living standards of low-credentialed single mothers.

To provide a more concrete picture of how much these policies improve the ability of single mothers to meet the basic needs of their families, we consider two representative cases based on the changes in employment, hours, wages and overall earnings that we estimated above. In particular, the overall rise in earnings we observed reflects two different types of improvements: 1) an increase in earnings among low-wage single mothers who work more at a higher pay rate, and 2) new earnings among single mothers who previously did not work.

We provide the basic figures for the first case in Table 8. We show how the average single mother working at a low-wage job experiences a rise in her pay rate and work hours in response to both a higher minimum wage and EITC rate.

From our earlier analyses we know that the average low-wage single mother earns about $9.50 per hour and works 37 hours weekly for a total weekly earnings of $352.

Our earlier analyses also indicate that raising minimum wages and EITC rates both increase employment levels and only minimum wage hikes increase wages. So in column 2 of Table 8, we use those findings to estimate the combined impact of a 10 percent minimum wage increase and a state EITC rate 10 percentage points higher than the average 4 percent.

Starting with wages, we know that in response to a 10-percent minimum wage hike, low-credentialed single mothers earning in the range of $9.50 should see their pay rate rise between three and four percent, from about $9.50 to $9.85. Our estimates of the policy impact on work schedules suggest that the policy rate increases that we are considering would increase weekly hours by about one hour across all low-credentialed single mothers. If we make the reasonable assumption that this increase occurs primarily among single mothers in low-wage positions, this would translate to about a three-hour increase among low-wage single mothers to 40 hours per week.[54]

These combined improvements in pay and employment add up to weekly earnings of about $400

TABLE 8. INCOME GAINS FOR LOW-CREDENTIALED SINGLE MOTHERS FROM MINIMUM WAGE AND EITC INCREASES

Assumes a 10 percent minimum wage increase and a 10 percentage point EITC increase

	Before policy changes	After policy changes
Average hourly wage	$9.50/hour	$9.85/hour (+3.5%)
Average weekly hours	37 hours	40 hours (+3 hours)
Average weekly earnings	$352 ($9.50 x 37 hours)	$394 ($9.85 x 40 hours)
Average annual earnings (assume 45 weeks worked)	$15,840 ($352 x 45 weeks)	$17,730 ($394 x 45 weeks)
Federal EITC benefit	$5,036	$4,766*
State EITC benefit	$200 (4% percent state EITC rate)	$670 (14% percent state EITC rate)
Total income (earnings plus EITC benefits)	$21,080	$23,170 (+$2,090, a 10% increase)
% of basic budget income threshold ($41,400)	51%	56%

Note: 2010 dollars. These figures are for a single mother with two children.
Source: Tables 3-7.
**The EITC benefit falls slightly because these earnings place this single mother in the phase-out region of the EITC benefit schedule.*

[54] This is based on the assumption that the hours increase is for the half of employed single mothers (i.e., about 34 percent of all single mothers) who earn the lowest wages (1 hour/0.34 = 3 hours).

($9.85 x 40 hours per week)—an overall earnings increase among these women of 12 percent. Considering that these women typically work 45 weeks per year, this comes to a rise in annual earnings from $15,800 to $17,700 or nearly $2,000. In sum, the higher wages and longer hours in response to expanding both policies generate a meaningful improvement in earnings. If we consider also changes in EITC benefits, we see that the annual income that this household brings home rises $2,100 or 10 percent, from about $21,100 to $23,200.

The second case we consider is the single mother who newly enters the workforce in response to the policy increases. We can reasonably assume that the job opportunities most accessible to these women are low-wage jobs similar to those we just described.

The situation for the newly employed single mother improves in a dramatic way. Low-credentialed single mothers who are not working have access to about $7,500 in income, on average. This income comes primarily from a combination of social security, supplemental social security, welfare, and earnings from other members of the family. As a result of the policy increases we are considering here, the *potential* income for low-credentialed single mothers from working at a low-wage job will increase from $21,100 to $23,200.[55]

This $2,100 improvement in potential earnings and EITC credits illustrates exactly how these policies boost the incentives for these single mothers to enter into paid employment. Our estimates suggest that the percent of employed low-credentialed single mothers would increase by between two and four percent.

Clearly, the economic situation of these newly employed single mothers and their households would sharply improve with such a combination of policy expansions.

[55] These two figures assume that newly employed single mothers could no longer rely on income subsidies and that they would prefer not to rely on other family members' earnings. These earnings may come from single mothers' children of working age or from adult relatives sharing the same household. The $7,500 income figure comes from the 1998 to 2008 CPS March files which report income levels for 1997 to 2007.

Reaching a basic budget threshold

Despite these improvements, $23,200 covers just over half of their $41,400 basic needs budget. Overall then, our earnings results indicate that single mothers experience a substantial improvement in their economic standing when states adopt higher-than-average EITC and minimum wage rates. Still, raising policy rates within the range of what states have adopted in the past do not bring the potential income of such households anywhere close to an income sufficient to cover their basic life expenses.

In other words, these findings suggest that in the range of current policy rates at the state level, EITC and minimum wage policies work most effectively together to raise the living standards among low-credentialed single mothers. This is because each policy's strength appears to build upon those of the other policy and neither policy appears to trigger any substantial negative effects. However, when we look at the actual employment situation of low-credentialed single mothers and the degree to which these policies have improved their earnings, we can see that to get these women and their families to a decent living standard would require a level of EITC benefits and minimum wage rates that far exceeds what states have adopted in the past.

Within this unchartered policy territory, we do not have experience in how these policies would actually operate to impact low-income households. We may yet see these policies operate in a complementary way that is distinct and supplemental from what we observed thus far. At current rates, the strengths of the EITC as a policy tool appear to compound the strengths of minimum wage laws, and vice versa. At higher rates, the strengths of the EITC as a policy tool may also be needed to *compensate* for the potential weaknesses of minimum wage laws, and vice versa.

