Is the NIT Better Than the EITC?
Targeted Transfers in General Equilibrium

C. Luke Watson*
Federal Deposit Insurance Corporation

October 2026

Abstract

A targeted labor subsidy meant to raise employment can unintentionally lower recipients' wages. I derive incidence with imperfectly substitutable labor and capital supply. Measurable elasticities, cost shares, and policy shocks are sufficient statistics. Factor-price incidence extends beyond recipients to capital owners and untargeted workers; with free entry, it becomes a redistribution among workers. I apply the model to a 1992 Earned Income Tax Credit (EITC) expansion and an equal-cost negative income tax (NIT). At baseline, the NIT delivers more net transfers to women; the EITC yields more disposable income and a higher marginal value of public funds, 1.04 versus 0.89.

Keywords: Targeted Transfers; Earned Income Tax Credit; Negative Income Tax; Tax Incidence; General Equilibrium.
JEL codes: H22, H24, H53, J22, J23.

**Contact:* C. Luke Watson, chwatson@fdic.gov. I thank Jay Wilson, Leslie Papke, Oren Ziv, Soren Anderson, Gary Wagner, and conference attendees from the 2019 National Tax Association for valuable discussions. This work is based on the first chapter of my dissertation. Views and opinions expressed in this paper reflect those of the authors and do not necessarily reflect those of the FDIC or the United States. I used Refine.ink to review an earlier draft for technical and expository issues. I used AI models to assist with drafting and coding, which were reviewed, verified, and edited by the author. I take full responsibility for the final content and all mistakes are my own.

1 Introduction

A targeted labor subsidy can increase employment while lowering the gross wage of the workers it is meant to help. How much of the subsidy recipients keep depends on the wage response, which also changes the earnings of workers who receive no subsidy. I study these effects in general equilibrium, allowing workers, firms, and capital markets to adjust.

I derive analytic expressions for partial and general equilibrium incidence of a change in the financial return to work. Workers differ by skill and demographic characteristics, and labor skill-types are imperfect substitutes in production. A policy may change the payment a person receives when working, when not working, or both. For each labor type, its direct effect is a change in labor supply holding wages fixed. The general equilibrium wage response combines that own-market effect with a labor-demand adjustment common to all types. The common adjustment depends on substitution across labor types, labor supply responses, and the supply of capital with firm entry.

In partial equilibrium, the wage decline and increase in labor supply generate economic profits for employers. In general equilibrium, under zero profits and allowing firm optimization and factor market responses, those profits are absorbed by capital owners' returns and an adjustment to workers' wages, including the wages of workers who receive no direct payment. The capital incidence share of a labor subsidy is decreasing in its supply elasticity. When perfectly inelastic in the short run, capital absorbs the most of the subsidy; whereas, in the long run as capital markets fully adjust with entry, supply becomes perfectly elastic and the labor subsidy is only distributed among workers. The model also gives a condition under which adjustment in the other factor markets attenuates, rather than amplifies, the treated workers' own-market wage change.

I show that both incidence formulas can be expressed as a function of elasticities, cost shares, and shocks; all of which can in principle be measured. This allows a sufficient statistics approach to quantify different policy shocks and incidence terms.

I use the 1992 Earned Income Tax Credit (EITC) schedule and the March 1993 CPS to compare a small increase in the credit with a negative income tax (NIT) at the same mechanical spending. The EITC raises credit payments for eligible tax units; the NIT pays most when tax-unit earnings are zero and phases out as they rise. The EITC's participation response puts downward pressure on wages in affected markets, whereas the NIT's withdrawal from work puts upward pressure on them. While neither reform pays men directly, their wages rise under the EITC and fall under the NIT.

At my baseline estimates, with relatively elastic substitution across labor types, the EITC raises men's wages and returns to capital, while the NIT lowers both. Despite downward pressure on single women's wages, the EITC raises women's disposable income by $1.18 per dollar of mechanical spending, compared with $0.88 for the NIT. The EITC draws women into work and partly offsets its fiscal cost through the existing tax and transfer system. The NIT induces exits from work and increases its fiscal cost. The resulting marginal values of public funds are 1.04 for the EITC and 0.89 for the NIT. As labor types become less substitutable, the NIT can deliver more disposable income to women, while the EITC continues to yield the higher marginal value of public funds.

My application revisits the partial equilibrium analysis of Rothstein (2010), who shows how an

EITC can lower the wages of its intended recipients and compares the EITC and NIT. His partial equilibrium analysis provides a useful benchmark for the own-market wage effect. I expand his analysis such that other workers, firms, and capital also respond, so that the economic profits employers gain in partial equilibrium are allocated across the other factor markets.[1]

The labor supply response is central to the comparison, and has been extensively studied in the context of the EITC. Meyer and Rosenbaum (2001) study the employment of single mothers as the EITC and welfare policy changed, and Eissa and Hoynes (2004) examine EITC participation incentives for married couples. Saez (2002) shows why the relative importance of participation and hours responses matters for the design of income transfers. Hardy et al. (2022) report heterogeneous extensive-margin employment responses to the 1993 EITC expansion across Black and White households. Nichols and Rothstein (2016) surveys the EITC evidence, while Kleven (2024) reexamines the evidence for extensive-margin responses and emphasizes the difficulty of separating the 1993 expansion from concurrent changes. I therefore report how the incidence and policy comparison vary with the labor supply and substitution elasticities rather than relying on one parameterization. In Section 5 I halve the extensive-margin elasticities of unmarried mothers, and every comparison between the two programs is unchanged.

There is also direct evidence that a targeted credit affects wages of both targeted and untargeted workers. Leigh (2010) studies EITC incidence among recipients, coworkers, and firms using state credit variation. Azmat (2019) finds wage effects and spillovers from the UK's Working Families' Tax Credit. Kasy (2022) studies the distributional welfare consequences of wage changes, including those induced by the EITC. I decompose wage changes into direct and spillover effects and use the model to predict the effects of counterfactual reforms.

The EITC–NIT comparison is also part of a broader discussion of cash transfers. Friedman (1962) proposed a negative income tax, and Moffitt (2003) traces its place in the evolution of U.S. welfare policy. Hartley and Garfinkel (2023) compare income-guarantee designs at fixed wages using CPS microsimulation and labor-supply responses. Ghatak and Maniquet (2019), Hoynes and Rothstein (2019), and Kearney and Mogstad (2019) discuss the design of universal basic income and related transfers. Jones and Marinescu (2022) find no significant decline in aggregate employment from Alaska's universal dividend, while Vivalt et al. (2024) find lower participation in a guaranteed-income experiment. Pepin and Truskinovsky (2026) study empirically another targeted transfer, the Child and Dependent Care Credit for adult caregivers. I compare how these transfers change the return to work and the government's cost for low wage workers.

The factor-market analysis follows the general equilibrium tax-incidence tradition of Harberger (1962) and Mieszkowski (1972), surveyed by Kotlikoff and Summers (1987) and Fullerton and Metcalf (2002). Agrawal and Hoyt (2019) show how cross-price responses affect pass-through when products are related. Suárez Serrato and Zidar (2016) trace the gains from state corporate tax cuts across workers, firm owners, and landowners; Fuest et al. (2018) estimate the wage effects

[1]This work is also based on Watson (2021), where I estimate heterogeneous labor supply and labor substitution elasticities to analyze the 1993 and 2009 EITC expansions and a counterfactual analysis that equalizes the EITC for workers with and without children.

of German business taxes. Sachs et al. (2020) derive general equilibrium wage incidence under nonlinear income taxation. I apply this factor-market perspective to targeted payments at the extensive margin and use the marginal value of public funds of Hendren and Sprung-Keyser (2020) to report the fiscal counterpart to the income effects.

The rest of the paper is structured as follows. Section 2 sets out the factor markets and the work decision. Section 3 derives incidence for a generic policy shock and allocates the partial equilibrium employer share. Sections 4 and 5 apply the result to the EITC and NIT and report the income and fiscal comparisons. Section 6 concludes.

2 Model

I model targeted changes in the return to work before specifying a particular program.[2] Worker utility is quasi-linear in consumption, production has constant returns and a constant elasticity of substitution between labor types, and market participants observe worker characteristics and skills. I finance transfers with a lump-sum tax on workers and allow payments to nonworkers.

I begin with two labor types and two demographic groups to show the mechanism. Section 3.4 extends the incidence result to any number of labor types and type-specific policy changes; the EITC–NIT application uses that general version.[3]

2.1 Workers

Let workers be indexed by a skill level, $e \in \mathcal{E}$, and a demographic status, g. In the two-type case, $e \in \{0, 1\}$ distinguishes low and high skill and $g \in \{0, 1\}$ distinguishes demographic groups that may face different payments. Suppose that only skill determines productivity, so wages are positively related to skill but unrelated to demographic status conditional on skill. Given perfect information and perfect labor competition, all workers with the same skill earn the same gross wage, w_e. Group eg has population N_{eg}, and each of its members draws a cost of work, ν, from a continuously differentiable distribution F_{eg}.

Each worker has preferences over a homogeneous consumption good, x, and labor, L, representable by a quasi-linear utility function, $U(x, L; \nu) = x - \nu \cdot L$. Workers maximize utility by choosing a labor-consumption bundle given the wage and the tax and transfer system:

$$\max_{x,L} \{x - \nu \cdot L\} \quad \text{s.t.} \quad x \leq T_{eg}(w_e L) \quad \& \quad L \in \{0, 1\}, \tag{1}$$

where $T_{eg}(w_e L)$ is consumption available after taxes and transfers. By substituting the constraint,

[2] The worker side follows Rothstein (2010), while I add firm entry and capital supply to close the factor market.

[3] I focus on a single elasticity of labor substitution across labor skills groups; however, it is straightforward to allow for nested substitution across subsets of skill groups.

the problem becomes a discrete choice:

$$\max_{L\in\{0,1\}} \left\{ \underbrace{T_{eg}(0)}_{L=0}\ ,\ \underbrace{T_{eg}(w_e)-\nu}_{L=1} \right\}. \tag{2}$$

To allow both work and nonwork payments, write $T_{eg}(0) = a^N_{eg} - \mathcal{T}$ and $T_{eg}(w_e) = w_e + a^W_{eg} - \mathcal{T}$, where a^W_{eg} is a payment conditional on work, a^N_{eg} is a payment conditional on nonwork, and $\mathcal{T}$ is a common lump-sum tax. The net gain from working is $v_{eg} = T_{eg}(w_e) - T_{eg}(0)$, so a worker participates when $\nu \le v_{eg}$, which occurs with probability $F_{eg}(v_{eg})$. The decision to work depends on the difference between the work and nonwork payments, which I denote using the average tax rate on working:

$$\tau_{eg} \equiv -\frac{a^W_{eg} - a^N_{eg}}{w_e}. \tag{3}$$

Note that $\tau_{eg} > 0$ when a worker receives less than an otherwise identical nonworker, and that the baseline payment difference is $a^W_{eg} - a^N_{eg} = -w_e\tau_{eg}$. Participation and aggregate skill-specific labor supply are therefore:

$$v_{eg} = w_e\left(1-\tau_{eg}\right), \qquad L^S_{eg} = N_{eg}F_{eg}(v_{eg}), \qquad L^S_e = \sum_g L^S_{eg}. \tag{4}$$

With a specific density the participation rate of each group is known; e.g., with Type-1 Extreme Value draws, labor supply has a logit form. The lump-sum tax does not affect participation given quasi-linearity, and because there are no income effects the Marshallian and Hicksian responses coincide.

Define the baseline employment share $\theta_{eg} = L_{eg}/L_e$ and the participation semi-elasticity expressed in wage units:

$$\varepsilon_{eg} = \frac{w_e}{L_{eg}}\frac{\partial L^S_{eg}}{\partial v_{eg}} = \frac{w_e f_{eg}(v_{eg})}{F_{eg}(v_{eg})} > 0, \qquad \varepsilon_e = \sum_g \theta_{eg}\varepsilon_{eg}. \tag{5}$$

Note that a policy aimed at one demographic group affects the group's *labor market* in proportion to θ_{eg}, while the market's own response to a wage change depends on the share-weighted average ε_e. Demographics enter the price system only through these two terms.

2.2 Production

Let there be a mass J of producers indexed by j, each endowed with one unit of capital, that hire labor to produce the consumption good. Technology is represented by a nested constant elasticity

of substitution (CES) production function:

$$Y_j = A\,\mathcal{L}_j^{\alpha} K_j^{1-\alpha}, \qquad \mathcal{L}_j = \left(\sum_{e\in\mathcal{E}} \phi_e L_{e;j}^{(1+\rho)/\rho}\right)^{\rho/(1+\rho)}, \quad \rho < 0, \quad 0 < \alpha < 1, \tag{6}$$

where A is a Hicks-neutral productivity term, $L_{e;j}$ is firm j's demand for type-e labor, and $\mathcal{L}_j$ is the firm's labor aggregate. The elasticity of substitution between labor skill groups is parameterized by:

$$\rho = \mathrm{d}\ln[L_{e''}/L_{e'}] \,/\, \mathrm{d}\ln[w_{e''}/w_{e'}] < 0, \quad \text{for } e', e'' \in \mathcal{E}. \tag{7}$$

When there are more than two skill groups, ρ is the *partial* elasticity of substitution.

This technology features constant returns to scale and fixed substitution elasticities between factors. Firms maximize profits, $\pi_j = Y_j - \sum_e w_e L_{e;j} - rK_j$, and I normalize the output price to one, so wages and capital rents are in units of the final good. Price taking, zero profits, and identical production functions imply that all firms choose the same input bundle, so by constant returns the aggregate production function is also nested CES. Cost minimization over (6) gives the conditional demand $L_e^D = \phi_e^{-\rho}(w_e/\bar{w})^{\rho}\mathcal{L}$, where $\bar{w} = \left(\sum_e \phi_e^{-\rho} w_e^{1+\rho}\right)^{1/(1+\rho)}$ is the unit cost of the labor aggregate, and the unit cost of final output is:

$$c(\boldsymbol{w}, r) = A^{-1}(\bar{w}/\alpha)^{\alpha}\big(r/(1-\alpha)\big)^{1-\alpha}. \tag{8}$$

Let the cost share of each labor type be $s_e = w_e L_e/Y$, with $s_L = \sum_e s_e$ and $s_K = rK/Y$. Given constant returns and zero profits, output elasticities equal cost shares, so $s_L = \alpha$, $s_K = 1-\alpha$, and $s_L + s_K = 1$.

