The Earned Income Tax Credit and the Extensive Margin of the Labor Supply

In the early 1990s, as the amounts for the Earned Income Tax Credit (EITC) were raised and its eligibility widened, President Bill Clinton famously touted the policy as "a cornerstone of the government's effort to make work pay."[1] On paper, Clinton was right. Inherent in the credit's design is an effort to reward work—a worker's EITC grows with each additional dollar of earnings until a maximum value is reached, meaning that the credit ostensibly incentivizes labor force participation for low-income families. But incentives are not the same as results. In this report, I seek to synthesize the broad and often conflicting literature discussing the EITC's real impacts on the labor supply. I will hone in on two recent, hotly debated studies—Kleven's 2021 *The EITC and the Extensive Margin: A Reappraisal* and Schanzenbach's 2021 *Employment Effects of the Earned Income Tax Credit: Taking the Long View*—that occupy polar positions in this debate, using them as a window into the uncertainties inherent in any EITC discussion.

What motivates this exploration is today's policy landscape, where the EITC remains a growing mainstay of American welfare. It is one of the federal government's largest programs, lifting about 5.6 million people above the poverty line in 2018.[2] In pandemic-times, this importance has only been reaffirmed—the Biden administration's American Rescue Plan temporarily expanded both the eligibility and amount of the credit, affecting over 17 million workers. Today, the clamor around the credit is ever-growing. In November 2021, The House of Representatives passed the Build Back Better framework, which seeks to make these pandemic-era expansions permanent. In light of these developments and a tight labor market, assessing the EITC's labor force impacts becomes all the more important.

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[1] Alstott, abstract.
[2] CBPP, 1. See bibliography for URL.

This report is structured as follows. First, I provide a brief summary of the EITC, focusing on its structure and differing provisions based on family size. I then offer an overview of the literature—much of it, I argue, expresses a broad consensus that labor supply benefits are clustered around the *extensive* rather than the *intensive* margin. I then dive into muddier waters by analyzing Kleven's and Schanzenbach's *dueling certitudes*, arguing that Kleven's controls and assumptions are less credible in an EITC context. There is, I conclude, robust evidence that EITC expansions increase the labor supply's extensive margin. Finally, I attempt to apply this takeaway to present-day concerns about the Build Back Better framework. I find that an unprecedented expansion of the credit for childless workers in the new framework means that there is a great deal of uncertainty in predicting labor-force impacts.

THE EITC: A TRAPEZOIDAL, SINGLE PARENT-CENTRIC, REFUNDABLE CREDIT

Simply put, the EITC is a trapezoidal, refundable subsidy for low-income working families. The credit equals a fixed percentage of earnings from the first dollar of earnings until the credit reaches its maximum. After this point, the maximum credit is paid until earnings exceed a certain threshold, following which the credit declines with each additional dollar of income until it reaches zero. There are thus three 'phases' to the EITC—a linear phase-in, a plateau at the maximum credit level, and a linear phase-out. This gives the credit schedule the shape of a trapezoid, as seen in Figure 1 below.[3] Another salient feature of the EITC is its refundable nature—if the credit exceeds a worker's tax liability, the IRS will refund the balance.

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[3] Figure taken from the Tax Policy Center's work on the EITC. See bibliography for URL.