Therefore, to understand how we can use these policies to achieve sufficient support for these households to get to a decent living standard, we need to look beyond the past experience of states. This is what Jeffrey Thompson and one of us (Wicks-Lim) explore in a 2010 companion paper, "Combining Minimum Wage and Earned Income Tax Credit Policies to

Guarantee a Decent Living Standard to All U.S. Workers." In particular, Wicks-Lim and Thompson extrapolate from the findings of past research on EITC policies and minimum wage laws in order to predict how these policies would operate at much higher levels than what has been attempted to date at either the federal or state levels. As part of this exercise, Wicks-Lim and Thompson assume that much higher EITC and minimum wage rate would, in fact, trigger the potential negative effects that we did not observe from states' past experiences. They specifically identify how much these policies could expand in order to maximally support low-income working families while minimizing any negative effects.

They conclude that in a growing economy, businesses should be able to absorb a minimum wage increase of 70 percent without turning to workforce reduction in any significant way. This would raise the current federal rate from $7.25 to $12.30. This measure alone, however, does not get the majority of low-income working households to a minimally decent standard of living. They then use the federal EITC to help fill the gap between full-time minimum wage earnings at $12.30 and what households need to cover their most basic expenses. They recommend a federal EITC expansion that nearly doubles the maximum EITC benefit—from about $5,000 to $9,000, and expands eligibility to reach up to three times the official poverty line. An EITC expansion of this size is ambitious, but its $51 billion cost represents a modest 1.8 percent of the federal government's budget. Policy expansions of this scale would guarantee that 60 percent of all low-income working families would achieve a decent living standard through full-time employment. The other 40 percent of low-income working families offer more difficult challenges, because they either live in high-cost areas or they depend on only one wage-earner to raise children such as the single mothers of our focus group do. But the proposed measures would substantially improve conditions for these households as well.

CONCLUSION

Considering the U.S. population as a whole, in 2010, 15.1 percent were living below the official poverty line. As we have seen, this percentage more than doubles among families headed by single mothers (31.6 percent), the social group on which we have focused.[56] The figures jump even higher when we consider the percent of households that fall below the basic family budget line: between 60 and 90 percent of single parent households with young children fall below this income threshold.

A wide range of policy interventions will be needed to significantly expand decent life opportunities for people in the United States now living in poverty or below a basic budget standard. Access to decent educational and health care services is obviously important. High rates of employment at the economy-wide level are also central, since improving the overall quality of jobs matters only after people have jobs in the first place. The key here is macroeconomic policies focused on achieving and maintaining something resembling full employment.

But "making work pay"—the question on which we have focused in this paper—is also crucial. At least since the repeal of the Aid to Families with Dependent Children program in 1997, there has been near-universal assent across the political spectrum in support of the principle of making work pay, if not on the most effective tools of converting this principle into practice. The basic measure of success should be straightforward: whether workers are receiving enough income from their jobs so that they and their families can live securely at a minimally decent standard.

The EITC and minimum wage laws are both measures to ensure that employment will indeed pay for low-wage workers and their families to live at a minimally decent standard. But as we have seen, these two policy interventions approach this shared goal in sharply distinct ways.

[56] See U.S. Census Bureau 2010 Poverty Tables and Figures, www.census.gov/hhes/www/poverty/data/incpovhlth/2010/table4.pdf

Given this interrelationship between the EITC and the minimum wage, a view has been widely held that the two policies are substitutes, and even in conflict, with one another. Thus, amid debates over minimum wage laws and living wage ordinances that have taken place around the country, an argument was often raised that a living wage standard was unnecessary for guaranteeing the basic needs of low-income working families. This was because EITC policies were already in place at the federal level, and could be enhanced, if necessary, through state- or local-level EITC supplements. It was also held that EITC programs were more effective than living wage laws in delivering benefits to low-wage workers and their families, especially because they would not discourage businesses from hiring low-wage workers.

Minimum wage and living wage proponents countered that the EITC could enable businesses to attract workers at substandard wages. As such, the overall effect of the EITC for workers could be a wash, with wages falling precisely because the government supplement to the wage had risen. Under this scenario, the EITC would become largely a government subsidy to business.

The alternative view of the relationship between EITC and minimum wage policies—including living wage ordinances at the local levels—is that they should properly be seen as complementary initiatives for delivering decent living standards to low-wage working people and their families. This is the view we have explored in this paper. We have examined this idea not simply as a broad generalization, but in specific terms.

Decent minimum wage standards can limit the problem inherent with the EITC by setting a floor below which wages cannot be allowed to fall. But depending on how high the minimum wage floor is set it is possible that businesses could be discouraged from hiring or even maintaining their existing low-wage work force. EITC supplements can provide additional support to low income households to avoid setting the minimum wage too high by increasing business costs too much, while concentrating subsidies on workers that have the greatest income needs, workers raising young children. Moreover, to the extent that EITC supplements encourage greater levels of employment among low-wage workers, EITC policies can help amplify the benefits of a decent minimum wage.

There is finally the basic problem that at current rates neither minimum wage laws nor EITC policies are anywhere near sufficient to ensure that full-time work will provide income that gets a family above a basic budget standard. We documented this in considering the situation of a prototypical minimum wage-earning single mother in Vermont, the state with the most generous combination of minimum wage and EITC support as of 2010. As we showed, even in this most supportive statewide environment, a single mother and her family's total income would place them at more than 50 percent below the basic budget line after working full-time at the statewide minimum wage and receiving her full EITC benefits. What this situation suggests is that a minimum wage rate significantly above even current state-wide standards along with a relatively generous EITC are both needed to ensure decent minimum living standards for low-wage workers and their families.