Firm entry is endogenously determined by capital supply costs and the price of capital. Each potential producer draws an entry cost ξ from a continuously differentiable distribution G and enters if the rental rate covers that cost, so $K_j = 1 \iff \xi_j \le r$. Aggregate capital supply and its elasticity are therefore:

$$K^S(r) = J \cdot G(r), \qquad \varepsilon_K = \frac{r\,g(r)}{G(r)} \ge 0. \tag{9}$$

Because the entry cost is sunk once a producer is active, it does not enter that producer's factor demands. An entrant with cost ξ earns producer surplus $r-\xi$, the marginal entrant at $\xi = r$ earns no surplus, and aggregate producer surplus is $PS(r) = J\int_0^r (r-\xi)g(\xi)\mathrm{d}\xi$. By the envelope theorem $\mathrm{d}PS = K\mathrm{d}r$, so a change in the rental rate accrues to inframarginal capital owners while the entry margin contributes nothing to first order. I use this surplus change, $K\mathrm{d}r$, to measure capital owners' gains in Section 3.5. Only ε_K enters the local incidence results, so nothing below depends on G beyond this elasticity.[4]

[4]The cases $\varepsilon_K = 0$ and $\varepsilon_K \to \infty$ represent a fixed capital stock and a fixed rental rate, the latter being the open-economy limit for a small jurisdiction. I use $\varepsilon_K = 1$ as an interior sensitivity case and not as an estimated parameter.

2.3 Tax and transfer system

For simplicity, suppose the government finances the work and nonwork payments with a common lump-sum tax and balances its budget. Writing $N = \sum_{eg} N_{eg}$, budget balance requires:

$$N\mathcal{T} = \sum_{eg} \left[a^W_{eg} L_{eg} + a^N_{eg} (N_{eg} - L_{eg}) \right]. \tag{10}$$

The government then reforms the system by paying a small transfer to one demographic group and nothing to the others. Differentiating the budget separates mechanical spending from the effect of changed participation:

$$N\mathrm{d}\mathcal{T} = \sum_{eg} \left[L_{eg} \mathrm{d}a^W_{eg} + (N_{eg} - L_{eg}) \mathrm{d}a^N_{eg} - w_e \tau_{eg} \mathrm{d}L_{eg} \right]. \tag{11}$$

At a zero-transfer baseline the last term vanishes to first order. With pre-existing taxes and transfers, participation changes the financing charge through the fiscal externality described in Section 4.5. Lump-sum finance and quasi-linearity imply that the common charge does not itself change anyone's decision to work.

2.4 Equilibrium

An equilibrium is a wage and rent schedule under which workers and firms make their optimal choices, every factor market clears, and firms make zero profits.

Constant returns imply that the scale of factor demands cannot be determined, but the model can be solved in terms of equilibrium demand ratios. The labor demand bundle must satisfy $L^D_0 / L^D_1 = \left((w_0/\phi_0)/(w_1/\phi_1) \right)^{\rho}$, while the labor-aggregate and capital bundle must satisfy $\mathcal{L}^D / K^D = \left((\bar{w}/\alpha)/(r/(1-\alpha)) \right)^{-1}$. Let $\mathcal{L}^S$ denote the CES labor aggregate in (6) evaluated at the supplied quantities $\{L^S_e\}$. Equating factor demands and supplies and enforcing zero profits through the unit cost function, the general equilibrium of the two-type economy is any set of prices $\{w_0, w_1, r\}$ solving:

$$\text{Labor clearing} \quad \frac{L^S_0}{L^S_1} = \left(\frac{w_0/\phi_0}{w_1/\phi_1} \right)^{\rho}, \tag{12}$$

$$\text{Factor clearing} \quad \frac{\mathcal{L}^S}{K^S} = \left(\frac{\bar{w}/\alpha}{r/(1-\alpha)} \right)^{-1}, \tag{13}$$

$$\text{Zero profits} \quad 1 = c(\boldsymbol{w}, r). \tag{14}$$

In proportional changes the first condition is $\widehat{L}_e - \widehat{L}_f = \rho(\widehat{w}_e - \widehat{w}_f)$, and cost minimization gives the two share identities $\mathrm{d}\log \bar{w} = \sum_e (s_e/s_L)\widehat{w}_e$ and $\mathrm{d}\log \mathcal{L} = \sum_e (s_e/s_L)\widehat{L}_e$, which I use throughout. Finally, if supplying capital costs $C(K)$ in units of output, household consumption is $X = \sum_e w_e L_e + rK - C(K)$ once net transfers cancel, and zero profits give $Y = \sum_e w_e L_e + rK$, so $Y = X + C(K)$ and the goods market closes.

3 Incidence

I first use the two-type model to separate a policy's own-market wage effect from the adjustment in other factor markets. I then extend the incidence formula to many labor types and show how capital supply determines the allocation of the employer share.

3.1 Policy shocks to participation

Consider a small change in payments conditional on work or nonwork. Let $\mathrm{d}a^j_{eg} = a^{\text{post},j}_{eg} - a^{\text{pre},j}_{eg}$ be a differential change in payment j for group eg, so that by (3) the reform changes the average tax rate on working by:

$$\mathrm{d}\tau_{eg} = -\frac{\mathrm{d}a^W_{eg} - \mathrm{d}a^N_{eg}}{w_e}. \tag{15}$$

Thus an increased subsidy for workers is $\mathrm{d}\tau < 0$ while a benefit withdrawn from workers is $\mathrm{d}\tau > 0$.

For any such change, define the type's *policy shock* as the change in participation holding wages fixed:

$$q_e = -\sum_g \theta_{eg}\varepsilon_{eg}\,\mathrm{d}\tau_{eg}. \tag{16}$$

A work subsidy that raises the return to participation has $q_e > 0$; a nonwork benefit that lowers it has $q_e < 0$. Labor supply changes by:

$$\widehat{L}^S_e = \varepsilon_e \widehat{w}_e + q_e, \tag{17}$$

where hats denote proportional changes; e.g., $\widehat{w}_e = \mathrm{d}w_e/w_e$.

3.2 Partial equilibrium

I find the partial equilibrium incidence by totally differentiating the labor clearing condition (12) while holding $\{L_1, K, w_1, r\}$ constant. Combining the resulting demand change, $\widehat{L}^D_0 = \rho\widehat{w}_0$, with labor supply (17) yields:

$$\widehat{w}^{PE}_0 = -\frac{q_0}{\varepsilon_0 - \rho} = \frac{\varepsilon_{01}}{\varepsilon_0 - \rho}\,\theta_{01}\mathrm{d}\tau_{01} < 0, \tag{18}$$

where the second equality assumes $g = 1$ is the only eligible group, so $\mathrm{d}\tau_{01} < 0$ for a work subsidy. This is the own-market incidence calculation, where the treated market's wage falls until its labor supply again equals its labor demand. It requires neither production cost shares nor a capital-supply elasticity. Note that the numerator uses the policy shock of the subsidized group, through (16), while the denominator uses the aggregate supply elasticity of the whole low-skill market.

Under these partial equilibrium assumptions, the labor demand elasticity is constant across labor types and equals the elasticity of substitution between them. To see why, substitute labor

clearing into type 0's demand:[5]

$$L_0^D(w_0) = L_1^S(w_1(w_0)) \cdot \left(\frac{w_0/\phi_0}{w_1(w_0)/\phi_1}\right)^{\rho} \implies \eta_0^D = \rho + \frac{\partial \ln w_1}{\partial \ln w_0}(\varepsilon_1 - \rho). \tag{19}$$

When $\partial \ln w_1 / \partial \ln w_0 = 0$ by the partial equilibrium assumption, the labor demand elasticity equals the substitution elasticity.[6]

Captured Wages in Partial Equilibrium

Equation (18) gives the treated market's wage response, but it does not identify who receives the resulting wage savings. Rothstein (2010) writes that "employers of low-skill labor capture a portion of the intended EITC transfer," and the same explanation for gross wage decline appears elsewhere in the literature.[7] Holding other factor prices fixed, those savings appear as economic profits for firm owners. An increase in L_0 will increase the marginal product of L_1 and K, and so their prices should rise. With constant returns and zero profits, a fall in one factor price requires another factor price to rise. Thus, the partial equilibrium finding of captured wages can only exist in the very immediate run before even other labor factors adjust. In the next section, I let those prices adjust and show how the subsidy incidence is split between workers and capital owners.

3.3 General equilibrium

To calculate the general equilibrium incidence, I totally differentiate (12), (13), and (14) with respect to $\{w_0, w_1, r\}$ and the policy. Since the two-type system has three equations and three unknowns, I solve it by iterative substitution. Use zero profits to solve $\mathrm{d}r = f(\mathrm{d}w_0, \mathrm{d}w_1)$, use labor clearing to solve $\mathrm{d}w_1 = g(\mathrm{d}w_0, q_0)$, and substitute both into factor clearing to obtain $\mathrm{d}w_0 = h(q_0)$. Defining the aggregate adjustment term:

$$\Lambda = \frac{1+\varepsilon_K}{s_K} + \frac{1+\rho}{s_L}, \tag{20}$$

this yields:

$$\widehat{w}_0^{GE} = \underbrace{-\frac{q_0}{\varepsilon_0 - \rho}}_{\gamma_0} + \underbrace{\frac{\Lambda}{\varepsilon_0 - \rho} \cdot \frac{s_0 q_0/(\varepsilon_0 - \rho)}{1 + \Lambda\left(\frac{s_0}{\varepsilon_0 - \rho} + \frac{s_1}{\varepsilon_1 - \rho}\right)}}_{\Gamma_0} = \gamma_0 + \Gamma_0, \tag{21}$$

where γ_0 is the partial equilibrium wage effect of (18) and Γ_0 is the general equilibrium spillover. Thus the general equilibrium incidence is the direct effect plus a weighted sum of cross-factor

[5] In the two-factor constant returns case, Lee and Saez (2012) show that the supply response of the second factor pins down the first factor's demand as a function of the first factor's price alone, despite the unknown scale of production.

[6] Rothstein (2010) uses this fact for his calibration.

[7] Kasy (2018) draws a similar conclusion in arguing for unconditional transfers over subsidies to low-wage work.

effects.[8] Solving for the remaining prices:

$$\widehat{w}_1^{GE} = \left(\frac{\varepsilon_0 - \rho}{\varepsilon_1 - \rho}\right)\Gamma_0, \qquad \widehat{r}^{GE} = -\left(\frac{s_0}{s_K}\widehat{w}_0^{GE} + \frac{s_1}{s_K}\widehat{w}_1^{GE}\right). \tag{22}$$

The untreated type's wage changes entirely through spillovers, with the magnitude depending on the two markets' supply elasticities.

Equations (21) and (22) show that spillovers change wages at first order unless the treated market's cost share is negligible ($s_0 \approx 0$). The spillover is signed by Λ and q_0, since the denominator in (21) is positive. The gross wage change from a subsidy ($q_0 > 0$) is attenuated by general equilibrium, $\Gamma_0 \geq 0$, if and only if:

$$-\rho \leq 1 + \frac{s_L}{s_K}(1 + \varepsilon_K). \tag{23}$$

At my calibrated shares and $\varepsilon_K = 1$ the cutoff is about 5.33, so in every specification I consider the spillover attenuates the partial equilibrium effect and workers retain more of the subsidy than own-market analysis implies. Above this cutoff, the spillover would amplify the wage decline.

For a positive participation shock under the attenuation condition (23), the adjustment occurs in rounds. More targeted workers enter, lowering their wage. Zero profits require higher returns to other factors, which draws in more of them. Their entry raises targeted workers' marginal product and pushes their wage partway back up; the resulting participation and factor-demand responses continue until markets clear. A negative participation shock reverses these movements.

The partial and general equilibrium effects coincide when the treated type's cost share approaches zero, a small-market assumption that may or may not make sense in a given application.[9] Figure 1 compares partial and general equilibrium incidence for a unit wage-scaled subsidy as the treated type's cost share varies. The flat dashed lines are the partial equilibrium effect, which by construction does not depend on the treated market's size, and the solid lines are the general equilibrium effect, which diverges from it as more of the wage bill is subsidized.

Figure 1 also shows the importance of the substitution elasticity. When labor types are poor substitutes, as in Rothstein (2010), the implied wage effects are large; when they are better substitutes, as at the estimate in Appendix D that I use in Section 5, the wage effects are much smaller. This pattern arises because a larger substitution elasticity lets a firm adjust its input bundle more easily in response to a change in relative factor prices. This difference in substitution elasticities explains much of the difference between my partial equilibrium results and those of Rothstein (2010).

3.4 General equilibrium incidence with many labor markets

The same incidence formula extends to any number of labor types. Let skills be indexed by $e \in \{0, 1, \ldots, E\} = \mathcal{E}$ and allow arbitrary type-specific shocks q_e.

[8] Equation (21) resembles the result in Agrawal and Hoyt (2019) in that general equilibrium incidence is a linear function of partial equilibrium incidence and a spillover term, there derived on the demand side of the economy.

[9] Nichols and Rothstein (2016) report that 20% of tax units and 40% of workers with children receive the EITC .

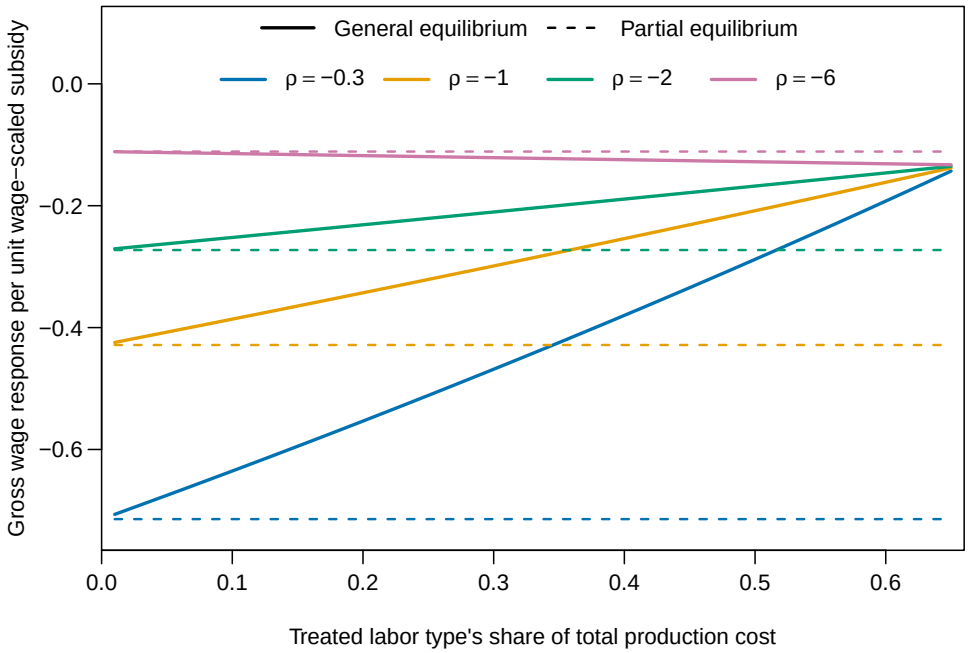


Figure 1: Incidence comparison across labor substitution elasticities

Notes: Each curve plots the treated type's gross wage response to a unit wage-scaled subsidy, $q_0 = 0.75$, against that type's share of total production cost, computed from (28). Dashed lines hold the common labor-demand shifter fixed and so give the partial equilibrium response (18); solid lines are general equilibrium. The aggregate labor share is held at 0.66, so as the treated type grows the untreated type shrinks by the same amount and capital retains $s_K = 0.34$. Other parameters: $\varepsilon_0 = 0.75$, $\varepsilon_1 = 0.60$, $\varepsilon_K = 1$.