Earned Income Tax Credit
2021

TPC

Credit amount
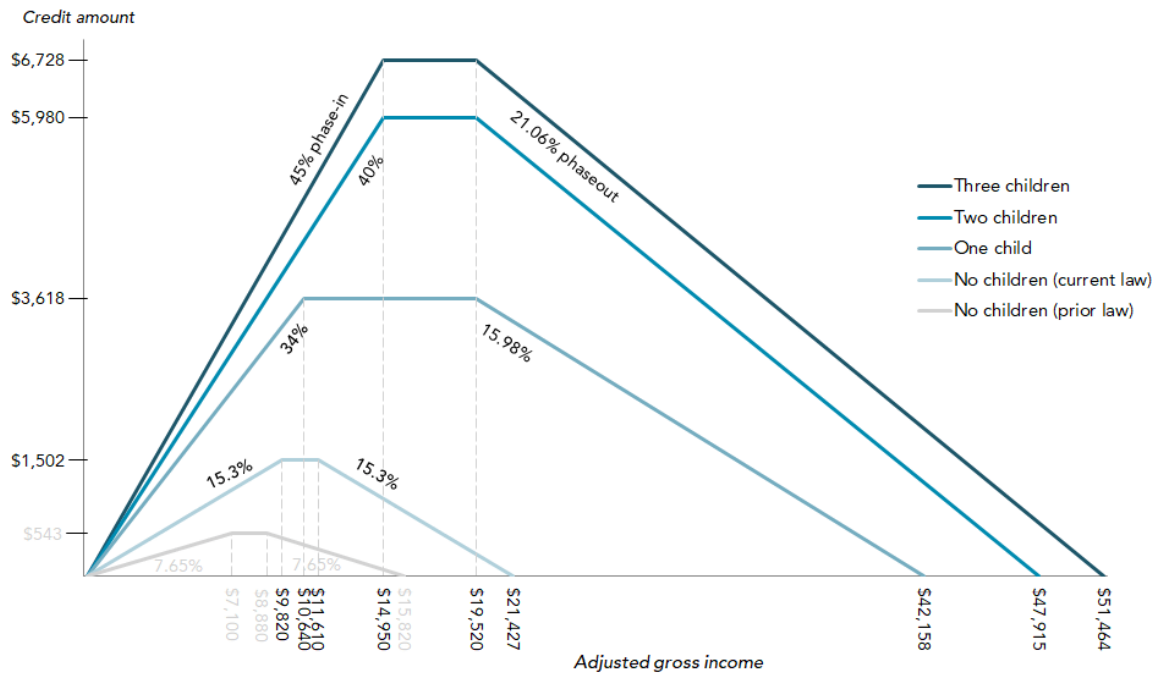
Source: Urban-Brookings Tax Policy Center (2021); Internal Revenue Procedure 2020-45, Internal Revenue Service; and H.R. 1319, "American Rescue Plan Act of 2021," 117th Cong. (2021.)
Notes: Assumes all income comes from earnings. Amounts are for taxpayers filing a single or head-of-household tax return. For married couples filing a joint tax return, the credit begins to phase out at income $5,940 higher than shown, or $5,950 if the couple has children.

But the EITC schedule is not the same for all workers. From its inception, the EITC has maintained a focus on working parents *who claim a qualifying child*—in his first State of the Union address, Clinton argued that expanding the EITC would "realize the principle that if you work 40 hours a week and you've got a child in the house, you will no longer be in poverty."[4] This is visible in Figure 1, with higher phase-in rates and a greater maximum credit for workers with children. The impacts of the credit are thus also visible in child poverty statistics—the CBPP estimates that without the EITC, the number of poor children would have been about one-quarter higher.[5] This

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[4] Hotz and Scholz, 7.
[5] CBPP website, see link in bibliography below.

landscape, however, may be set to change. Build Back Better's proposed permanent expansion of the credit would significantly raise the phase-in rate and maximum credit for childless workers, an unprecedented shift.

Since its inception in 1975, the EITC has undergone a number of modifications that can be classed into one of two categories—*amount* changes that edit the shape of the trapezoid, and *eligibility* changes that include or exclude new categories of workers, allowing for better targeting. These changes are important. Much of the literature that uses DiD models to assess labor supply impacts focuses heavily on the years preceding and proceeding a major change, meaning that it is worthwhile to identify some of the landmark shifts that frame the debate. Between 1975 (when the legislation was enacted) and 1990, most changes were incremental *amount* changes, with no credit available for childless workers throughout this period. The first major changes, then, were in the early 1990s. The twin laws of 1990 and 1993 were both *amount* and *eligibility* changes, increasing the maximum credit while expanding the credit to childless workers and instituting the modern formula of calculating the credit based on family size. Finally, in the 2000s, amounts once again changed, alongside the removal of the 'marriage penalty'. Since then, most changes have been of a regulatory/compliance nature. The EITC, then, is a trapezoidal, single parent-centric, refundable credit that saw substantial changes in the 1990s, and continues to face proposals for change, particularly around the issue of childless workers. The next section will narrow the scope of my discussion on the EITC and offer a broad overview of the literature.