The main question we address in this study is whether empirical evidence does indeed support the idea that minimum wage standards and the EITC work most effectively when they operate as complements. To explore this idea, we have focused on state experiences with these two policies between 1997 and 2007. Over these years, some states have experimented with increasing both the state minimum wage rates and EITC programs, other states have focused their attention on only one of these policies, and still other states have neither created a state-level EITC policy nor raised their minimum wages above the federal rate. We took advantage of the wide variety of policy choices that states have made over the years to see what combinations achieved the greatest level of improvement in earnings for low-credentialed single mothers.

We considered three types of effects with respect to these alternative policy combinations—effects on employment levels, wage rates, and overall earnings. We focused on conditions for low-credentialed single

mothers and their families. On the basis of employment levels, states with relatively high minimum wage and state EITC rates both improved the outcomes for our focus group of single mothers and neither demonstrated negative impacts. In terms of wages, we observed the expected rise in the wages of the lowest paid single mothers, but did not observe their wages decline as some have anticipated may accompany relatively large EITC benefits. We conclude that states have yet to implement state minimum wage or EITC policies at levels that would trigger the anticipated employment loss with regard to minimum wages or wage declines with regard to EITC policies.

The absence of negative effects on wages or employment by either policy maximizes the potential for each of these policies to reinforce the positive features of the other policy. In our analysis of overall earnings, we find evidence that these two policies work in this complementary way. Specifically, as EITC policies raise employment levels of low-income individuals who typically earn low wages, this allows minimum wage hikes to generate even greater earnings gains. As a result, when both policies are set at high rates, our focus group of single mothers work more at better wages, and consequently earn more than would be the case if each policy operated separately at a high rate.

We found that a 10-percent minimum wage hike can raise the earnings of low-credentialed single mothers by eight percent on its own. However, this same minimum wage hike generates an additional earnings gain of 3-4 percent if there is also in place a relatively high 14-percent state EITC rate. The additional earnings gains likely result from the fact that the higher employment levels encouraged by the state EITC broaden the benefits for single mothers of a minimum wage hike. These earnings gains are substantial: for the average low-credentialed single mother working in a low-wage job, we estimate that her annual pay would rise nearly $2,000 to about $17,700. This leads us to our first conclusion. Within the range of current state policies, minimum wage laws and EITC policies work to amplify each policy's strengths so that combined, they work most effectively to raise the earnings of low-credentialed single mothers. This is crucially important given the large gap between what the current minimum wage rates and EITC policies leave between what families earn and what they need to pay for their basic need for food, clothing, housing, transportation and energy, health care and childcare.

However, even after adding state and federal EITC benefits, this single mother's income of $23,200 would still cover just over half of the $41,400 that the average 3-person household needs to cover its basic needs. This leads us to our second conclusion: current state policies fall far short of what these women and their households need to achieve a minimally decent living standard. In order for these policies to achieve the goal of "making work pay" both the EITC and minimum wage rates must be raised to levels well above what states have considered. EITC and minimum wage rates at such levels would push us into unchartered territory that may yet trigger the negative effects of each policy. In that case, the other types of complementarities between the two policies will rise in importance.

In short, our research findings support the idea that maintaining a fair minimum wage standard and a relatively generous level of EITC support are both important tools for "making work pay"—i.e. for ensuring decent living standards for low-credentialed working people and their families in the United States. Our findings show that minimum wage laws and EITC policies work most effectively when they operate side-by-side in a mutually supportive combination. Without the combined effects of these two policies operating together, it will be extremely difficult for the U.S. economy to deliver on the goal of making work pay for all working people in the country. Operating in tandem, minimum wage laws and EITC support can serve as crucial policy tools for delivering a decent standard of life opportunities for all working people and their families.

TECHNICAL APPENDIX

This appendix is organized as follows. The first section describes our data sources and how we used them. The second section provides a detailed description of our models, the variables we used, and a full set of the regression results. In the third section we present the results of a robustness test we used to further examine whether our estimates are actually picking up the impact of policy changes, as opposed to more general local labor market trends.

Data sources

As described in the main report, all of our results were estimated from data files from the Current Population Survey (CPS) for the years of 1997 through 2007. Specifically, we use the basic monthly files for our employment analysis, and a subset of data, referred to as the outgoing rotation groups (ORG), for the wages and earnings analysis. We chose to use the basic monthly and outgoing rotation groups because the BLS designed these surveys specifically to measure current work activity and wages.

All of the wage data, as well all other dollar figures, in our main report have been adjusted to reflect 2007 values using the Consumer Price Index for All Urban Consumers produced by the Bureau of Labor Statistics unless otherwise noted.

Data sample

The large majority of our results are produced for a specific group: single mothers with a high school degree or less, and of primary working age (25 to 55 years old). This group includes women who report that they are single, at the time of the survey, and can be matched to a child that broadly meets the requirements for a qualifying child: under 19 years old or under 24 years old and a full-time student. Workers under age 25 were excluded to avoid problems of interpreting the policy interactions with youth and/or student employment. Such workers tend to have a different relationship with their employment because of other sources of support they may have access to. Similarly, we exclude workers over the age of 55 to avoid problems of interpreting the policy interactions with retirement employment. By focusing on the age range 25 to 55 years old we can see how the minimum wage and EITC programs impact those most likely to depend on some form of paid employment for the large majority of their income.

Methodology

In this section, we provide details on the regression models we used to estimate the impact of minimum wage and state EITC policies on employment, wages, and weekly earnings.