Cost minimization over (6) gives the conditional demand $L_e = \phi_e^{-\rho}(w_e/\bar{w})^{\rho}\mathcal{L}$, so in proportional changes:

$$\widehat{L}_e = \rho\widehat{w}_e + \underbrace{\left(\widehat{\mathcal{L}} - \rho\widehat{\bar{w}}\right)}_{\equiv\ z}. \tag{24}$$

The first term is the own-price response and is the only place type e's own wage appears. The CES labor aggregator and wage index imply that the second term is common to all labor types. I define z as the common labor-demand shifter.

Because z is common to all labor types, a constant would absorb it in a regression of labor market changes on wage changes. Nevertheless, z is endogenous, as a targeted transfer changes employment and thus the labor aggregate $\mathcal{L}$ and wage index $\bar{w}$. These changes shift labor demand for all types, including those not targeted by the policy.

Setting demand (24) equal to supply (17) gives one equation per type:

$$(\varepsilon_e - \rho)\widehat{w}_e + q_e = z. \tag{25}$$

Given z, type e's wage follows from its own shock and its own elasticities alone, $\widehat{w}_e = (z - q_e)/(\varepsilon_e - \rho)$, and so holding z fixed in equation (24) yields $\widehat{w}_e^{PE} = -q_e/(\varepsilon_e - \rho)$, the partial equilibrium solution. All that remains for the general incidence formula is to determine z, which requires using the zero profits and capital supply conditions. Total differentiation of those two conditions yields:

$$\sum_e s_e\widehat{w}_e + s_K\widehat{r} = 0, \qquad \sum_e \frac{s_e}{s_L}(\widehat{L}_e + \widehat{w}_e) = (1 + \varepsilon_K)\widehat{r}. \tag{26}$$

The first equality states that a higher wage bill must be offset by another factor price when the output price is fixed. The second lets labor composition, the labor cost index, and capital supply adjust together.

Aggregating (25) across markets in this way leaves only two cost-share-weighted sums of the own-market objects:

$$Q \equiv \sum_e \frac{s_e q_e}{\varepsilon_e - \rho}, \qquad S \equiv \sum_e \frac{s_e}{\varepsilon_e - \rho}. \tag{27}$$

Q is the aggregate own-market wage effect, calculated as each type's partial equilibrium wage response weighted by its share of production cost, which Section 3.5 shows is the employer amount per unit of output. S applies the same weighting to those markets' incidence denominators, so it measures how much aggregate wage movement follows from a given shift in labor demand. Both are sufficient statistics in the sense that labor markets affect one another only through these two numbers.

Proposition 1 (General equilibrium wage incidence)**.** *Under the maintained positive factor shares and nonnegative supply elasticities, the common labor-demand shifter is* $z = \Lambda Q/(1 + \Lambda S)$*, and the local*

factor-price response is:

$$\widehat{w}_e^{GE} = \underbrace{-\frac{q_e}{\varepsilon_e - \rho}}_{\text{own market}} + \underbrace{\frac{1}{\varepsilon_e - \rho} \cdot \frac{\Lambda Q}{1 + \Lambda S}}_{\text{common correction}} \tag{28}$$

$$\widehat{r}^{GE} = -\frac{1}{s_K} \sum_e s_e \widehat{w}_e^{GE} \tag{29}$$

with Q and S as defined in (27) *and Λ in* (20).

Proof. Relative CES demand implies $\widehat{L}_e = \rho \widehat{w}_e + z$ for a common z. Combining it with (17) gives (25). Substitute $\widehat{L}_e = \rho \widehat{w}_e + z$ into the second equation of (26), and use the first equation to eliminate rent. The result is:

$$z = -\left[\frac{1 + \varepsilon_K}{s_K} + \frac{1 + \rho}{s_L}\right] \sum_e s_e \widehat{w}_e = -\Lambda \sum_e s_e \widehat{w}_e. \tag{30}$$

Next substitute $\widehat{w}_e = (z - q_e)/(\varepsilon_e - \rho)$ to obtain:

$$z\left(1 + \Lambda \sum_e \frac{s_e}{\varepsilon_e - \rho}\right) = \Lambda \sum_e \frac{s_e q_e}{\varepsilon_e - \rho}. \tag{31}$$

Solving for z and substituting into $(z - q_e)/(\varepsilon_e - \rho)$ gives the wage formula. The rent formula follows directly from zero profits. □

Equation (28) shows the three first-order terms of any tax reform: the direct effect, the own-supply induced spillover, and the spillovers received from tax changes aimed at everyone else. The two-type formula (21) is the case $\mathcal{E} = \{0, 1\}$ with $q_1 = 0$. Under the maintained restrictions (i.e., $s_e, s_K > 0$, $\varepsilon_e, \varepsilon_K \geq 0$, and $\rho < 0$, the denominator $1 + \Lambda S$ is positive.[10]

Generally, one cannot sign (28) without knowing the magnitude of every q_e. For example, if the change for one group is small *but* all other changes are large and of the same sign, then the spillovers dominate and that group's wage moves with them. Spillovers vanish only when $Q = 0$, or when $\Lambda = 0$, and *not* merely when the unweighted average shock is zero.[11] An unsubsidized labor type has $q_e = 0$ but will generally have $\widehat{w}_e^{GE} \neq 0$.

3.5 Decomposition of PE Employer Share

In partial equilibrium, the wage decline appears as economic profits for firms. I now show how factor-price adjustments divide that amount between capital owners and workers. Summing the own-market responses (18) over labor markets, the price-driven change in the aggregate wage bill

[10] The term Λ can be negative, but then there is an additional parameter restriction: $S \leq s_L/(-\rho)$ implies $1 + \Lambda S \geq [1 + (1 + \varepsilon_K)s_L/s_K]/(-\rho) > 0$.

[11] Agrawal and Hoyt (2019) make the analogous point by supposing that the market share of taxed goods is small relative to a composite consumption good.

in partial equilibrium is:

$$\sum_e w_e L_e \widehat{w}_e^{PE} = -YQ, \tag{32}$$

recalling Q from (27). When the policy raises weighted labor supply, $Q > 0$ and the partial equilibrium wage bill falls by YQ (the signs reverse when weighted supply falls). The partial equilibrium calculation attributes this wage-bill change to employers, but the ultimate recipients are other factor owners (i.e., other labor markets and capital).

Proposition 2 (Decomposition of the employer share)**.** *Let $\kappa \equiv 1/(1+\Lambda S)$. The price-driven change in the wage bill in general equilibrium is a fraction κ of its partial-equilibrium counterpart, and the partial-equilibrium employer share YQ can be decomposed into:*

$$YQ = \underbrace{\kappa YQ}_{K\mathrm{d}r\ (\textit{capital owners})} + \underbrace{(1-\kappa)\,YQ}_{YzS\ (\textit{common labor-price correction})}, \tag{33}$$

where the common labor-price correction is allocated across labor types in proportion to $s_e/(\varepsilon_e - \rho)$, including untreated types. Its sign depends on Λ.

Proof. From (25), $\sum_e s_e \widehat{w}_e^{GE} = zS - Q$. Substituting $z = \Lambda Q/(1+\Lambda S)$ from the proof of Proposition 1 gives $\sum_e s_e \widehat{w}_e^{GE} = -Q/(1+\Lambda S) = -\kappa Q$. Zero profits give $K\mathrm{d}r = rK\widehat{r} = -Y\sum_e s_e \widehat{w}_e^{GE} = \kappa YQ$. The remainder is $YQ - \kappa YQ = YQ\Lambda S/(1+\Lambda S) = YzS$, and type e receives $Ys_e z/(\varepsilon_e - \rho)$ of it. □

The endogenous parameter κ is the share of the wage-bill decline retained by capital owners after accounting for entry. A work subsidy lowers the wages of subsidized workers, which raises the return to capital and draws in new firms. Their entry bids the rental rate back down and raises the marginal product of the workers whose wage fell in the first place. The capital supply elasticity ε_K determines how much of the original decline capital owners retain.

Corollary 1 (Short run and long run)**.** *(i) In the short run, capital is fixed, $\varepsilon_K = 0$, and so $\Lambda = 1/s_K + (1+\rho)/s_L$. Since κ is decreasing in ε_K, this is the largest share of the wage-bill decline that firms can ever retain. (ii) In the long run with free entry, $\varepsilon_K \to \infty$, and so $\kappa \to 0$. Firms capture none of the subsidy, $\sum_e s_e \widehat{w}_e^{GE} = 0$, and the wage incidence of any targeted transfer is a redistribution among labor types.*

The capital supply elasticity therefore governs the division between capital owners and workers, while the policy shocks govern the size and sign of the amount to be divided. In the application below, at $-\rho = 1.8$, capital owners retain about three fifths of the partial equilibrium employer share when capital is fixed and about a third at $\varepsilon_K = 1$. In the free-entry limit, wage incidence is entirely a redistribution among workers. Men, for example, receive \$0.09 per EITC dollar through spillovers despite having no direct policy exposure.

4 Data and calibration

To compare my general equilibrium results with the partial equilibrium benchmark in Rothstein (2010), I use the 1992 EITC schedule and the March 1993 CPS, which reports 1992 work and earnings. I combine the incidence results of Section 3 with estimated supply elasticities to evaluate a small increase in the EITC's maximum credit and an equal-cost NIT. I describe the sample and policy schedules before calculating the income and fiscal outcomes.

4.1 Data and labor markets

I use the 1993 March CPS, which reports income and work for calendar year 1992 (Flood et al., 2021). I exclude group quarters and households with more than ten members, which leaves 116,082 adults aged 16 or older, men and women. Sex × four education categories × nine age groups × marital status yield 144 labor types and 367 observed child-status cells. Labor supply is measured based on labor force participation. I calculate the 1992 labor share from all-economy BEA income components as employee compensation plus proprietors' income over gross factor income, which gives $s_L = 0.684$ and a capital cost share $s_K = 0.316$. Appendix B gives the sample construction, the coverage of the two simulated schedules, and two alternative treatments of proprietors' income. Appendix C replicates and extends Rothstein (2010) using his female reference-person sample and parameterization.

4.2 The policy experiments

I simulate two reforms on the 1992 baseline, an EITC expansion and an NIT. The EITC experiment raises the maximum credit under the 1992 statutory schedule.[12] The NIT pays the largest benefit at zero tax-unit earnings and phases out as earnings rise.[13] I scale the NIT schedule to match the EITC expansion's mechanical spending. Both reforms only provide payment to tax units with children, matching the 1992 law. For married tax units, I treat the woman as the potential nonworker and hold men's labor supply constant.[14]

4.3 Earnings-dependent transfers

Both the EITC and NIT transfers are conditional on gross earnings, which requires one extension of the flat payments of Section 2. Let the payment to a worker depend on earnings, $a^W_{eg}(w_e)$, and so $\dot{a}^W_{eg} = \partial a^W_{eg}(w_e)/\partial w_e$ is the marginal transfer with respect to earnings and $m_{eg} = 1 + \dot{a}^W_{eg}$ is the share of a gross wage increase that an incumbent worker keeps. The share term m_{eg} affects tax revenue

[12] Tax year 1992 is covered by the March 1993 CPS ASEC supplement. Table B.1 in Appendix B gives the parameters of both schedules, before and after each reform.

[13] I use the same NIT comparison as Rothstein (2010) to aid comparisons to prior work. In Watson (2021), I compare the EITC expansion instead to an expansion of AFDC and food stamps, with guarantees and phase-out rates taken from the Urban Institute's TRIM3 microsimulation rather than assumed, and find qualitatively similar results.

[14] I omit transfers to single fathers due to their infrequency in the data and to match Rothstein (2010); however, single father households would have qualified for EITC payments.

through both targeted and untargeted workers, but leaves (5) and (16) unchanged.[15] I hold other tax-unit earnings fixed when evaluating v_{eg} and m_{eg}, and so each group's participation responds to its own type's wage alone.

4.4 Parameters

Table 1 lists the parameters used in the program comparison. For the labor supply response of women, I use sixteen education × marriage × child-status estimates, as well as the substitution elasticity estimate, $-\rho = 1.80$. I estimate both in Appendix D, which reports the data, sample, instruments, estimating equations, and diagnostics. To allow for comparisons, I additionally use the relatively inelastic estimate of $-\rho = 0.30$ throughout. I hold married men's participation fixed and assign the household response to women; single men's extensive-margin elasticity is 0.20.[16]

Table 1: Calibration parameters

Parameter	Baseline	Also reported	Source
Female supply response	16 cells	—	App. D
Married-male supply response	0	—	Assumption
Single-male supply response	0.2	—	Assumption
Substitution $(-\rho)$	1.8	0.3	App. D; Rothstein (2010)
Labor share (s_L)	0.684	—	BEA; CPS
Capital supply elasticity (ε_K)	1	0, ∞	Assumption

Notes: These parameters govern the EITC and NIT calibrations, reported below. Appendix D reports the elasticity estimation and its diagnostics. Male labor supply elasticities are assumed based on men's relative inelastic responses. Capital supply is allowed to vary from perfectly inelastic, unit elastic, and perfectly elastic. The labor cost share is held fixed. The parameters of the two simulated schedules are separate from these and are given in Table B.1.