THE MARGINS OF LABOR SUPPLY AND THE EITC: A LITERATURE REVIEW

A defining feature of the literature on the EITC is just how diffuse it is. Since atleast the '90s, researchers have attempted to study a vast variety of topics, from the credit's economic

incidence to its impacts on markers of well-being such as child health and education. Research on the EITC's labor supply impacts, then, is a subset of a vast body of work. In this section, I will narrow my focus to this labor supply literature, providing an overview of the *extensive* margin (entering the workforce) as well as *intensive* margin (number of hours worked) impacts of the EITC. Much of this literature, I find, has focused on the 1993 changes as a seminal event, and there seems to be a broad consensus that the EITC's benefits are along the *extensive* rather than the *intensive* margin. The extensive margin literature, I find, maintains a strong focus on and generally finds a positive impact for single mothers, the group with the strongest EITC incentives to work. Finally, I offer a general critique of the literature—I argue that the heavy reliance on difference-in-differences (DD) methods relies on a parallel-trends assumption that may not hold in an EITC context.

The broad consensus seems to be that the EITC does in fact have significant positive effects on the extensive margin of the labor supply, particularly for single women with children. After the reforms of the early '90s, there was a wave of interest in the subject, driven by an observed uptick in the employment rates of single women that seemed to coincide with EITC expansions (see Figure 2 below). One of the first studies of this nature was by Eissa and Liebman (1996) that analyzed the reforms of 1986. They demonstrated that in comparison to single women without children, those with children increased their relative labor force participation by 2.8 percentage points. Much of the literature continued in this vein—comparing the outcomes between single women (and often single women with one child) to single women with multiple children, since the EITC reforms of the '90s heavily targeted the latter group. Married families were largely out of discussion, since the EITC was perceived to create *negative* incentives in many cases for a second earner in the family. Meyer and Rosenbaum (2001) reaffirmed Eissa's conclusions by showing that a large share of the increase in work by single mothers in the '90s could be attributed by the EITC. Specifically, they calculate an extensive-margin labor supply elasticity of around 0.7. These results seem to be independent of data

source—Hotz, Mullin and Scholz (2006) reaffirm these findings for single mothers by using administrative panel data from California as well. More recent research such as Bastian (2020) and Schanzenbach (2021) also find significant positive effects for single mothers, meaning that there is a broad consensus on the positive external-margin impacts of the EITC, with most studies relying on some kind of difference-in-differences design.

[6] Figure taken from Nichols and Rothstein, 73.
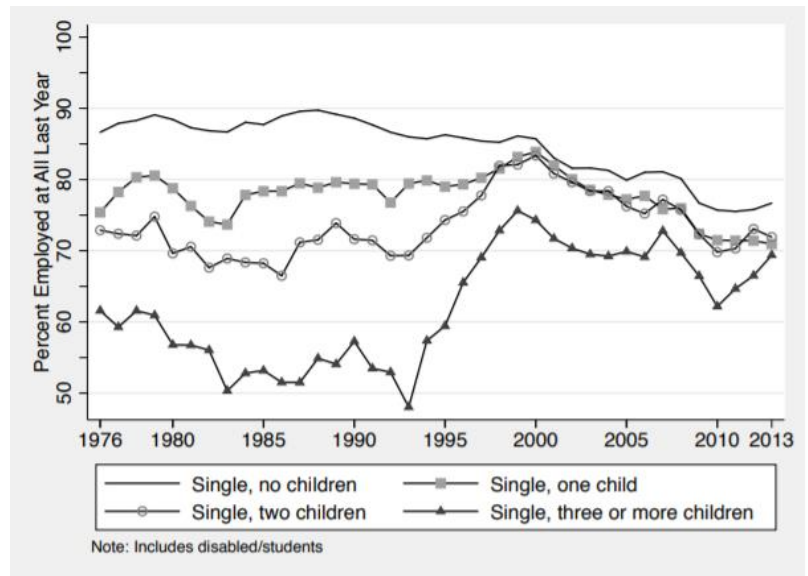
But this consensus is not without its doubters. An influential paper was Cancian and Levinson (2006), that found no effects on the labor supply's extensive margin from Wisconsin's large EITC supplement to families with three or more children. More recently, Kleven (2021) throws even the 1993 expansion's effects into doubt, arguing that they can be better explained by other welfare reforms and the macroeconomy. I will consider Kleven's (alongside Schanzenbach's) work in greater detail in the next section, but despite these dissenters the fact remains that much of the literature expresses a broad consensus on the positive extensive-margin impacts.