Basic regression model

As we explained earlier, we observe policy impacts by examining how these three different economic outcomes—employment, wages and earnings—change when states implement different combinations of minimum wage and EITC rate increases. The following is the basic regression model we use to estimate these policy impacts:

$$\text{Economic outcome}_i = a_i + B_1\text{STATE EITC RATE}_{SY} + B_2\text{LN(REAL MIN. WAGE)}_{SM} + B_3\text{LN(STATE MEAN WAGE)}_{SY} + B_4\text{STATE UNEMPLOYMENT RATE}_{SY} + B_5\text{CCPROP}_{SY} + B_6\text{BLACK}_i + B_7\text{LATINO/A}_i + B_8\text{OTHER NONWHITE}_i + B_9\text{HIGH SCHOOL GRADUATE}_i + B_{10}\text{AGE2535}_i + B_{11}\text{AGE3545}_i + \sum B_S\text{STATE}_S + \sum B_S\text{STATE}_S \text{ x TIME TREND}_{MY} + \sum B_Y\text{YEAR}_Y \text{ x } \sum B_R \text{ CENSUS REGION}_R + \sum B_M\text{MONTH}_M + e_i$$

where the subscript i denotes the individual, the subscript s denotes the state, the subscript Y denotes the year, the subscript M denotes the month, and the subscript R denotes the census region. The economic outcome measures are described in the main text of the report. Definitions of these dependent variables, as well as the independent variables, are provided in Table A.1 (page 36).

For regression models that have, as their dependent variable, an economic outcome measured with an indicator variable (e.g., employed or not), we estimate a Probit model. For all regression models, standards errors are robust to heteroskedasticity and clustering within states.

To estimate policy interaction effects on usual weekly hours worked and weekly earnings, we modify slightly the basic regression model. We add in the following interaction term: B_{12}[STATE EITC RATE$_{SY}$ x LN(REAL MIN. WAGE)$_{SM}$]. In this interaction term we demean the state EITC rate and real minimum wage measures so that the estimated coefficients on each separate policy measure (estimated by coefficients B_1 and B_2 above) will be approximately the same whether or not the interaction term is included. This results because the coefficients B_1 and B_2 measure the impact of each policy at their means and the interaction term (with the demeaned policy measures) equals zero at the mean of each policy measure.

Detailed regression results

In Table A.2 (page 37) we provide further details of the regression results presented in the main text of the report. In particular, we provide the regression estimates directly (and their standard errors), rather than adjusting the figures to reflect the impact of a ten percent rise in minimum wage or ten percentage point increase in state EITC rate.

Refer to the main text of this report for a discussion of these results.

Robustness test

One of the most difficult challenges in measuring the impact of minimum wage and EITC policies is differentiating between the impact of trends in local labor markets and policy differences. This has been illustrated by a recent set of publications by the Institute for Research on Labor and Employment at the University of California, Berkeley, that show how negative employment effects linked to minimum wage laws can be explained by local labor market trends, rather than minimum wage increases (e.g., Allegretto, Dube, and Reich, 2011 and Dube, Lester, and Reich, 2010). These studies demonstrate how including precise controls for local low wage labor market dynamics in their statistical model eliminates any link between job losses and minimum wage hikes.

We have already included a comprehensive set of regional controls to control for local labor market dynamics in our model. Here we conduct one other way to ensure that the results presented in the main report reflect policy impacts rather than more general trends in the labor market. This alternative approach is to run the same regression models for another demographic group that may compete in low-wage labor markets, similar to our target group of single mothers with a high school degree or less, but can reasonably be expected to be either *unaffected* by the specific policies of interest or affected in a *predictably different* way. If the regression results for such a group echo those for single mothers, this would suggest that our statistical model does *not* include sufficient controls for local labor market trends. And, therefore, the policy effects we measured for our target group likely reflect the impact of local labor market trends that impact both demographic groups similarly.

One version of this type of robustness test has already been presented in the main text. In particular, the impact of minimum wage policies on the wages of single mothers generally versus single mothers employed in low-wage jobs. We would not expect minimum wage policies to impact workers earning, on average, nearly $12.50 per hour (i.e., all single mothers with a high school degree or less). We would, on the other hand, expect workers earning $9.50 per hour (i.e., single mothers with a high school degree or less in low-wage occupations) to experience some positive impact from a minimum wage hike. The fact that we only observe a wage raise among the latter group when the minimum wage rises is itself evidence that our minimum wage measure is in fact picking up policy effects, rather than local labor market trends.

There is, unfortunately, no alternative social group that competes for low-wage jobs and whose employment levels would not potentially be influenced by minimum wage policies at all. The same is true for EITC policies with regard to both employment and wage levels. The next best alternative is a demographic group that competes for similarly low-wage jobs but whose employment levels and wages can be expected to react less strongly to these policies or at least, differently from, our target group. Teenage girls serve as this next best alternative demographic group, i.e., as our "control group" for the following reasons:

1. Consider first the relationship between minimum wage laws and employment. In the main report we observed employment rates actually *rose* among single mothers with a high school degree or less. We suggest that higher wage floors raise employment by making minimum-wage and near-minimum-wage jobs more economically viable for these women. If this is the case, we should then expect that workers in a demographic group that faces fewer costs to working would not increase their employment levels in the same way with a rise in the minimum wage. Teenage girls are likely to face many fewer costs to working than single mothers. Second, teenagers have long been theorized to be the most likely to lose jobs in the wake of a minimum wage hike, because they are less skilled than adult workers (i.e., less experienced). Therefore, teenage girls are less likely to raise their employment levels in response to a minimum wage hike and most likely to experience a decrease in their employment.

2. What about EITC policies and employment? In a similar way, EITC policies boost the income linked to low-wage jobs, but only for workers who are low-income tax filers. Here again, we would not expect employment rates among teenage girls to rise in response to an EITC benefit increase.[57] Teenage girls are unlikely to file their own tax returns. Moreover, they are less likely to come from a low-income household than a single parent with a high school degree or less.