4.5 Outcomes, fiscal cost, and the MVPF

A reform's *mechanical* spending $(\mathrm{d}M)$ is its cost evaluated at baseline employment. Each group's income changes through three channels, which I report separately: wages, participation, and the transfer and tax system. Writing the group-level change in mechanical spending, participation as

[15] By (3) the net gain from working is $v_{eg} = w_e + a^W_{eg} - a^N_{eg} = (1 - \tau_{eg})w_e$, so $\ln v_{eg} = \ln w_e + \ln(1 - \tau_{eg}) \approx \ln w_e - \tau_{eg}$. The gross wage and the tax rate therefore enter labor supply (approximately) additively, matching the empirical specification in Appendix D for a net wage elasticity.

[16] Prime-age married men's participation was close to universal in 1992 and their extensive-margin elasticity is among the smallest in the labor-supply literature. Using $-\rho = 1.80$ and $\varepsilon_K = 1$, I find that κ increases from 0.36 at a zero response to 0.39 if $\varepsilon^L_{\text{Married Men}} = 0.40$, since married men hold 49 percent of the paired wage bill.

$\mathrm{d}L$, and gross earnings change as $\mathrm{d}E$, these are:

$$\mathrm{d}M_{eg} = L_{eg}\mathrm{d}a^W_{eg} + (N_{eg} - L_{eg})\mathrm{d}a^N_{eg}, \tag{34}$$

$$\mathrm{d}L_{eg} = L_{eg}\varepsilon_{eg}\left(\widehat{w}_e - \mathrm{d}\tau_{eg}\right), \tag{35}$$

$$\mathrm{d}E_{eg} = \underbrace{L_{eg}\mathrm{d}w_e}_{\text{wage}} + \underbrace{w_e\mathrm{d}L_{eg}}_{\text{participation}}, \tag{36}$$

where $\mathrm{d}M = \sum_{d\in eg}\mathrm{d}M_{eg}$ and equation (36) decomposes the change in gross earnings due to wages and to participation changes. Note, a wage increase need not raise total gross earnings if participation falls enough.

Adding these channels one at a time gives three cumulative income measures, each of which appears as a row in Tables 3 and 4. The first is the *net total transfer* ($\mathrm{d}X$) of Rothstein (2010), the mechanical payment plus the wage effect on baseline workers:

$$\mathrm{d}X_{eg} = L_{eg}\mathrm{d}w_e + \mathrm{d}M_{eg}. \tag{37}$$

The second income measure, *net earnings*, adds the earnings of the workers who enter or leave:

$$\mathrm{d}I_{eg} = \mathrm{d}X_{eg} + w_e\mathrm{d}L_{eg} = \mathrm{d}E_{eg} + \mathrm{d}M_{eg}. \tag{38}$$

The third adds how the *existing* tax and transfer schedule responds, both to incumbents' wage changes and to the change in participation, which I call *disposable income*:

$$\mathrm{d}D_{eg} = \mathrm{d}I_{eg} + L_{eg}\dot{a}^W_{eg}\mathrm{d}w_e - w_e\tau_{eg}\mathrm{d}L_{eg}, \tag{39}$$

where the second term is the household side of the incumbent wage-revenue channel $\mathrm{d}R$ defined below. When an incumbent's wage falls, the schedule collects less tax on her earnings, so she bears less than the full decline while the Treasury bears the rest. The last term in equation (39) is the household side of the participation externality $\mathrm{d}B$ defined below. A woman the EITC draws into work gives up other non-work benefits (e.g., 'welfare payments'), so she keeps less than her new earnings; whereas, a woman the NIT induces to leave will qualify for more benefits.

Alongside mechanical spending, define the participation externality ($\mathrm{d}B$) and the incumbent wage-revenue channel ($\mathrm{d}R$):

$$\mathrm{d}B_{eg} = -w_e\tau_{eg}\mathrm{d}L_{eg}, \qquad \mathrm{d}R_{eg} = L_{eg}\dot{a}^W_{eg}\mathrm{d}w_e, \tag{40}$$

where $\mathrm{d}B = \sum_{d\in eg}\mathrm{d}B_{eg}$ and $\mathrm{d}R = \sum_{d\in eg}\mathrm{d}R_{eg}$. Specifically, $\mathrm{d}B$ is the change in spending on the pre-existing schedule that follows from changed participation (i.e., a behavioral change), and $\mathrm{d}R$ is the change in revenue collected on incumbent workers' earnings when their gross wages move. Differentiating the government budget at the baseline, and applying the envelope theorem and zero

profits, gives the net fiscal cost ($\mathrm{d}C$) and unfinanced aggregate willingness to pay ($\mathrm{d}W$):

$$\mathrm{d}C = \mathrm{d}M + \mathrm{d}B + \mathrm{d}R, \tag{41}$$

$$\mathrm{d}W = \mathrm{d}M + \mathrm{d}R, \tag{42}$$

where $\mathrm{d}C$ is the reform's total fiscal cost and $\mathrm{d}W$ is its money-metric welfare change before financing. The ratio of these values yields the marginal value of public funds (MVPF):

$$\text{MVPF} = \frac{\mathrm{d}M + \mathrm{d}R}{\mathrm{d}M + \mathrm{d}B + \mathrm{d}R}. \tag{43}$$

Equivalently, the MVPF is the private value delivered per dollar of public funds, and so a value above one means the reform produces more aggregate private benefit than the mechanical cost of the transfer (Hendren and Sprung-Keyser, 2020). Appendix A derives these expressions.

4.6 Caveats

The empirical exercise has two limitations. First, I hold each worker's labor type fixed. Workers can enter or leave employment as wages change, but they cannot change their labor type. The exercise therefore omits the investment responses the EITC literature documents in education (Bastian and Michelmore, 2018), in child health and achievement (Dahl and Lochner, 2012), and in marriage and fertility (Dickert-Conlin and Houser, 2002), and the switching margin of Saez (2002).

Second, the model has no frictions in wage and employment adjustment. The incidence result supposes that an increase in subsidized labor supply lowers that type's gross wage and shifts demand for other types outward. Suppose instead that the subsidized type is a low-wage group facing a binding minimum wage. If firms do not hire the additional workers at that wage, employment does not rise, unemployment does, and no additional demand for other types follows. While the participation responses are identified from real policy variation, the incidence calculations still assume competitive wage adjustment and market clearing.

5 Results

In this section, I first report the wage, employment, and gross earnings effects of the EITC and NIT by demographic group. Next, I add the policy payment and the existing tax and transfer schedule to those market effects, which gives each group's income. Last, I compare aggregate income and fiscal cost across labor substitution and capital supply elasticities.

5.1 Wages, employment, and earnings

Table 2 reports the wage, employment, and gross earnings components for women.[17] Columns (1) through (4) use the elastic substitution $\rho = -1.8$ parameterization and columns (5) through (8)

[17] Appendix F reports the same demographic breakdown for men.

use $\rho = -0.3$. For the general equilibrium columns, I set $\varepsilon_K = 1$. Unless otherwise specified, I focus the discussion on the general equilibrium columns with $-\rho = 1.8$.

For single mothers, the main target group, I find that the EITC draws more women into work and lowers their wages. The NIT has the reverse effect. The participation changes dominate the wage changes, and so single mothers' gross earnings rise by \$0.33 per EITC dollar and fall by \$0.19 per NIT dollar.

Three other groups show how the reforms affect workers beyond single mothers. First, workers with no direct policy exposure can benefit through higher wages. Despite not being targeted by either policy reform, men's gross earnings rise by \$0.08 per EITC dollar, and fall by \$0.09 under the NIT. As I hold married men's participation fixed, their earnings move through wages alone. Other than mothers with children, married men gain the most from the EITC.

Second, single women without children lose earnings under the EITC. The 1992 schedule paid nothing to childless filers, yet they are close substitutes for single mothers within the same education and age labor types. Their wage bill falls by \$0.09 per mechanical dollar and their employment falls by \$0.08 measured in earnings, so their gross earnings fall by \$0.17. Under the NIT, their gross earnings rise by \$0.09 because targeted workers' exit raises their marginal product. Aggregating across women masks these differences between mothers and women without children.

Third, married mothers' gross wages *rise* under the EITC while their employment falls. As the EITC phases out against total tax-unit earnings, increasing gross earnings can actually *reduce* tax credits to the household and *raise* tax rates, which could then discourage married women from working. In fact, I find that the change in the average tax rate on working is +0.11 basis points for married mothers, against −8.79 basis points for single mothers. This is the secondary-earner disincentive described by Eissa and Hoynes (2004).

5.2 Income by demographic group

Table 3 adds the mechanical payment and the existing tax and transfer schedule to the market effects of Table 2, which gives the three cumulative income measures of Section 4.5 for each group. The two reforms divide their mechanical dollars differently. Married mothers receive \$0.54 of every EITC dollar but \$0.32 of every NIT dollar, because the EITC phases in with earnings while the NIT pays most where earnings are lowest.

In columns (1) through (4), with $-\rho = 1.8$, I find a larger net total transfer to single mothers under the NIT, \$0.71 against \$0.39 per mechanical dollar under the EITC. That measure counts the payment and the wage change for women already working, but not the earnings of women who enter or leave work. Adding those earnings and the response of the existing tax and transfer schedule reverses the ranking, such that net earnings and disposable income rise by \$0.79 and \$0.72 under the EITC, against \$0.49 and \$0.57 under the NIT. The NIT raises wages by reducing participation; the EITC raises income by drawing more women into work.

The reversal between the net total transfer and the two wider measures also holds for women as a whole, in the bottom block of the table. The EITC delivers \$0.87 of net total transfer to women per

Table 2: Wages, employment, and gross earnings by demographic group, women

	Elastic substitution, $-\rho = 1.8$				Inelastic substitution, $-\rho = 0.3$			
	EITC		NIT		EITC		NIT	
Per \$1 of mechanical spending	PE (1)	GE (2)	PE (3)	GE (4)	PE (5)	GE (6)	PE (7)	GE (8)
Single mothers								
Wage, $L\,\mathrm{d}w$	−0.069	−0.066	+0.039	+0.036	−0.172	−0.166	+0.100	+0.093
Employment, $w\,\mathrm{d}L$	+0.393	+0.395	−0.224	−0.225	+0.333	+0.335	−0.190	−0.193
Gross earnings, $\mathrm{d}E$	+0.324	+0.329	−0.184	−0.189	+0.161	+0.170	−0.091	−0.101
Single women, no children								
Wage, $L\,\mathrm{d}w$	−0.103	−0.094	+0.059	+0.050	−0.254	−0.237	+0.149	+0.130
Employment, $w\,\mathrm{d}L$	−0.084	−0.078	+0.046	+0.040	−0.205	−0.193	+0.116	+0.103
Gross earnings, $\mathrm{d}E$	−0.186	−0.172	+0.105	+0.090	−0.459	−0.430	+0.265	+0.233
Married mothers								
Wage, $L\,\mathrm{d}w$	+0.007	+0.017	+0.052	+0.042	+0.019	+0.040	+0.131	+0.108
Employment, $w\,\mathrm{d}L$	−0.013	−0.009	−0.168	−0.174	−0.008	+0.002	−0.119	−0.130
Gross earnings, $\mathrm{d}E$	−0.007	+0.008	−0.116	−0.132	+0.011	+0.042	+0.012	−0.022
Married women, no children								
Wage, $L\,\mathrm{d}w$	+0.001	+0.009	+0.026	+0.018	+0.005	+0.019	+0.064	+0.048
Employment, $w\,\mathrm{d}L$	0.000	+0.006	+0.025	+0.018	+0.001	+0.013	+0.060	+0.046
Gross earnings, $\mathrm{d}E$	+0.001	+0.014	+0.051	+0.036	+0.005	+0.032	+0.124	+0.094
All women								
Wage, $L\,\mathrm{d}w$	−0.164	−0.135	+0.178	+0.146	−0.402	−0.343	+0.447	+0.382
Employment, $w\,\mathrm{d}L$	+0.295	+0.314	−0.321	−0.341	+0.121	+0.157	−0.134	−0.175
Gross earnings, $\mathrm{d}E$	+0.131	+0.180	−0.142	−0.195	−0.281	−0.186	+0.313	+0.207
All men								
Wage, $L\,\mathrm{d}w$	0.000	+0.075	0.000	−0.081	0.000	+0.312	0.000	−0.347
Employment, $w\,\mathrm{d}L$	0.000	+0.004	0.000	−0.004	0.000	+0.011	0.000	−0.012
Gross earnings, $\mathrm{d}E$	0.000	+0.079	0.000	−0.085	0.000	+0.322	0.000	−0.359

Notes: Dollars per dollar of mechanical spending, using the policy experiment defined in Section 4.2. Columns (1) to (4) use the substitution elasticity estimated in Watson (2021) and columns (5) to (8) the value used by Rothstein (2010). General equilibrium columns set $\varepsilon_K = 1$. All other baseline parameters are defined in Table 1. Data is from the 1993 March CPS (ASEC supplement).

dollar of mechanical spending, against \$1.15 under the NIT, but \$1.18 of net earnings against \$0.81 and \$1.18 of disposable income against \$0.88. The reversal is because the net total transfer does not count the earnings of the women whose participation changes, which contributes +\$0.31 per EITC dollar versus −\$0.34 per NIT dollar. Excluding those earnings changes makes the EITC look much weaker. Disposable income incorporates the mechanical payment, the wage change net of the tax the existing schedule collects on it, and the participation change with the taxes and benefits that follow, so it is the most comprehensive of the three cash measures for women.

However, proponents of expanding the EITC must accept that ineligible workers who share a labor market with recipients will be financially hurt, even as ineligible workers in other markets, such as men, gain. Single women without children receive no payment under either schedule, so their disposable income falls by \$0.12 per EITC dollar and rises by \$0.06 per NIT dollar. Men's disposable income is +\$0.05 per EITC dollar and −\$0.06 per NIT dollar.