What of the intensive margin (number of hours worked)? Here, the methods used are more diverse, but still seem to express a consensus that the intensive-margin effects are small, if not zero. Nichols and Rothstein (2016) note that most of the early studies that found large extensive-margin effects simultaneously found zero or small intensive-margin effects using their DD methods.[7] But these methods may not be best suited to the question at hand. Atleast three other methods seem to be employed in the literature. Blundell (2013), for example, uses a structural model of labor supply based on parametric specifications of the individual's utility function. Saez (2010) uses a more reduced-form method, finding little sign of 'bunching' around the kinks in the EITC schedule, consistent with the conclusion that labor supply elasticities are small for the intensive margin. Chetty and Saez (2013) conducted an RCT with 43,000 EITC recipient clients of the tax preparation firm H&R Block, wherein the EITC schedule was explained to half of the clients. They found no significant impact on hours worked or earnings, further suggesting that even when information is provided about the details of the EITC schedule, the intensive margin effect is unlikely to be positive. Thus, despite a variety of methods in employ, the consensus seems to be that the EITC has little to no effect on the intensive margin of the labor supply, with positive effects clustered on the extensive margin, historically for single mothers.

Since much of the extensive margin literature relies on difference-in-differences (DD) models, it is worth seeing if the general assumptions underpinning these models hold in an EITC context. One of the key assumptions is the *parallel trends* assumption, that in the absence of the treatment (in this case the EITC expansion), the difference between the control (single mothers with one child, for example) and treatment group (single mothers with multiple children, for example) is constant over time. It is apparent that many exogenous factors could result in a violation of this assumption. Statewide EITCs, for example, could target these two groups differently during the time

period under observation. A real concern is about the tight labor market of the 1990s—it is entirely possible that this differentially impacted mothers with multiple children as opposed to those with a single child, since the former group is on average lower-skilled. Thus it is possible that the parallel-trends assumption could have been violated, casting some uncertainty onto the positive extensive-margin literature. Nevertheless, the DD methods remain extremely suitable for the sort of natural experiment that an EITC expansion entails, and provide an intuitive model that can be used for smaller subgroups of the population as well.

In this section, then, I have briefly described the landscape of the literature on the EITC's labor supply impacts. The literature on the extensive-margin (mainly DDs, whose limitations I have discussed) exhibits a broad consensus that the EITC's impacts are significant and positive, particularly for single mothers (at whom the policy has been historically targeted). On the intensive-margin, a variety of different approaches seem to conclude that the EITC's impacts are small, if not zero. The next section will narrow my scope further to the extensive-margin, discussing two recent papers occupying polar positions on the debate.

KLEVEN AND SCHANZENBACH: A CASE OF DUELING CERTITUDES

Debate on the EITC's labor supply impacts is far from over. Despite a focus in the last decade on other impacts such as healthcare and child wellness, two recent studies—Kleven (2021) and Schanzenbach (2021)— have resumed an old conversation by analyzing the labor supply impacts of every federal EITC expansion since its inception. The two studies represent a perfect case of what Manski (2019) labels *dueling certitudes*, where alternative assumptions lead to contradictory predictions. In this section I will closely examine these two studies, arguing that Kleven's identification of a zero extensive-margin effect is based on a meta-analysis-like model that exhibits *illogical certitude*. Schanzenbach's approach, on the other hand, makes more credible

assumptions that lead to the identification of a positive extensive-margin effect, further reaffirming the consensus found in the literature discussed above.