3. Next, we turn to EITC policies and wages. As we discussed in the main text, one expected affect of greater EITC benefits is that they may reduce wages by increasing the supply of available workers. This potential impact of EITC policies would affect any worker competing in the same labor market as our target group of single mothers since these women are the most likely to enter the workforce in response to an EITC policy expansion. We did not observe any such effect in our main results. We would expect that teenage girls would not be subject to such an influence to the same degree because these workers already earn wages very close to the minimum wage, and therefore have little room to fall. Teenage girls earn, on average, $7.80. This compares to $12.50 among single

[57] We considered childless women with a high school degree or less as a possible control group. This group shares similar education credentials, age range, and would likely compete in similar labor markets as our target group. However, minimum wage hikes and EITC benefit increases could influence their behavior and experience in the labor market in a similar way as single mothers, if to a lesser degree. For example, a state with their own relatively generous EITC benefit such as D.C. could boost childless women's incomes by $150 (35 percent of $428 in 2007). This is a small, but not insignificant, sum.

mothers with a high school degree or less, and $9.50 among single mothers with a high school degree or less in low-wage occupations.

4. Weekly earnings measure the combined impact of policies on employment and wages. Therefore, for the same reasons as explained above, we would expect teenage girls to experience the impact of minimum wage and EITC policies differently from our target group of single mothers with a high school degree or less.

We present our results for teenage girls in Table A.3 (page 40). We discuss each set of results in turn.

Employment

The results in Table A.3 Panels A-C indicate no employment effects associated with higher EITC rates or minimum wage effects. All coefficients for both policies on employment rates are small in magnitude and none are statistically significant. The same is true for labor force participation and hours worked with two exceptions. The coefficient for the immediate impact of minimum wage laws indicates that teenage girls reduce slightly the numbers of hours they work and their labor force participation. The magnitudes of these coefficients however are quite small: a ten percent higher minimum wage rate lowers their probability of labor force participation by 0.6 percent and weekly hours by 0.1 hours. Taken altogether then, employment of teenage girls is basically unaffected by EITC policies. Minimum wage rates, on the other hand, reduce marginally their works hours and labor force participation.

In other words, the employment results for teenage girls are distinctly different from our results for single mothers. This provides evidence *against* the possibility that our results for single mothers simply reflect local low-wage labor market trends.

One possible explanation behind these small, negative, employment effects may be due to a higher level of competition in the workplace that teenagers may face from single mothers who, as we found in the main text of this report, enter the workplace at higher rates in response to minimum wage hikes. In other words, the results for teenage girls could reflect some degree of substitution between the two types of workers. Certainly the magnitude of the hours increase among single mothers with a high school degree or less is more than sufficient to offset the hours decrease among teenage girls.

Wages

The results in Table A.3 Panel D indicate both higher EITC rates and higher minimum wage rates can raise the wages among teenage girls. We anticipated the positive impact of minimum wage rates on their wages since these workers earn, on average, about $7.80. The rise in teenage girls' wages by 2.0 to 2.5 percent for a 10-percentage point EITC increase, however, is surprising. As we noted above, we did not anticipate any impact of EITC policies on their wages.

In any case, these wage results for teenage girls are distinctly different from our results for single mothers and therefore provide evidence *against* the possibility that the wage effects that we presented in the main text for single mothers simply reflect local low-wage labor market trends.

One possible explanation for these wage gains is that they result from the substitution effect suggested by our employment results above. That is, if employers are able to substitute some teenage workers with single mothers who average ten percent higher wages, then this shift in the workforce could push wages upward for those teenage workers remaining in the workforce.

Weekly earnings

The results for this measure indicate that for the teenage girls, EITC policies basically have no impact on their overall earnings which reflect the combined impact of changes in employment, hours, and wages (Table A.3 Panel E). The estimated impacts of state EITC rates are relatively large in size, but too inconsistent to be statistically significant. Minimum wage rates, on the other hand, push up earnings among teenage girls after one year. This result indicates that the boost in earnings due to higher wages from minimum wage hikes more than offset any decline in earnings due to fewer hours worked. Their estimated gain in earnings, however, is much smaller than the +1.095 coefficient what we measured for single mothers (see regression coefficients for single mothers in Table A.2, page 37).

Again, we find that the results for teenage girls are distinctly different from our results for single mothers and therefore provide evidence *against* the possibility that the earnings effects that we presented in the main text for single mothers simply reflect local low-wage labor market trends.

TABLE A.1. DEFINITIONS OF VARIABLES USED IN REGRESSION ANALYSIS

Dependent (outcome) variables		
Variable	*Definition*	
EMPLOYED	= 1 = 0	If individual is employed in last two weeks; otherwise
LABOR FORCE PARTICIPANT	= 1	If individual is employed or sought employment in last two weeks; otherwise
USUAL WEEKLY HOURS WORKED	Continuous variable	Usual weekly hours
LN(HOURLY WAGE)	Continuous variable	For hourly wage workers: natural log of respondent's directly reported
LN(WEEKLY EARNINGS)	Continuous variable	Natural log of usual weekly hours x hourly wage;
Independent variables		
Variable	*Definition*	
SEITCR	Continuous variable	Current EITC rate of state-level program
SEITCR LAGGED	Continuous variable	EITC rate of state-level program in effect last year
LN(REAL MINIMUM WAGE)	Continuous variable	Natural log of the real value of state-level prevailing minimum wage (in 2007 dollars) currently in effect that month
LN(REAL MINIMUM WAGE) LAGGED	Continuous variable	Natural log of the real value of state-level prevailing minimum wage (in 2007 dollars) in effect last year that month
LN(AVERAGE WAGE)	Continuous variable	Natural log of the mean wage of all workers 25 to 55 years old for each state and year.
STATE UNEMPLOY-MENT RATE	Continuous variable	Unemployment rate for all workers for each state and year; obtained from the Bureau of Labor Statistics, Local Area Unemployment Survey
CCPROP	Continuous variable	The proportion of a state's TANF annual expenditures dedicated to child care subsidies.[58]
BLACK	= 1 = 0	If individual identifies his/her race black/African American; all other individuals
LATINO/A	= 1 = 0	If individual identifies his/her ethnicity as Hispanic; all other individuals
OTHER NONWHITE	= 1 = 0	All other individuals that identify his/her race as other than white, and does not identify his/her ethnicity as Hispanic; all other individuals
HIGH SCHOOL DEGREE	= 1 = 0	If individual's highest degree is a high school diploma or GED equivalent, and has not attended any college; all other individuals
AGE2535	= 1 = 0	if individual is between the ages of 25 and 35 at the time of interview; all other individuals
AGE3545	= 1 = 0	if individual is between the ages of 35 and 45 at the time of interview; all other individuals
MONTH	Set of indicator variables	One indicator variable for each month
STATE	Set of indicator variables	One indicator variable for each state
TIME TREND	Continuous variable	Linear trend line over entire time period
STATE x TIME TREND	Set of continuous variables	State-specific linear trend line over entire time period
CENSUS REGION	Set of indicator variables	One indicator variable for each of nine census regions
CENSUS REGION x YEAR	Set of indicator variables	One indicator variable for each year for each of nine census regions