Columns (5) through (8) use $-\rho = 0.30$, so labor types are less substitutable and their wages move more for a given participation shock. In partial equilibrium, women receive \$0.60 in net total transfer per dollar under the EITC and \$1.45 under the NIT, giving the NIT a \$0.85 advantage rather than the \$0.34 in columns (1) and (3).[18] On all three income measures at the inelastic value, the NIT delivers more to women than the EITC by \$0.73, \$0.39, and \$0.21, respectively, which reverses the result at the elastic value. The EITC's advantage depends on labor types being good enough substitutes with other workers that the earnings of new entrants outweigh the wage decline the entry itself causes. The EITC's wage decline is now two and a half times greater, −\$0.34 against −\$0.14, which offsets much of the policy shock in (35) and halves women's employment response, to +\$0.16 from +\$0.31 (Table 2). A low substitution elasticity therefore attenuates the EITC's participation advantage while exacerbating its negative wage effects. The lower substitution elasticity also produces larger spillovers to untreated workers. Men's disposable income is +\$0.22 per EITC dollar and −\$0.24 per NIT dollar, four times the magnitudes at the elastic value, because less substitutable labor types require larger wage movements to clear the market. A low substitution elasticity increases both the amount attributed to employers in partial equilibrium and the wage effects on untreated workers in general equilibrium.

5.3 Aggregate income and fiscal accounting

Table 4 reports the aggregate fiscal cost of each reform, the change in returns to capital, and the income measures of Table 3, under three capital supply elasticities. Panel A uses the substitution elasticity $-\rho = 1.80$ of Appendix D and Panel B uses 0.30 from Rothstein (2010). The sample, policy schedules, labor supply responses, and factor shares are otherwise held fixed. I focus on $\varepsilon_K = 1$ and discuss the fixed-capital and free-entry cases separately.

The government budget block of Table 4, for both Panels, reports the fiscal accounting measures

[18] Rothstein reports \$0.64 and \$1.55 for the same accounting row, which is due to differences in the sample and elasticity parameters. Appendix C replicates his sample and results, and solves for the general equilibrium incidence under his parameterization.

Table 3: Income measures by demographic group, women

	Elastic substitution, $-\rho = 1.8$				Inelastic substitution, $-\rho = 0.3$			
	EITC		NIT		EITC		NIT	
Per \$1 of mechanical spending	PE (1)	GE (2)	PE (3)	GE (4)	PE (5)	GE (6)	PE (7)	GE (8)
Single mothers								
Mechanical payment, dM	0.460	0.460	0.678	0.678	0.460	0.460	0.678	0.678
Net total transfer, dX	0.391	0.394	0.718	0.714	0.288	0.294	0.778	0.771
Net earnings, dI	0.784	0.788	0.494	0.489	0.621	0.630	0.588	0.578
Disposable income, dD	0.721	0.724	0.570	0.566	0.612	0.618	0.632	0.625
Single women, no children								
Mechanical payment, dM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Net total transfer, dX	−0.103	−0.094	0.059	0.050	−0.254	−0.237	0.149	0.130
Net earnings, dI	−0.186	−0.172	0.105	0.090	−0.459	−0.430	0.265	0.233
Disposable income, dD	−0.129	−0.119	0.072	0.061	−0.316	−0.297	0.180	0.159
Married mothers								
Mechanical payment, dM	0.540	0.540	0.322	0.322	0.540	0.540	0.322	0.322
Net total transfer, dX	0.547	0.557	0.374	0.363	0.560	0.580	0.453	0.430
Net earnings, dI	0.534	0.549	0.206	0.190	0.552	0.582	0.334	0.300
Disposable income, dD	0.559	0.569	0.235	0.225	0.571	0.590	0.318	0.297
Married women, no children								
Mechanical payment, dM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Net total transfer, dX	0.001	0.009	0.026	0.018	0.005	0.019	0.064	0.048
Net earnings, dI	0.001	0.014	0.051	0.036	0.005	0.032	0.124	0.094
Disposable income, dD	0.000	0.008	0.031	0.022	0.002	0.018	0.076	0.058
All women								
Mechanical payment, dM	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Net total transfer, dX	0.836	0.865	1.178	1.146	0.598	0.657	1.447	1.382
Net earnings, dI	1.131	1.180	0.858	0.805	0.719	0.814	1.313	1.207
Tax on the wage change, dR	+0.047	+0.037	−0.056	−0.045	+0.117	+0.097	−0.141	−0.119
Benefits and taxes on entry and exit, dB	−0.028	−0.035	+0.108	+0.116	+0.033	+0.019	+0.037	+0.053
Disposable income, dD	1.151	1.182	0.910	0.876	0.868	0.929	1.209	1.141
All men, disposable income, dD	0.000	+0.053	0.000	−0.057	0.000	+0.215	0.000	−0.240

Notes: Dollars per dollar of mechanical spending, using the policy experiment defined in Section 4.2. Columns (1) to (4) use the substitution elasticity estimated in Watson (2021) and columns (5) to (8) the value used by Rothstein (2010). General equilibrium columns set $\varepsilon_K = 1$. All other baseline parameters are defined in Table 1. Data is from the 1993 March CPS (ASEC supplement).

from Section 4.5. Working is net-taxed at the baseline for 99.8 percent of the employed women I simulate, and the mean difference $a^W - a^N$ is −$6,183 for women without qualifying children and −$7,315 for women with children.

At the baseline substitution elasticity, the EITC draws women into work and reduces spending on existing nonwork benefits, so $dB = -\$0.04$ per mechanical dollar in general equilibrium. The NIT induces some women to leave work and raises that spending, so $dB = +\$0.12$. The resulting MVPFs are 1.04 for the EITC and 0.89 for the NIT; the EITC ranks higher in every column of Table 4.

The incumbent wage-revenue channel, dR, is the term general equilibrium changes most. In partial equilibrium, the entire wage-price effect falls on women, and because their wages decline the government loses revenue on incumbent earnings, $dR = +\$0.05$ per EITC dollar. In general equilibrium, part of that wage change falls on men instead, whose wages rise and whose incumbent earnings generate offsetting revenue, and dR falls to +$0.01. Higher wages for married men contribute −$0.02 to this change in fiscal cost even though I hold their participation fixed. Because $dW = dM + dR$ and $dC = dM + dB + dR$ share the term dR, general equilibrium changes the MVPF much less than either its numerator or its denominator. The EITC's MVPF rises from 1.03 in partial equilibrium to about 1.04 in general equilibrium, while the NIT's remains about 0.89 across these capital-supply cases.

Panel B shows both channels at Rothstein's substitution elasticity. In partial equilibrium, the government loses $0.12 per EITC dollar on incumbent earnings, and the participation response adds a fiscal cost of 3.3 cents per dollar. Closing the model moves part of the wage adjustment onto men, whose wages rise and whose taxed earnings therefore offset revenue, so dR falls to −$0.01 while dB falls to a cost of about $0.02. The EITC's marginal value of public funds moves from 0.971 to 0.985 and the NIT's from 0.959 to 0.946. The differences between the programs are more muted for this parameterization because the participation response is more muted.

Under the NIT, women who leave work raise the marginal product and wages of those who remain. The EITC brings more women into work and lowers wages in those labor markets. The resulting factor-market adjustment moves men's wages in the opposite direction. The participation changes also affect taxes and existing benefits, raising the NIT's fiscal cost and offsetting part of the EITC's cost.

Kleven (2024) questions whether the 1993 expansion identifies an extensive-margin response for single mothers at all. Motivated by this concern, I halve the extensive-margin elasticities of unmarried mothers and hold every other group at its estimate. The EITC's marginal value of public funds falls from 1.04 to 1.01, and the NIT's rises from 0.89 to 0.92. At the baseline substitution elasticity, the EITC still has the higher marginal value of public funds and delivers more disposable income, while the NIT delivers more in net transfers. At $-\rho = 0.30$ the same exercise gives 0.99 for the EITC against 0.96 for the NIT. Appendix E reports how uncertainty in the estimated elasticities carries through to these comparisons.

Table 4: Aggregate income and fiscal accounting

Per $1 of mechanical spending	EITC				NIT			
		General equilibrium				General equilibrium		
	PE	ε_K=0	ε_K=1	ε_K=∞	PE	ε_K=0	ε_K=1	ε_K=∞
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Elastic Substitution $-\rho = 1.8$								
All women: cumulative income								
Net Total Transfer, dX	0.836	0.855	0.865	0.882	1.178	1.158	1.146	1.128
Net Earnings, dI	1.131	1.162	1.180	1.207	0.858	0.824	0.805	0.775
Disposable Income, dD	1.151	1.171	1.182	1.200	0.910	0.888	0.876	0.857
Other recipients								
Men, Net Total Transfer, dX	0.000	+0.048	+0.075	+0.118	0.000	−0.052	−0.081	−0.128
Men, Disposable Income, dD	0.000	+0.033	+0.053	+0.083	0.000	−0.036	−0.057	−0.090
Capital Owners, K dr	—	+0.098	+0.060	0.000	—	−0.106	−0.065	0.000
Government budget								
Mechanical Payment, dM	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Participation externality dB	−0.028	−0.033	−0.036	−0.041	+0.108	+0.114	+0.117	+0.123
Incumbent wage revenue dR	+0.047	+0.025	+0.013	−0.007	−0.056	−0.032	−0.018	+0.003
Net fiscal cost dC = dM + dB + dR	1.020	0.992	0.976	0.952	1.052	1.082	1.099	1.126
Willingness to pay dW = dM + dR	1.047	1.025	1.013	0.993	0.944	0.968	0.982	1.003
MVPF = dW/dC	1.027	1.033	1.037	1.043	0.897	0.895	0.893	0.891
Capital's Retention Share κ	—	0.596	0.363	0.000	—	0.596	0.363	0.000
Panel B. Inelastic Substitution $-\rho = 0.3$								
All women: cumulative income								
Net Total Transfer, dX	0.598	0.653	0.657	0.662	1.447	1.385	1.382	1.376
Net Earnings, dI	0.719	0.808	0.814	0.822	1.313	1.213	1.207	1.198
Disposable Income, dD	0.868	0.926	0.929	0.934	1.209	1.145	1.141	1.135
Other recipients								
Men, Net Total Transfer, dX	0.000	+0.294	+0.312	+0.338	0.000	−0.328	−0.347	−0.376
Men, Disposable Income, dD	0.000	+0.203	+0.215	+0.234	0.000	−0.226	−0.240	−0.260
Capital Owners, K dr	—	+0.052	+0.031	0.000	—	−0.058	−0.035	0.000
Government budget								
Mechanical Payment, dM	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Participation externality dB	+0.033	+0.016	+0.015	+0.014	+0.037	+0.056	+0.057	+0.058
Incumbent wage revenue dR	+0.117	0.000	−0.007	−0.017	−0.141	−0.012	−0.004	+0.007
Net fiscal cost dC = dM + dB + dR	1.150	1.016	1.008	0.996	0.895	1.044	1.052	1.066
Willingness to pay dW = dM + dR	1.117	1.000	0.993	0.983	0.859	0.988	0.996	1.007
MVPF = dW/dC	0.971	0.984	0.985	0.986	0.959	0.947	0.946	0.945
Capital's Retention Share κ	—	0.130	0.078	0.000	—	0.130	0.078	0.000

Notes: Dollars per dollar of mechanical spending, using the policy experiment defined in Section 4.2. Panel A uses the substitution elasticity estimated in Watson (2021) and Panel B the value used by Rothstein (2010). All other baseline parameters are defined in Table 1. Data is from the 1993 March CPS (ASEC supplement).

6 Conclusion

A targeted labor subsidy that affects the labor supply can then affect wages and earnings of both targeted and untargeted workers, potentially in unintended ways that can undermine the goals of the subsidy. I derive the general equilibrium incidence of the subsidy on wages for arbitrary type-specific participation shocks in a model with imperfectly substitutable labor, capital supply, and zero profits. I show how to characterize the direct and spillover effects of the subsidy as a function of elasticities, cost shares, and the policy shock for each worker type. The analysis reveals how the subsidy's incidence is split between targeted workers, untargeted workers, and capital owners. Once the endogenous change in wages and capital returns is derived, I show how to measure other endogenous changes in the economy, including labor supply, capital supply, tax revenue, and the marginal value of public funds.

I apply the model to a small counterfactual increase in the 1992 EITC and an equal-cost NIT. The direct effect of the EITC is to lower wages in the labor markets where it raises participation, while the spillover effects of bringing more workers into the labor force reverse some of the wage decline; an NIT has the opposite effects. Untargeted workers in unsubsidized labor markets, like high income workers, see wages rise under the EITC and fall under the NIT; however, untargeted workers who share a labor market with recipients, like single women without children, face the reverse. Using my baseline parameters, the NIT delivers $0.28 more in net total transfers to women per dollar of mechanical spending. Women's disposable income, which also accounts for changes in participation and other taxes and transfers, rises by $1.18 per dollar under the EITC against $0.88 under the NIT. The EITC has a higher marginal value of public funds, 1.04 against 0.89, because it draws more women into work and lowers its net fiscal cost through the existing tax and transfer system. This calibration demonstrates both the importance of general equilibrium forces when comparing programs and how a few sufficient statistics can be used to calculate incidence parameters.

Disclosures

Paper: Is the NIT Better Than the EITC? Targeted Transfers in General Equilibrium
Author: C. Luke Watson

I have no financial arrangements that might give rise to conflicts of interest with respect to this research. No interested party provided financial or in-kind support, and I hold no relevant officer, director, or board positions. Neither the Federal Deposit Insurance Corporation nor any other party had the right to review or approve this paper before circulation. The research received no FDIC resources.

References

Agrawal, David R., and William H. Hoyt. 2019. "Pass-Through in a Multiproduct World." Working paper, July. SSRN 3173180.

Azmat, Ghazala. 2019. "Incidence, Salience, and Spillovers: The Direct and Indirect Effects of Tax Credits on Wages." *Quantitative Economics* 10(1): 239–273.

Bastian, Jacob, and Katherine Michelmore. 2018. "The Long-Term Impact of the Earned Income Tax Credit on Children's Education and Employment Outcomes." *Journal of Labor Economics* 36(4): 1127–1163.

Dahl, Gordon B., and Lance Lochner. 2012. "The Impact of Family Income on Child Achievement: Evidence from the Earned Income Tax Credit." *American Economic Review* 102(5): 1927–1956.

Dickert-Conlin, Stacy, and Scott Houser. 2002. "EITC and Marriage." *National Tax Journal* 55(1): 25–40.

Eissa, Nada, and Hilary Williamson Hoynes. 2004. "Taxes and the Labor Market Participation of Married Couples: The Earned Income Tax Credit." *Journal of Public Economics* 88(9–10): 1931–1958.

Feenberg, Daniel, and Elizabeth Coutts. 1993. "An Introduction to the TAXSIM Model." *Journal of Policy Analysis and Management* 12(1): 189–194.

Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, J. Robert Warren, and Michael Westberry. 2021. *Integrated Public Use Microdata Series, Current Population Survey*: Version 9.0 [dataset]. Minneapolis, MN: IPUMS.