Like much of the literature, Kleven focuses on single mothers, using Current Population Survey (CPS) data as input to his difference-in-difference analysis and event studies. Kleven's conclusions can be summarized as follows: apart from the 1993 reform, EITC expansions have not had any clear impacts on employment, and even the 1993 effects are better aligned with confounders such as welfare reform and the macroeconomy rather than being attributable to the EITC. Specifically, Kleven concludes that the elasticity of the extensive-margin is -0.04, as shown in the figure below. This flies in the face of the broad consensus on a positive elasticity dating back to Eissa (1996). In light of this starkly different conclusion, it is worth asking: what about Kleven's methods and assumptions leads to this conclusion? Are these choices credible?

FIGURE 10: DISTRIBUTION OF ELASTICITY ESTIMATES ACROSS SPECIFICATIONS VS PRIOR ESTIMATES
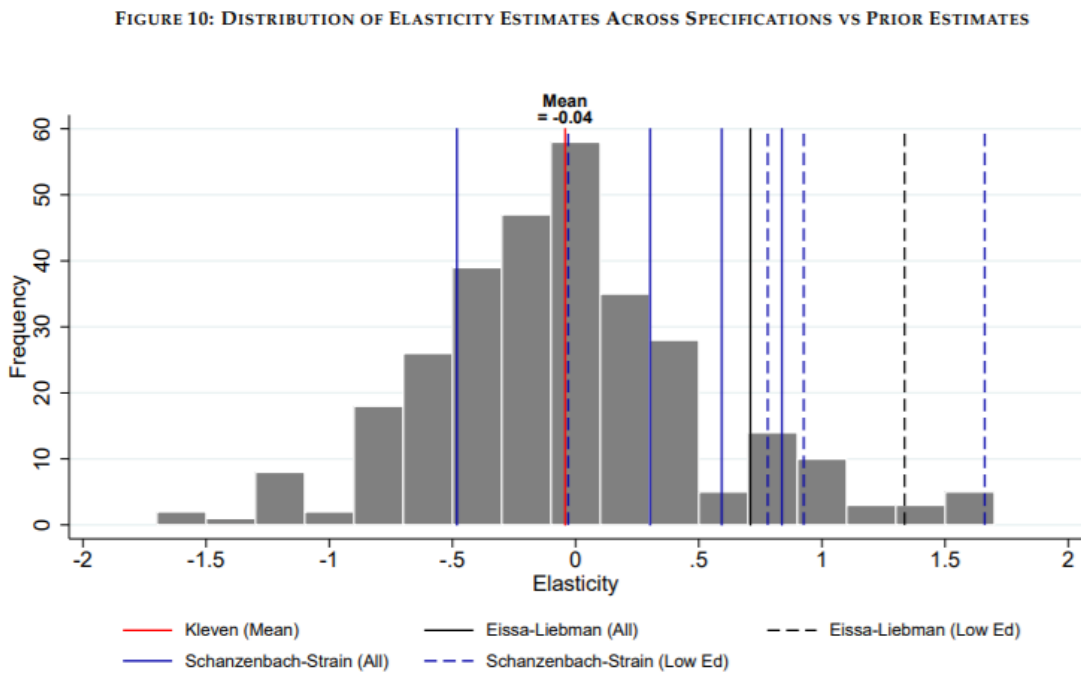
The answer, I find, is that Kleven's methods are based on a meta-analysis-like model that exhibits *illogical certitude*. Consider this excerpt from his paper that describes how the figure above was produced: " [we estimate] EITC impacts across a wide range of specifications. These specifications consider different reform episodes, different samples, different comparison groups . . . different control variables. Allowing for all possible permutations of specification choices yield hundreds of treatment impact estimates . . . the estimates are symmetrically distributed around zero."[8] Kleven's model thus treats all specification choices as equal and comparable, allowing him to average out across 'trials'. This is analogous to the (ab)use of meta-analysis in the medical literature, discussed by Manski in *Patient Care Under Uncertainty*. Not all sample groups have the same underlying characteristics, so it is not necessarily valid to average out across different specification choices. A concrete example of this is when Kleven picks a permutation from the set of different controls—about a fourth of his trials thus feature no controls at all, an extremely unrealistic specification.[9] Kleven thus avoids the problem of selecting a theoretically grounded, EITC-applicable set of specifications for his model by simply averaging out over all possible specifications for the model. This approach is flawed and demonstrates *illogical certitude*—to put it simply, not all specifications are created equal, but Kleven treats them as though they are.