[58] For a discussion about state funding of child care subsidies, see Schumacher, Greenberg, and Duffy (2001).

TABLE A.2. DETAILED REGRESSION RESULTS FOR LOW-CREDENTIALED SINGLE MOTHERS

A. Dependent variable: employed in last 2 weeks?

Independent variable	dF/dX	Robust Standard Error	Z-stat	P-Value
Immediate policy effects				
State EITC credit rate	0.110	0.158	0.700	0.486
Ln(real minimum wage)	0.124	0.053	2.350	0.019
% of TANF spending on childcare subsidies	-0.010	0.046	-0.220	0.829
Ln(real average hourly wage)	0.117	0.121	0.970	0.333
Unemployment rate	0.004	0.006	0.630	0.529
Black	-0.088	0.009	-9.630	0.000
Latino	-0.026	0.025	-1.080	0.280
Other non-white	-0.066	0.011	-6.460	0.000
High school degree	0.205	0.007	28.420	0.000
25-35 years old	-0.049	0.008	-6.340	0.000
35-45 years old	0.006	0.005	1.130	0.259
Policy effects after one year				
State EITC credit rate	0.212	0.157	1.350	0.179
Ln(real minimum wage)	0.154	0.042	3.720	0.000
% of TANF spending on childcare subsidies	0.001	0.045	0.030	0.980
Ln(real average hourly wage)	0.124	0.120	1.030	0.302
Unemployment rate	0.003	0.006	0.510	0.611
Black	-0.088	0.009	-9.570	0.000
Latino	-0.026	0.025	-1.070	0.283
Other non-white	-0.066	0.010	-6.440	0.000
High school degree	0.205	0.007	28.580	0.000
25-35 years old	-0.055	0.007	-8.160	0.000
35-45 years old	-0.006	0.005	-1.140	0.252

Notes: Other controls include indicator variables for month, census region x year; state x linear time trend. Sample size is: 214,000.

B. Dependent variable: participated in labor force in last 2 weeks?

Independent variable	dF/dX	Robust Standard Error	Z-stat	P-Value
Immediate policy effects				
State EITC credit rate	0.023	0.171	0.14	0.892
Ln(real minimum wage)	0.106	0.050	2.13	0.033
% of TANF spending on childcare subsidies	-0.047	0.040	-1.18	0.237
Ln(real average hourly wage)	0.111	0.136	0.82	0.414
Unemployment rate	0.016	0.006	2.74	0.006
Black	-0.040	0.008	-4.78	0.000
Latino	-0.022	0.022	-1.03	0.303
Other non-white	-0.061	0.012	-5.50	0.000
High school degree	0.174	0.006	28.27	0.000
25-35 years old	0.000	0.008	0.06	0.955
35-45 years old	0.027	0.005	5.27	0.000
Policy effects after one year				
State EITC credit rate	0.089	0.174	0.51	0.608
Ln(real minimum wage)	0.072	0.034	2.12	0.034
% of TANF spending on childcare subsidies	-0.041	0.039	-1.05	0.296
Ln(real average hourly wage)	0.117	0.135	0.86	0.388
Unemployment rate	0.015	0.006	2.51	0.012
Black	-0.040	0.008	-4.77	0.000
Latino	-0.022	0.022	-1.02	0.306
Other non-white	-0.061	0.012	-5.45	0.000
High school degree	0.173	0.006	28.45	0.000
25-35 years old	-0.027	0.007	-3.84	0.000
35-45 years old	-0.028	0.005	-5.26	0.000

Notes: Other controls include indicator variables for month, census region x year; state x linear time trend. Sample size is: 214,000.

TABLE A.2. DETAILED REGRESSION RESULTS FOR LOW-CREDENTIALED SINGLE MOTHERS (CONTINUED)

C. Dependent variable: usual weekly hours

Independent variable	Coefficient	Robust Standard Error	T-stat	P-Value
Immediate policy effects				
State EITC credit rate	6.652	5.856	1.14	0.26
Ln(real minimum wage)	5.724	2.244	2.55	0.01
% of TANF spending on childcare subsidies	-1.430	1.831	-0.78	0.44
Ln(real average hourly wage)	5.334	4.701	1.13	0.26
Unemployment rate	-0.012	0.231	-0.05	0.96
Black	-3.305	0.333	-9.93	0.00
Latino	-0.791	0.888	-0.89	0.38
Other non-white	-1.930	0.428	-4.51	0.00
High school degree	8.973	0.263	34.10	0.00
25-35 years old	-2.490	0.269	-9.26	0.00
35-45 years old	0.098	0.224	0.44	0.66
Policy effects after one year				
State EITC credit rate	10.991	5.579	1.97	0.05
Ln(real minimum wage)	7.135	1.644	4.34	0.00
% of TANF spending on childcare subsidies	-0.946	1.796	-0.53	0.60
Ln(real average hourly wage)	5.480	4.616	1.19	0.24
Unemployment rate	-0.045	0.247	-0.18	0.86
Black	-3.299	0.334	-9.88	0.00
Latino	-0.784	0.888	-0.88	0.38
Other non-white	-1.922	0.427	-4.50	0.00
High school degree	8.962	0.261	34.32	0.00
25-35 years old	-2.585	0.208	-12.44	0.00
35-45 years old	-0.094	0.223	-0.42	0.68

Notes: Other controls include indicator variables for month, census region x year; state x linear time trend. Sample size is: 204,000. No statistically significant interaction effects. Sample includes total sample, employed and not employed.