Ruggles, Steven, Sarah Flood, Matthew Sobek, Daniel Backman, Grace Cooper, Stephanie Richards, Renae Rodgers, and Megan Schouweiler. 2024. *IPUMS USA*: Version 15.0 [dataset]. Minneapolis, MN: IPUMS.

Friedman, Milton. 1962. *Capitalism and Freedom*. Chicago: University of Chicago Press.

Fuest, Clemens, Andreas Peichl, and Sebastian Siegloch. 2018. "Do Higher Corporate Taxes Reduce Wages? Micro Evidence from Germany." *American Economic Review* 108(2): 393–418.

Fullerton, Don, and Gilbert E. Metcalf. 2002. "Tax Incidence." In *Handbook of Public Economics*, Vol. 4, ed. Alan J. Auerbach and Martin Feldstein, 1787–1872. Amsterdam: North-Holland.

Ghatak, Maitreesh, and François Maniquet. 2019. "Universal Basic Income: Some Theoretical Aspects." *Annual Review of Economics* 11: 895–928.

Harberger, Arnold C. 1962. "The Incidence of the Corporation Income Tax." *Journal of Political Economy* 70(3): 215–240.

Hardy, Bradley, Charles Hokayem, and James P. Ziliak. 2022. "Income Inequality, Race, and the EITC." *National Tax Journal* 75(1): 149–167.

Hartley, Robert Paul, and Irwin Garfinkel. 2023. "Income Guarantee Policy Design: Implications for Poverty, Income Distribution, and Tax Rates." *National Tax Journal* 76(2): 317–346.

Hendren, Nathaniel, and Ben Sprung-Keyser. 2020. "A Unified Welfare Analysis of Government Policies." *Quarterly Journal of Economics* 135(3): 1209–1318.

Hoynes, Hilary W., and Jesse Rothstein. 2019. "Universal Basic Income in the United States and Advanced Countries." *Annual Review of Economics* 11: 929–958.

Jones, Damon, and Ioana Marinescu. 2022. "The Labor Market Impacts of Universal and Permanent Cash Transfers: Evidence from the Alaska Permanent Fund." *American Economic Journal: Economic Policy* 14(2): 315–340.

Kasy, Maximilian. 2018. "Why a Universal Basic Income Is Better Than Subsidies of Low-Wage Work." Data for Progress Working Paper 2.

Kasy, Maximilian. 2022. "Who Wins, Who Loses? Identification of Conditional Causal Effects, and the Welfare Impact of Changing Wages." *Journal of Econometrics* 226(1): 155–170.

Kearney, Melissa S., and Magne Mogstad. 2019. "Universal Basic Income (UBI) as a Policy Response to Current Challenges." Report, Aspen Institute Economic Strategy Group.

Kleven, Henrik. 2024. "The EITC and the Extensive Margin: A Reappraisal." *Journal of Public Economics* 236: 105135.

Kotlikoff, Laurence J., and Lawrence H. Summers. 1987. "Tax Incidence." In *Handbook of Public Economics*, Vol. 2, ed. Alan J. Auerbach and Martin Feldstein, 1043–1092. Amsterdam: North-Holland.

Lee, David, and Emmanuel Saez. 2012. "Optimal Minimum Wage Policy in Competitive Labor Markets." *Journal of Public Economics* 96(9–10): 739–749.

Leigh, Andrew. 2010. "Who Benefits from the Earned Income Tax Credit? Incidence among Recipients, Coworkers and Firms." *B.E. Journal of Economic Analysis & Policy* 10(1).

Meyer, Bruce D., and Dan T. Rosenbaum. 2001. "Welfare, the Earned Income Tax Credit, and the Labor Supply of Single Mothers." *Quarterly Journal of Economics* 116(3): 1063–1114.

Mieszkowski, Peter. 1972. "The Property Tax: An Excise Tax or a Profits Tax?" *Journal of Public Economics* 1(1): 73–96.

Moffitt, Robert A. 2003. "The Negative Income Tax and the Evolution of U.S. Welfare Policy." *Journal of Economic Perspectives* 17(3): 119–140.

Nichols, Austin, and Jesse Rothstein. 2016. "The Earned Income Tax Credit." In *Economics of Means-Tested Transfer Programs in the United States*, Vol. 1, ed. Robert A. Moffitt, 137–218. Chicago: University of Chicago Press.

Pepin, Gabrielle, and Yulya Truskinovsky. 2026. "Not Just for Kids: Child and Dependent Care Credit Benefits for Adult Care." *National Tax Journal* 79(2): 333–361.

Rothstein, Jesse. 2010. "Is the EITC as Good as an NIT? Conditional Cash Transfers and Tax Incidence." *American Economic Journal: Economic Policy* 2(1): 177–208.

Sachs, Dominik, Aleh Tsyvinski, and Nicolas Werquin. 2020. "Nonlinear Tax Incidence and Optimal Taxation in General Equilibrium." *Econometrica* 88(2): 469–493.

Saez, Emmanuel. 2002. "Optimal Income Transfer Programs: Intensive versus Extensive Labor Supply Responses." *Quarterly Journal of Economics* 117(3): 1039–1073.

Suárez Serrato, Juan Carlos, and Owen Zidar. 2016. "Who Benefits from State Corporate Tax Cuts? A Local Labor Markets Approach with Heterogeneous Firms." *American Economic Review* 106(9): 2582–2624.

Vivalt, Eva, Elizabeth Rhodes, Alexander W. Bartik, David E. Broockman, Patrick Krause, and Sarah Miller. 2024. "The Employment Effects of a Guaranteed Income: Experimental Evidence from Two U.S. States." NBER Working Paper 32719.

Watson, C. Luke. 2021. "The General Equilibrium Incidence of the Earned Income Tax Credit." Working paper, September 16.

U.S. House of Representatives, Committee on Ways and Means. 1998. *1998 Green Book: Background Material and Data on Programs within the Jurisdiction of the Committee on Ways and Means*. Section 7, "Aid to Families with Dependent Children." Committee Print WMCP 105–7. Washington, DC: U.S. Government Printing Office.

U.S. Bureau of Economic Analysis. 2026. "National Income and Product Accounts: 1992 Income Components." September 30 vintage, accessed via Federal Reserve Economic Data. Series GDICOMPA, GDINOSA, GDICONSPA, and A041RC1A027NBEA.

Urban Institute. 2020. "TRIM3 Microsimulation Model." Project website, accessed January 13, 2020. `http://trim3.urban.org`.

A Welfare and fiscal accounting

This appendix collects the derivations behind (40) and (43), the welfare measure that corresponds to them, and the conventions and limitations of the accounting reported in Table 4.

A.1 Private welfare

For an eligible person, the first-order change in average indirect utility, before changes in capital income, is:

$$\mathrm{d}V_{eg} = p_{eg}\left(m_{eg}\mathrm{d}w_e + \mathrm{d}a^W_{eg}\right) + (1 - p_{eg})\,\mathrm{d}a^N_{eg} - \mathrm{d}\mathcal{T}, \qquad p_{eg} \equiv L_{eg}/N_{eg}, \tag{44}$$

Here $\mathrm{d}a^W_{eg}$ and $\mathrm{d}a^N_{eg}$ are the reform's payments with and without the potential recipient's own work, holding other tax-unit earnings fixed. The simulated NIT can pay working families, and an EITC payment can remain when a married woman does not work if her husband earns income. An ineligible group has $\mathrm{d}V_{eg} = p_{eg}m_{eg}\mathrm{d}w_e - \mathrm{d}\mathcal{T}$.

These are envelope results. A person at the participation threshold is indifferent, so the change in the set of workers contributes no additional first-order term to private indirect utility. Average indirect utility differs from net total transfer in (37) because existing taxes and transfers alter the value of wage changes, financing reduces private resources, and participation changes involve work costs. Capital owners receive a first-order income change of $rK(1 + \varepsilon_K)\widehat{r}$ and a surplus change of $K\mathrm{d}r = rK\widehat{r}$, the second being the object Section 3.5 assigns to them. Because the 1992 baseline taxes labor, a marginal reform's efficiency effect is first order rather than second, which is the $\mathrm{d}B$ term of (40). A welfare ranking of two reforms still requires an explicit social objective and ownership data.

A.2 The budget and the MVPF

Differentiating the government budget (11) at the baseline gives $\mathrm{d}C = \mathrm{d}M + \mathrm{d}B + \mathrm{d}R$. The envelope theorem gives unfinanced aggregate willingness to pay $\mathrm{d}W = \mathrm{d}M + \sum_{eg} L_{eg}m_{eg}\mathrm{d}w_e + K\mathrm{d}r$, and zero profits imply $\sum_{eg} L_{eg}\mathrm{d}w_e + K\mathrm{d}r = 0$, hence $\mathrm{d}W = \mathrm{d}M + \mathrm{d}R$ and $\text{MVPF} = (\mathrm{d}M + \mathrm{d}R)/(\mathrm{d}M + \mathrm{d}B + \mathrm{d}R)$.

A.3 Two limitations

First, marginal entrants are assigned their cell's average baseline work–nonwork payment difference, as in Rothstein (2010). If entrants differ systematically from incumbents within a cell (e.g., within-cell differences in labor productivity), then $\mathrm{d}B$ is mismeasured. Second, $\mathrm{d}R$ uses income-tax and payroll marginal rates, as I do not observe the marginal phase-out rates of AFDC and food stamps. The same derivative sets m_{eg}, so it also fixes the share of a wage change incumbents keep in (39). Substituting the AFDC and food stamp average rate as a proxy for the unobserved phase-out rate more than doubles $\mathrm{d}R$ under the EITC, from \$0.013 to \$0.031 per dollar of mechanical spending, but changes the marginal value of public funds by less than 0.001 under either reform.

B Data construction

The labor sample is the 1993 March CPS, which reports income and work for calendar year 1992 (Flood et al., 2021). Excluding group quarters and households with more than ten members leaves 154,425 persons, of whom 116,082 are aged 16 or older. Each adult is assigned to one of 144 labor types by sex, four education categories, nine age groups, and marital status, and within a type to a child-status cell; 367 of those cells are observed. Type cost shares use the weighted positive-earnings bill of $3.042 trillion, 65.9 percent of it men's and 34.1 percent women's. That bill includes positive self-employment earnings, which is what the labor share of Section 4.1 is constructed to match.

B.1 The policy sample

The two simulated schedules are computed for 49,740 women aged 16–65, each matched to her labor type in the full sample. These women hold 96.8 percent of the female positive-earnings bill and 96.45 percent of female paired hours. Each type's baseline policy exposure averages their average-tax-rate changes over the weighted count of workers in the policy sample and divides by the weighted count of all workers in that type, so adults outside the policy sample carry a zero direct shock rather than an imputed one. Counting workers rather than hours is what $\theta_{eg} = L_{eg}/L_e$ requires, and it is what makes the demographic employment rows of Table 2 aggregate to the labor response that clears the factor market. Child status is observed within a narrower sample that excludes households whose youngest member is older than 65.

B.2 Baseline tax and transfer positions

Baseline federal and state income tax liabilities come from TAXSIM (Feenberg and Coutts, 1993), employee payroll taxes use the 1992 caps, and the EITC uses the 1992 statutory parameters. AFDC and food stamp amounts come from the Urban Institute's TRIM3 microsimulation (Urban Institute, 2020). Counterfactual taxes and benefits assume for married couples that the woman adjusts labor supply.

B.3 The two simulated schedules

Table B.1 gives the parameters of both reforms. Both reforms are parameterized to have $100 million in mechanical spending at baseline employment.

The EITC baseline is the 1992 statutory credit, and the reform multiplies the maximum credit by 1.0088 for one-child and two-or-more-child tax units alike. It holds the phase-in kink at $7,520 and the phase-out start at $11,840, so the phase-in rate rises and the breakeven extends from $22,370 to $22,466. The phase-out rate is unchanged, which makes the experiment an increase in the credit's level rather than a change in the rate at which it is withdrawn. The NIT follows the design in Rothstein (2010). The benefit depends on tax-unit earned income and the number of qualifying

children. The ratio of the two-child to one-child benefit matches the ratio of the EITC's maximum credits, and the schedule reaches zero at the 1992 EITC's breakeven of $22,370.

Figure B.1 compares the shapes of the 1992 EITC and the NIT, expressing each as a share of its own maximum payment. Figure B.2 plots the additional payment under each reform in dollars against tax-unit earned income for tax units with one qualifying child. The EITC increment rises from zero to $11.70, stays roughly flat through the existing credit's phase-out range, and disappears at the new breakeven; the NIT pays $11.26 at zero earnings and declines throughout. The same pattern holds at slightly higher amounts for tax units with two or more children. I compute each cell's $d\tau_{eg}$ in (15) as the discrete difference between the schedules' average tax rates. The mapping from the shock vector to wages, employment, and the rental rate is exactly linear in that vector.

Table B.1: The two simulated schedules

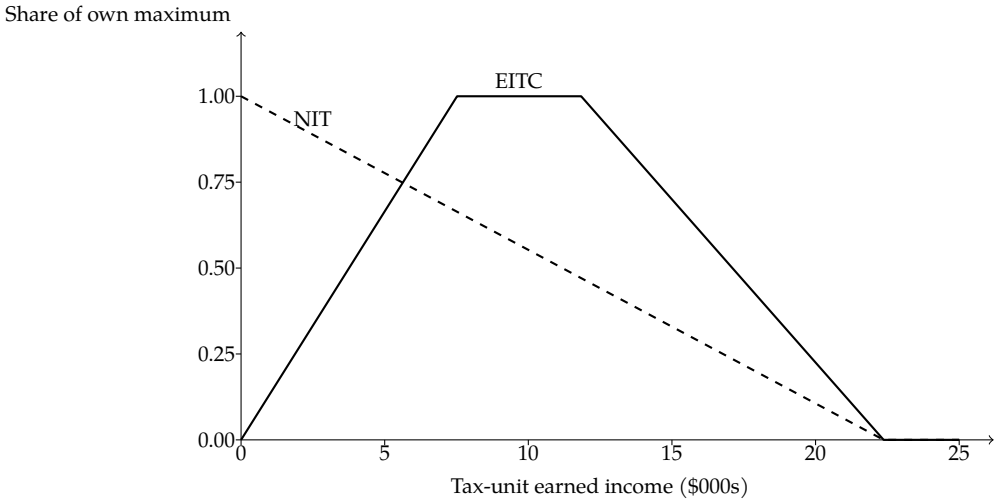
	One qualifying child		Two or more	
	(1)	(2)	(3)	(4)
Panel A. EITC: (1) and (3) the 1992 statute, (2) and (4) the reform				
Phase-in rate	0.1760	0.1776	0.1840	0.1857
Maximum credit ($)	1,324.00	1,335.70	1,384.00	1,396.23
Earnings at maximum credit ($)	7,520	7,520	7,520	7,520
Phase-out start ($)	11,840	11,840	11,840	11,840
Phase-out rate	0.1257	0.1257	0.1314	0.1314
Breakeven ($)	22,370	22,466	22,370	22,466
Panel B. NIT: (1) and (3) the design, (2) and (4) after the spending scalar				
Benefit at zero earnings ($)	1,000.00	11.26	1,045.32	11.78
Phase-out rate	0.04470	0.00050	0.04673	0.00053
Breakeven ($)	22,370	22,370	22,370	22,370

Notes: Dollar amounts are 1992 nominal. Panel A columns (1) and (3) are the baseline 1992 statutory EITC parameters. The reform multiplies the maximum credit by 1 + 0.0088336 for both child counts, holds the two kinks and the phase-out rate fixed, and so raises the phase-in rate and extends the breakeven. Panel B follows Rothstein (2010), such that the benefit falls linearly with tax-unit earned income, the payment is zero at the 1992 EITC's breakeven, and total mechanical spending matches the EITC's. Columns (2) and (4) apply the scalar 0.0112649 that equalizes that spending. Both reforms cost $100 million evaluated at baseline employment.