Schanzenbach (2021) uses a similar difference-in-difference approach with event studies that rely on CPS data, but reaches a very different conclusion. The authors find a positive extensive-margin impact of the EITC, demonstrating that on average, the EITC increased employment among low-education single mothers by around 3.9 percentage points.[10] What crucially differentiates this paper from Kleven, however, is the fact that Schanzenbach argues the case for a set of model specifications and applies them throughout the study. It does not make sense, she argues, to leave

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[8] Kleven, 3.
[9] Kleven, 22.
[10] Schanzenbach, 89.

out business cycle controls (as is the case with Kleven's mean result), or to extend the sample to all unmarried women, since these are not the target populations of the EITC. In addition, the outcome variable is clearly defined as whether a person reported being employed in the last year, since the EITC is filed for yearly. Kleven, on the other hand, includes as one of his possible specification permutations a case for whether a person reported themselves as employed in the last *week*, which seems a poor indicator of the extensive margin. This difference between the two is a pattern— Kleven seems to select his controls and specifications sometimes at random and willfully in other places, while Schanzenbach maintains a consistent standard throughout. This is further reflected in Kleven's second claim that the impacts of the 1993 are best explained by confounders—here the controls seem too tight, with Schanzenbach arguing that the manner in which Kleven controls for state welfare programs effectively controls away a chunk of the impact of the EITC itself, leading to the erroneous conclusion that the EITC is not responsible for 1993's extensive-margin gains.[11]

On the whole, then, Schanzenbach's conclusion seems more convincing, and fits neatly with the broader consensus that although there are little to no intensive-margin impacts of the EITC on the labor supply, there are significant positive effects on the extensive-margin, particularly for the groups at which the credit has been targeted. Kleven's research that attempts to refute this consensus, I find, is plagued by *illogical certitude* stemming from a meta-analysis like research design that holds all permutations of model inputs as equally valid. Thus, in a word, the EITC works, encouraging labor force participation along the extensive-margin.

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[11] Schanzenbach, 109.

CONCLUSION AND THE FUTURE OF THE EITC

What can we expect from the future of the EITC? If the Biden administration has its way and the Build Back Better framework passes the Senate, about 17 million workers—predominantly childless, single workers—will see a permanent expansion in their credit. Today's economy bears some macroeconomic parallels to that of the '90s, particularly in its tight labor market. Does, this, alongside, the research on the extensive margin, mean that we should expect to see a bump in the labor force participation of childless workers in the years to come? Perhaps. But it is important to remember that there may be underlying differences between single mothers and childless workers that lead to inherently different elasticities of the extensive margin. There is, then, a great degree of uncertainty in predicting the labor supply impacts of an EITC expansion for childless workers, particularly since this group has been traditionally outside the crosshairs of EITC targeting and lacks specific research.

Nevertheless, we can be reasonably sure of an answer on the EITC's historical impacts on the labor supply. By analyzing the literature, particularly the recent work of Kleven and Schanzenbach, we can reasonably conclude that the EITC works—although it does not lead to gains along the intensive-margin, it is responsible for pushing targets into the workforce (gains along the extensive-margin). Besides this, the EITC can be traced to varied anti-poverty and human development outcomes, meaning that its position as a cornerstone of American welfare policy is well-deserved. This is not to say that there is no uncertainty involved—much of the literature uses fallible DD models, and generalizing their conclusions to predict the impacts of future policy (like BBB) may simply be a case of *wishful extrapolation*. Despite this, the EITC deserves its plaudits, and the debate around its impacts will likely remain a fixture of our future.

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