D. Dependent variable: ln(hourly wage)

Independent variable	Coefficient	Robust Standard Error	T-stat	P-Value
Immediate policy effects				
State EITC credit rate	-0.011	0.121	-0.09	0.927
Ln(real minimum wage)	-0.017	0.048	-0.35	0.728
Unemployment rate	-0.010	0.006	-1.57	0.122
Ln(real average hourly wage)	0.830	0.166	4.99	0.000
% of TANF spending on childcare subsidies	-0.037	0.045	-0.82	0.416
Union member	0.169	0.010	17.61	0.000
Full-time worker	0.239	0.011	21.48	0.000
Black	-0.060	0.008	-7.41	0.000
Latino	-0.098	0.012	-7.95	0.000
Other non-white	-0.085	0.015	-5.52	0.000
High school degree	0.212	0.013	16.91	0.000
25-35 years old	-0.118	0.007	-16.25	0.000
35-45 years old	-0.034	0.006	-5.81	0.000
Policy effects after one year				
State EITC credit rate	0.125	0.142	0.88	0.385
Ln(real minimum wage)	0.046	0.055	0.85	0.401
Unemployment rate	-0.008	0.007	-1.30	0.201
Ln(real average hourly wage)	0.825	0.166	4.98	0.000
% of TANF spending on childcare subsidies	-0.033	0.044	-0.74	0.465
Union member	0.169	0.010	17.54	0.000
Full-time worker	0.240	0.011	21.44	0.000
Black	-0.060	0.008	-7.37	0.000
Latino	-0.098	0.012	-7.92	0.000
Other non-white	-0.083	0.016	-5.35	0.000
High school degree	0.212	0.012	16.96	0.000
25-35 years old	-0.118	0.007	-16.39	0.000
35-45 years old	-0.034	0.006	-5.81	0.000

Notes: Other controls include indicator variables for month, census region x year; state x linear time trend. Sample size is: 34,700. Sample includes employed workers only from the CPS ORG files.

TABLE A.2. DETAILED REGRESSION RESULTS FOR LOW-CREDENTIALED SINGLE MOTHERS (CONTINUED)

E. Dependent variable: ln(hourly wage) of single mothers in low-wage occupations

Independent variable	Coefficient	Robust Standard Error	T-stat	P-Value
Immediate policy effects				
State EITC credit rate	0.238	0.353	0.67	0.503
Ln(real minimum wage)	0.029	0.116	0.25	0.802
Unemployment rate	0.003	0.016	0.21	0.837
Ln(real average hourly wage)	0.841	0.372	2.26	0.028
% of TANF spending on childcare subsidies	0.079	0.067	1.19	0.241
Union member	0.204	0.021	9.71	0.000
Full-time worker	0.127	0.019	6.71	0.000
Black	0.108	0.015	7.37	0.000
Latino	0.045	0.020	2.29	0.026
Other non-white	0.032	0.026	1.24	0.219
High school degree	0.068	0.012	5.61	0.000
25-35 years old	-0.100	0.018	-5.54	0.000
35-45 years old	-0.021	0.019	-1.11	0.272
Policy effects after one year				
State EITC credit rate	-0.028	0.513	-0.05	0.956
Ln(real minimum wage)	0.344	0.166	2.08	0.043
Unemployment rate	0.004	0.017	0.26	0.797
Ln(real average hourly wage)	0.904	0.362	2.5	0.016
% of TANF spending on childcare subsidies	0.091	0.069	1.32	0.193
Union member	0.206	0.021	9.72	0.000
Full-time worker	0.125	0.019	6.57	0.000
Black	0.109	0.015	7.42	0.000
Latino	0.048	0.020	2.4	0.020
Other non-white	0.033	0.025	1.32	0.192
High school degree	0.069	0.012	5.83	0.000
25-35 years old	0.078	0.009	8.65	0.000
35-45 years old	0.102	0.018	5.61	0.000

Notes: Other controls include indicator variables for month, census region x year; state x linear time trend. Sample size is: 7,500.

F. Dependent variable: ln(weekly earnings)

Independent variable	Coefficient	Robust Standard	T-stat	P-Value
Immediate policy effects				
State EITC credit rate	-0.392	0.906	-0.43	0.67
Ln(real minimum wage)	0.784	0.297	2.64	0.01
Unemployment rate	0.002	0.037	0.06	0.95
Ln(real average hourly wage)	1.187	0.764	1.55	0.13
% of TANF spending on childcare subsidies	-0.207	0.278	-0.74	0.46
Black	-0.537	0.058	-9.29	0.00
Latino	-0.184	0.143	-1.28	0.21
Other non-white	-0.484	0.077	-6.30	0.00
High school degree	1.445	0.042	34.61	0.00
25-35 years old	-0.420	0.041	-10.28	0.00
35-45 years old	-0.026	0.033	-0.80	0.43
Policy effects after one year				
State EITC credit rate	0.807	0.836	0.97	0.34
Ln(real minimum wage)	1.095	0.350	3.13	0.00
Unemployment rate	0.002	0.037	0.05	0.96
Ln(real average hourly wage)	1.253	0.765	1.64	0.11
% of TANF spending on childcare subsidies	-0.115	0.271	-0.42	0.67
Black	-0.538	0.058	-9.28	0.00
Latino	-0.184	0.143	-1.29	0.20
Other non-white	-0.487	0.077	-6.29	0.00
High school degree	1.445	0.042	34.52	0.00
25-35 years old	-0.392	0.038	-10.29	0.00
35-45 years old	0.025	0.033	0.75	0.46

Notes: Other controls include indicator variables for month, census region x year; state x linear time trend. Sample size is: 50,100. Sample includes total sample, employed and not employed from CPS ORG files.