B.4 Factor shares

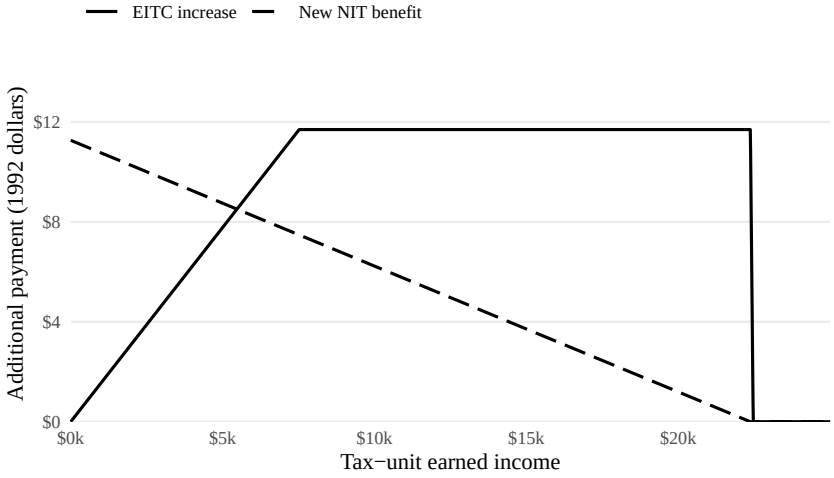
The 1992 labor share uses all-economy BEA factor income (U.S. Bureau of Economic Analysis, 2026) rather than a private-business series, to match the all-worker CPS denominator. The equal-compensation-per-hour alternative pays the 18.057 billion weighted annual hours of positive-earning unincorporated self-employed persons the same aggregate compensation per hour as the 217.509 billion hours of other positive earners. That imputation assigns $304.782 billion of proprietors' income to labor and gives $s_L = 0.6681$, while assigning none of it to labor gives 0.6169. Both alternatives vary only the macro share and hold the type earnings weights fixed; a fuller alternative would also reallocate mixed earnings across types.

Figure B.1: The baseline EITC and the NIT



Notes: Tax units with one qualifying child. Each schedule is drawn as a share of its own largest payment, since the two reforms have equal aggregate mechanical cost rather than equal maximum benefits. The solid line shows the 1992 statutory EITC, which phases in to its maximum at $7,520, holds the maximum through $11,840, and phases out to zero at $22,370. The dashed NIT is largest at zero earnings and declines linearly to zero at that same breakeven. Figure B.2 shows the reforms' additional payments in dollars.

Figure B.2: Additional payments under the EITC expansion and NIT



Notes: Each line gives the payment added by a reform, in 1992 dollars, at the indicated tax-unit earned income for a tax unit with one qualifying child. The solid line subtracts the 1992 EITC from the post-reform credit; the dashed line is the new NIT payment. Both reforms add $100 million at baseline employment, although payments differ at a given earnings level. The EITC curve connects the schedule's kink points and sets adjusted gross income equal to earned income; the simulation applies the statutory larger-of rule above the phase-in kink to each tax unit. Table B.1 gives the schedule parameters.

C Comparison to Rothstein (2010)

This appendix separates sample and equilibrium effects under the parameterization of Rothstein (2010). Table C.1 reproduces his published comparison and reports partial- and general-equilibrium results on both samples.

C.1 Differences in sample construction

The factor-market closure and elasticity parameters differ from Rothstein's, and the samples also differ. Rothstein (2010) keeps one woman per family in the 1993 March CPS, keeping the reference person of each family or subfamily, a spouse of that reference person, and women who live without relatives. I use the universe of all adults aged 16 or older, and simulate the schedules and participation responses for those aged 16 to 65.

His sample has two implications for the measured incidence of the EITC. First, it does not retain women who are neither a family or subfamily head nor a head's spouse, and so drops many single women without children.[19] Second, the count of dependents in each unit includes every member of the family who meets the age and schooling test for the EITC, but without a relationship test. This *inflates* the number of women recorded as having children, almost entirely among the young. In addition, the sample appears to inadvertently count the reference person herself if her age is below 24. Every unmarried woman under 24 in his sample is recorded as having a qualifying child, and in 99 percent of those cases the oldest assigned dependent is her own age. For example, consider a 20 year old unmarried woman who heads her own family record. She meets the age test for a dependent, so she is counted as her own qualifying child and enters the sample as an unmarried woman with a child, where I count her as an unmarried woman without children.

Overall, the two sample choices leave my sample with approximately 25 percent fewer single mothers, from 16 percent of women's annual hours to 12 percent, and correspondingly more single women without children. Within unmarried women, single mothers hold 43 percent of working hours in his sample but only 28 percent in mine, and roughly 7 points of the 15 point difference is from the dependent count and the remainder due to women that are dropped from his sample. The composition of married women also changes but not substantially, with married mothers holding 39 percent of married women's working hours in his sample and 33 percent in mine.

C.2 Differences in policy comparisons

Table C.1 uses Rothstein's elasticity parameters to compare the two samples. Column (1) reports his published Table 5, and column (2) reproduces those values on his sample. Column (3) applies the same partial equilibrium calculation to my sample. Columns (4) and (5) apply the general equilibrium formula to the two samples. Columns (6) through (10) repeat the four calculations for the NIT.

[19] For examples of women not retained, consider adult daughters who are not coded as their own subfamily, or co-resident grandmothers, sisters, and/or aunts.

Sample construction changes the distribution across groups more than the aggregate after-tax-income results. Comparing columns (2) and (3), the EITC gain for single mothers rises from \$0.58 to \$0.65 per dollar, while in columns (7) and (8) the NIT gain falls from \$0.61 to \$0.54. Single women without children lose more under the EITC and gain more under the NIT on my sample; the all-women amounts remain \$0.73 for the EITC and move from \$1.39 to \$1.37 for the NIT.

Under Rothstein's elasticity parameters and after-tax income measure in Table C.1, which Section 4.5 calls net earnings (denoted $\mathrm{d}I_{eg}$), the EITC delivers more to single mothers than the NIT in my sample: \$0.65 versus \$0.54 per mechanical dollar in partial equilibrium, and \$0.66 versus \$0.52 in general equilibrium. This reverses his published partial equilibrium ranking for that group: \$0.58 versus \$0.61.

The aggregate NIT advantage persists in every column. The NIT pays some nonworking families directly, and single women without children gain from higher wages when mothers leave the labor force. As in the main analysis, this wage gain comes with lower employment and output.

Table C.1 also reports the rest of the accounting of Section 4.5. Because his calibration uses the same labor supply elasticity, 0.75, for all women, the EITC moves many more women into work than my estimates imply. Once existing taxes and benefits respond, the NIT delivers more disposable income ($\mathrm{d}D$) for women as a group: \$0.81 of disposable income under the EITC against \$1.21 under the NIT. However, as in the main analysis, the MVPF favors the EITC, 1.12 against 0.89 in columns (5) and (10).

Table C.1: Comparison with Rothstein (2010)

	EITC					NIT				
		Partial Eq.		General Eq.			Partial Eq.		General Eq.	
Per $1 of mechanical spending	Published (1)	Replication (2)	Full Sample (3)	Replication (4)	Full Sample (5)	Published (6)	Replication (7)	Full Sample (8)	Replication (9)	Full Sample (10)
Single mothers										
Mechanical payment, dM	—	0.55	0.46	0.55	0.46	—	0.67	0.68	0.67	0.68
Net total transfer, dX	—	0.24	0.29	0.24	0.30	—	0.85	0.80	0.84	0.79
Net earnings, dI	0.58	0.58	0.65	0.59	0.66	0.61	0.61	0.54	0.60	0.52
Disposable income, dD	—	0.51	0.53	0.51	0.54	—	0.67	0.62	0.66	0.61
Single women, no children										
Mechanical payment, dM	—	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00
Net total transfer, dX	—	−0.23	−0.27	−0.22	−0.25	—	0.17	0.20	0.15	0.18
Net earnings, dI	−0.43	−0.43	−0.50	−0.41	−0.47	0.30	0.30	0.37	0.28	0.33
Disposable income, dD	—	−0.30	−0.34	−0.28	−0.33	—	0.21	0.25	0.19	0.23
Married mothers										
Mechanical payment, dM	—	0.45	0.54	0.45	0.54	—	0.33	0.32	0.33	0.32
Net total transfer, dX	—	0.59	0.59	0.61	0.60	—	0.47	0.45	0.45	0.43
Net earnings, dI	0.49	0.49	0.55	0.52	0.58	0.35	0.35	0.33	0.31	0.28
Disposable income, dD	—	0.48	0.55	0.50	0.57	—	0.35	0.33	0.33	0.31
Married women, no children										
Mechanical payment, dM	—	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00
Net total transfer, dX	—	0.05	0.02	0.06	0.03	—	0.06	0.07	0.05	0.06
Net earnings, dI	0.09	0.09	0.03	0.11	0.06	0.12	0.12	0.14	0.09	0.10
Disposable income, dD	—	0.06	0.02	0.07	0.03	—	0.07	0.09	0.05	0.07
All women										
Mechanical payment, dM	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Net total transfer, dX	0.64	0.64	0.63	0.69	0.68	1.55	1.55	1.53	1.48	1.46
Net earnings, dI	0.73	0.73	0.73	0.81	0.82	1.39	1.39	1.37	1.27	1.25
Tax on the wage change, dR	—	0.09	0.11	0.07	0.09	—	−0.17	−0.17	−0.15	−0.15
Benefits and taxes, dB	—	−0.07	−0.08	−0.08	−0.10	—	0.09	0.10	0.11	0.12
Disposable income, dD	—	0.75	0.76	0.80	0.81	—	1.31	1.29	1.23	1.21
MVPF, whole economy	—	1.069	1.080	1.101	1.116	—	0.901	0.896	0.896	0.891

Notes: Entries are dollars per dollar of mechanical spending. All columns use the parameters from Rothstein (2010), Table 5: a 0.75 extensive-margin response for every woman, no hours response, and $-\rho = 0.3$. Columns (1) and (6) report values from the original paper. The "Replication" columns use the sample of Rothstein (2010) while the "Full Sample" columns use the sample of Section 4.1.

D Estimating the elasticities

The incidence formulas take two sets of parameters, the extensive-margin labor supply elasticities ε_d^L and the substitution elasticity ρ. I estimate both here using variation in EITC policies across time and across states. Every tax variable and every instrument is an EITC parameter computed for a population held fixed at its 1990 composition, so a cell's tax variables move when the statute moves and *not* when its members change their behavior. The two instrument families then separate the two elasticities: a market's own statutory change shifts its own supply, while statutory changes in substitute markets shift its wage through labor demand. Watson (2021) develops this design at greater length and reports robustness specifications I do not repeat here.[20]

D.1 Data

Labor market quantities and prices come from the 1990 to 2000 Current Population Survey Outgoing Rotation Group samples, pooled from monthly files into annual cells (Flood et al., 2021). Labor supply is total hours worked divided by total potential workers. The price is the real effective wage, weekly earnings divided by usual weekly hours.

The instruments come from the 1990 Census five percent sample (Ruggles et al., 2024). For every tax year I compute EITC parameters for that fixed population through TAXSIM (Feenberg and Coutts, 1993). The main parameter is the EITC average-tax-rate measure used in Watson (2021):

$$\tau_i^{\text{EITC}} = \frac{\mathsf{EITC}_i(\text{actual}) - \mathsf{EITC}_i(\text{no work})}{\text{earnings}_i},$$

which treats a larger credit when working as a positive subsidy.[21] I also use the share of a cell eligible for the credit and the year-over-year change in the credit amount at fixed earnings. Holding the population at its 1990 composition means the variation in these parameters comes from statutory reforms over time and across states interacted with initial exposure, and *not* from behavioral responses to those reforms.

D.2 Sample

A skill type is an education category, an age group, and marital status, which gives 72 types from four education levels and nine age groups. A labor market is a skill type in a state and year, and a demographic group splits each market by child status. I estimate on women. Keeping cells with at least five wage observations leaves 47,339 demographic-state-year cells in 142 demographic groups. The substitution equation uses the 19,501 market-state-year cells that survive differencing against a base market, in 63 labor markets.

[20] Those include alternative outcome measures, cell-size and weighting rules, control-function estimates, and instrument subsets.

[21] Note, the sign is opposite to the EITC component of the model's average tax rate in (3); the estimating equations below follow the source paper's convention.

D.3 Instruments

I build two families of instruments from the simulated parameters. The own-market instruments average them within a demographic group, state, and year, and measure a market's direct exposure to the reforms. The substitute-market instruments are leave-out averages over the other markets in the same state and year, taken once across education levels and once across age groups.