TABLE A.2. FULL REGRESSION RESULTS FOR LOW-CREDENTIALED SINGLE MOTHERS (CONTINUED)

G. Policy impacts with interaction effects, dependent variable: ln(weekly earnings)

Independent variable	Coeffi-cient	Robust Standard Error	T-stat	P-Value
Immediate policy effects				
State EITC credit rate	-0.091	0.953	-0.10	0.92
Ln(real minimum wage)	0.795	0.286	2.78	0.01
State EITC credit rate * Ln(real minimum wage)	3.503	2.162	1.62	0.11
Unemployment rate	0.002	0.037	0.07	0.95
Ln(real average hourly wage)	1.128	0.775	1.46	0.15
% of TANF spending on childcare	-0.205	0.272	-0.75	0.46
Black	-0.537	0.058	-9.29	0.00
Latino	-0.184	0.143	-1.28	0.21
Other non-white	-0.484	0.077	-6.30	0.00
High school degree	1.445	0.042	34.61	0.00
25-35 years old	-0.420	0.041	-10.29	0.00
35-45 years old	-0.027	0.033	-0.81	0.42
Policy effects after one year				
State EITC credit rate	0.772	0.871	0.89	0.38
Ln(real minimum wage)	1.065	0.360	2.96	0.01
State EITC credit rate * Ln(real minimum wage)	1.223	4.563	0.27	0.79
Unemployment rate	0.002	0.037	0.04	0.97
Ln(real average hourly wage)	1.237	0.770	1.61	0.11
% of TANF spending on childcare	-0.116	0.270	-0.43	0.67
Black	-0.538	0.058	-9.29	0.00
Latino	-0.184	0.143	-1.29	0.21
Other non-white	-0.487	0.077	-6.29	0.00
High school degree	1.445	0.042	34.59	0.00
25-35 years old	-0.392	0.038	-10.29	0.00
35-45 years old	0.025	0.033	0.75	0.46

Notes: Other controls include indicator variables for month, census region x year; state x linear time trend. Sample size is: 50,100. Sample includes total sample, employed and not employed.

TABLE A.3: IMPACT OF MINIMUM WAGE AND EITC INCREASES ON TEENAGE GIRLS (16 TO 19 YEARS OLD), 1997-2007

A. Dependent variable: employed in last 2 weeks?

Policy Measures	dF/dX	Robust Standard Error	Z-stat	P-Value
Immediate policy effects				
State EITC credit rate	-0.067	0.102	-0.66	0.51
Ln(real minimum wage)	-0.046	0.038	-1.23	0.22
Policy effects after one year				
State EITC credit rate	-0.056	0.106	-0.52	0.60
Ln(real minimum wage)	0.014	0.031	0.45	0.65

Note: Sample size is 476,000. See notes to Table A.1, Panel A.

B. Dependent variable: participated in labor force in last 2 weeks?

Policy Measures	dF/dX	Robust Standard Error	Z-stat	P-Value
Immediate policy effects				
State EITC credit rate	-0.092	0.111	-0.83	0.41
Ln(real minimum wage)	-0.063	0.038	-1.64	0.10
Policy effects after one year				
State EITC credit rate	-0.080	0.122	-0.66	0.51
Ln(real minimum wage)	-0.026	0.032	-0.82	0.41

Note: Sample size is 476,000. See notes to Table A.1, Panel B.

C. Dependent variable: usual weekly hours

Policy Measures	Coeffi-cient	Robust Standard Error	T-stat	P-Value
Immediate policy effects				
State EITC credit rate	-2.82	2.65	-1.06	0.29
Ln(real minimum wage)	-1.39	0.72	-1.91	0.06
Policy effects after one year				
State EITC credit rate	-2.43	2.49	-0.97	0.34
Ln(real minimum wage)	0.86	0.77	1.11	0.27

Note: Sample size is 450,000. See notes to Table A.1, Panel C. No statistically significant interaction effects.

TABLE A.3: IMPACT OF MINIMUM WAGE AND EITC INCREASES ON TEENAGE GIRLS (16 TO 19 YEARS OLD), 1997-2007 (CONTINUED)

D. Dependent variable: ln(hourly wage)

Policy Measures	Coeffi-cient	Robust Standard Error	T-stat	P-Value
Immediate policy effects				
State EITC credit rate	0.201	0.074	2.73	0.01
Ln(real minimum wage)	0.112	0.060	1.88	0.07
Policy effects after one year				
State EITC credit rate	0.246	0.069	3.56	0.00
Ln(real minimum wage)	0.105	0.043	2.48	0.02

Note: Sample size is 49,621. See notes to Table A.1, Panel D.

E. Dependent variable: ln(weekly earnings)

Policy Measures	Coeffi-cient	Robust Standard Error	T-stat	P-Value
Immediate effects impacts				
State EITC credit rate	-0.600	0.498	-1.21	0.23
Ln(real minimum wage)	0.055	0.228	0.24	0.81
Policy effects after one year				
State EITC credit rate	-0.466	0.491	-0.95	0.35
Ln(real minimum wage)	0.376	0.167	2.24	0.03

Note: Sample size is 112,694. See notes to Table A.1, Panel F. No statistically significant interaction effects.

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