The two families separate the two elasticities. Conditional on its own tax change, a market's wage still varies because substitute markets' supply changed, which identifies the supply elasticity. Conditional on those spillovers, a market's own tax change shifts its own supply, which identifies the substitution elasticity. Each instrument enters interacted with the same indicators g_d that multiply the wage, so each instrument contributes one term for every endogenous wage term. Nine instrument families interacted this way give 63 excluded instruments for the seven endogenous terms of (45).[22]

D.4 Estimating equations

I let the wage coefficient vary with education and family type, so that one regression delivers all sixteen supply elasticities:

$$\ln L_{dst} = \varepsilon_1 \ln W_{dst} + [\ln W_{dst} \cdot \mathsf{g}_d]\,\boldsymbol{\varepsilon}_g + \beta_1 \tau_{dst} + \beta_2 \ln P_{dst} + \alpha_d + \alpha_{st} + \alpha_{qt} + \alpha_{lt}^{\mathsf{mw}} + \alpha_{kst}^{\mathsf{w}} + u_{dst}, \quad (45)$$

where g_d are education and family-type indicators, τ_{dst} is the market's own simulated average tax rate, and $\ln P_{dst}$ is log cell population. The elasticity for a market is $\varepsilon_d^L = \varepsilon_1 + \varepsilon_{g(d)}$. The indicators g_d are three education dummies and three family-type dummies, entered additively, and the sixteen elasticities in Table D.1 are from the linear combinations of groups (rather than estimating each demographic group separately). The fixed effects are demographic group, state-year, initial wage quintile by year, deciles of the 1990 share of workers at or below the state minimum wage by year, and state welfare waivers by parental status. They absorb demand and supply shocks, including time-invariant tastes for work, state policy changes common to all groups, mean reversion and skill-biased technical change, limits on price adjustment where the minimum wage binds, and the welfare reforms that preceded PRWORA.

For the substitution elasticity I difference every variable against the unmarried, least-educated women's market in the same state, year, and age group, writing $\tilde{x}_{est} = x_{est} - x_{0st}$:

$$\widetilde{\ln L}_{est} = \rho\,\widetilde{\ln W}_{est} + \alpha_2 \tilde{Z}_{est} + \alpha_3 \widetilde{\ln P}_{est} + \alpha_{et} + \alpha_{st} + \alpha_{qt} + v_{est}. \quad (46)$$

The market fixed effect α_{et} pools married and unmarried markets and interacts education with age and with year. Including marital status there absorbs too much of the instruments' variation and leaves the covariance matrix near-singular. I estimate (45) by two-step efficient GMM and (46) in both a just-identified and an overidentified form, clustering on demographic groups and on labor

[22] Watson (2021) also reports control function estimates as an alternative to the full instrument set.

markets respectively.

D.5 Results

Table D.1: Extensive-margin labor supply elasticities, ε_d^L

	Without children		With children	
	Unmarried	Married	Unmarried	Married
Less than high school	1.16	1.36	0.82	0.89
	(0.07)	(0.07)	(0.08)	(0.08)
High school	0.85	1.05	0.51	0.58
	(0.06)	(0.05)	(0.06)	(0.06)
Some college	0.82	1.02	0.48	0.55
	(0.05)	(0.05)	(0.05)	(0.05)
College degree	0.53	0.73	0.19	0.26
	(0.05)	(0.04)	(0.06)	(0.05)

Notes: Two-step efficient GMM on 47,339 demographic-state-year cells, 1990–2000, weighted by the number of wage observations in the cell. Standard errors in parentheses, clustered by 142 demographic groups. Each entry is the sum of the wage coefficient and its education and family-type interactions.

Table D.2: Substitution elasticity across labor markets, ρ

	(1)	(2)
ρ	-1.81	-1.58
	(0.29)	(0.44)
Weak-IV robust interval	[-2.46, -1.27]	[-2.21, -1.56]
Hansen J (p-value)	—	7.34 (0.025)
Instruments	1	3
Observations	19,501	19,501

Notes: Column (1) is just identified on the relative EITC average tax rate and estimated by two-stage least squares; column (2) adds the relative share receiving the credit and the relative mean credit amount and uses two-step GMM. Standard errors in parentheses, clustered by 63 labor markets. Intervals invert the Anderson–Rubin test.

Table D.1 reports the sixteen supply elasticities. Responsiveness falls with education, mothers are less responsive than women without children, and married women are more responsive than unmarried women. The estimate for unmarried mothers with less than a high school education is 0.82, against 0.75 in Rothstein (2010) and 0.83 in Meyer and Rosenbaum (2001). My estimates for married women are larger than the 0.27 in Eissa and Hoynes (2004) in every education group but the college educated with children, who are at 0.26.

Table D.2 reports the substitution elasticity. Column (1) is just identified, and its weak-instrument robust interval for ρ is $[-2.46, -1.27]$. Column (2) adds two instruments. Both intervals exclude Rothstein's -0.3, and I take $-\rho = 1.8$ from column (1) as the baseline.

While I use the just-identified specification as the baseline estimate, Hansen's J test rejects the

overidentifying restrictions in column (2) of Table D.2 at the five percent level. Still, the point estimates and weak IV robust confidence intervals are similar. Changing the cell-size screen moves the estimate toward more elastic substitution. At the five-observation screen I use throughout, ρ is -1.81 on 19,501 cells; at three observations it is -2.08 on 25,503 cells, and with no screen it is -2.15 on 29,604 cells.

E Uncertainty in the estimated elasticities

The results in Section 5 use point estimates of the labor supply and substitution elasticities. Here I draw those parameters from their estimated distributions and recalculate the incidence of each reform.

For the labor supply elasticities, I draw the seven wage coefficients of (45) from a multivariate normal centered at the point estimates, with the clustered covariance matrix the two-step estimation implies for them. I map each draw through the contrasts to the sixteen cells rather than drawing the sixteen directly, because their covariance has rank seven: the cells are linear combinations of the seven coefficients, not sixteen free parameters. For ρ, I draw it from a normal distribution centered at the just-identified estimate with its clustered standard error as the standard deviation, independently of the supply coefficients. Each comparison of the two reforms uses the same parameters for both.

Table E.1 reports the resulting intervals. The marginal values of public funds are tightly determined and do not overlap. The EITC lies in $[1.028, 1.045]$ while the NIT is in $[0.878, 0.911]$ in general equilibrium. The GE capital-price amount is positive under the credit and negative under the transfer throughout the displayed intervals.

I run the paired policy comparison on both cash measures, because Section 5 shows that they need not rank the reforms the same way. On net total transfer, the NIT's advantage survives the draws. At the unrounded point estimates it delivers \$0.279 more than the EITC per mechanical dollar in general equilibrium. Evaluating both policies under the same parameter draw gives a fifth-to-ninety-fifth percentile interval of $[0.225, 0.350]$ among the 1,000 draws, and the NIT delivers more in every one of them.

On disposable income, I find the reverse ranking: the EITC delivers more to women in every draw in general equilibrium. The NIT-minus-EITC difference is $-\$0.306$ at the general equilibrium point estimates, with an interval of $[-0.373, -0.226]$; in partial equilibrium it is $-\$0.242$, with an interval of $[-0.313, -0.151]$, and the EITC leads in 99.9 percent of draws. Net total transfer excludes the earnings of women whose participation changes. Disposable income counts those earnings net of benefits forgone and counts incumbents' wage changes net of tax. Counting those earnings reverses the income ranking, while the marginal value of public funds favors the EITC more sharply. These intervals reflect uncertainty in the estimated labor supply and substitution elasticities, holding the other calibration parameters fixed.

Table E.1: Incidence per mechanical dollar, with elasticity uncertainty

Per $1 of mechanical spending	PE (1)	GE (2)
Panel A. EITC		
All women		
Net total transfer, dX	0.837 [0.793, 0.871]	0.866 [0.831, 0.893]
Disposable income, dD	1.151 [1.104, 1.191]	1.182 [1.137, 1.222]
Other recipients		
Men, net total transfer, dX	0.000 [0.000, 0.000]	0.074 [0.052, 0.107]
Capital owners, K dr	— —	0.060 [0.048, 0.070]
Government budget		
Participation externality dB	−0.028 [−0.036, −0.018]	−0.036 [−0.044, −0.027]
MVPF = dW/dC	1.027 [1.017, 1.036]	1.037 [1.028, 1.045]
Panel B. NIT		
All women		
Net total transfer, dX	1.177 [1.140, 1.224]	1.145 [1.117, 1.182]
Disposable income, dD	0.909 [0.875, 0.954]	0.876 [0.846, 0.913]
Other recipients		
Men, net total transfer, dX	0.000 [0.000, 0.000]	−0.081 [−0.116, −0.055]
Capital owners, K dr	— —	−0.065 [−0.075, −0.053]
Government budget		
Participation externality dB	0.108 [0.088, 0.126]	0.117 [0.097, 0.136]
MVPF = dW/dC	0.897 [0.882, 0.915]	0.893 [0.878, 0.911]
Panel C. Paired policy comparison		
NIT minus EITC, all women		
Net total transfer, dX	0.340 [0.270, 0.430]	0.279 [0.225, 0.350]
Share of valid draws favoring EITC	0.0%	0.0%
Disposable income, dD	−0.242 [−0.313, −0.151]	−0.306 [−0.373, −0.226]
Share of valid draws favoring EITC	99.9%	100.0%

Notes: Amounts per dollar of mechanical spending at $-\rho = 1.8$ and $\varepsilon_K = 1$, with 5th to 95th percentiles beneath. The seven supply coefficients are drawn using their estimated covariance. Independently, ρ is drawn from a normal approximation based on its clustered standard error. The paired comparison uses the same parameters for both policies in each draw. All 1,000 draws satisfy the model's requirement of a nonnegative supply response in every market. All other baseline parameters are defined in Table 1. Data is from the 1993 March CPS (ASEC supplement).

F Incidence among men

Neither simulated schedule pays men, so changes in their wages and participation come through general equilibrium spillovers. Table F.1 reports those changes by marital and child status, using the same columns and dollar basis as Tables 2 and 3. Married men hold about three quarters of the male wage bill and have no participation response in the calibration, so they receive most of the spillover and receive it as a higher or lower wage, net of the tax the existing schedule collects on it. Married fathers alone take \$0.02 of the \$0.05 per EITC dollar that men receive. Single men respond on the participation margin at an assumed elasticity of 0.20, which is why theirs are the only nonzero employment rows in the table. Single fathers are 2.1 percent of the male wage bill, and are the only men who both have children and move on that margin.

Table F.1: Wages, employment, earnings, and income by demographic group, men

	Elastic substitution, $-\rho = 1.8$				Inelastic substitution, $-\rho = 0.3$			
	EITC		NIT		EITC		NIT	
Per $1 of mechanical spending	PE	GE	PE	GE	PE	GE	PE	GE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Single fathers								
Wage, $L\,\mathrm{d}w$	0.000	+0.001	0.000	−0.002	0.000	+0.004	0.000	−0.005
Employment, $w\,\mathrm{d}L$	0.000	0.000	0.000	0.000	0.000	+0.001	0.000	−0.001
Gross earnings, $\mathrm{d}E$	0.000	+0.002	0.000	−0.002	0.000	+0.005	0.000	−0.006
Disposable income, $\mathrm{d}D$	0.000	+0.001	0.000	−0.001	0.000	+0.003	0.000	−0.004
Single men, no children								
Wage, $L\,\mathrm{d}w$	0.000	+0.016	0.000	−0.017	0.000	+0.048	0.000	−0.053
Employment, $w\,\mathrm{d}L$	0.000	+0.003	0.000	−0.004	0.000	+0.010	0.000	−0.011
Gross earnings, $\mathrm{d}E$	0.000	+0.019	0.000	−0.021	0.000	+0.058	0.000	−0.064
Disposable income, $\mathrm{d}D$	0.000	+0.013	0.000	−0.014	0.000	+0.039	0.000	−0.043
Married fathers								
Wage, $L\,\mathrm{d}w$	0.000	+0.037	0.000	−0.040	0.000	+0.165	0.000	−0.183
Employment, $w\,\mathrm{d}L$	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Gross earnings, $\mathrm{d}E$	0.000	+0.037	0.000	−0.040	0.000	+0.165	0.000	−0.183
Disposable income, $\mathrm{d}D$	0.000	+0.024	0.000	−0.026	0.000	+0.109	0.000	−0.121
Married men, no children								
Wage, $L\,\mathrm{d}w$	0.000	+0.020	0.000	−0.022	0.000	+0.089	0.000	−0.099
Employment, $w\,\mathrm{d}L$	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Gross earnings, $\mathrm{d}E$	0.000	+0.020	0.000	−0.022	0.000	+0.089	0.000	−0.099
Disposable income, $\mathrm{d}D$	0.000	+0.013	0.000	−0.014	0.000	+0.059	0.000	−0.066
All men								
Wage, $L\,\mathrm{d}w$	0.000	+0.075	0.000	−0.081	0.000	+0.312	0.000	−0.347
Employment, $w\,\mathrm{d}L$	0.000	+0.004	0.000	−0.004	0.000	+0.011	0.000	−0.012
Gross earnings, $\mathrm{d}E$	0.000	+0.079	0.000	−0.085	0.000	+0.322	0.000	−0.359
Disposable income, $\mathrm{d}D$	0.000	+0.053	0.000	−0.057	0.000	+0.215	0.000	−0.240

Notes: Dollars per dollar of mechanical spending. Columns (1) to (4) use the substitution elasticity estimated in Watson (2021) and columns (5) to (8) the value used by Rothstein (2010). General equilibrium columns set $\varepsilon_K = 1$. No man receives a mechanical payment under either schedule, so each group's net total transfer is its wage row and its net earnings is its gross earnings row. All other baseline parameters are defined in Table 1. Data is from the 1993 March CPS (ASEC supplement).

G Notation

Indices and sets

$e \in \mathcal{E}$	labor skill type; $e \in \{0, 1\}$ in the two-type model
g	demographic status (e.g. without or with children)
f	a generic labor type, used when e is already bound
j	producer
n, c	education nest and cell within nest

Workers and labor supply

N_{eg}	population of group eg
L_{eg}	employment; $L_e = \sum_g L_{eg}$
$\theta_{eg} = L_{eg}/L_e$	group's share of its type's employment
$p_{eg} = L_{eg}/N_{eg}$	group's employment rate
ν	cost of work, drawn from F_{eg} with density f_{eg}
x, X	homogeneous consumption good and its aggregate
$U(x, L; \nu) = x - \nu L$	quasi-linear utility
$T_{eg}(\cdot)$	consumption available after taxes and transfers
$v_{eg} = w_e(1 - \tau_{eg})$	net gain from working
ε_{eg}	participation semi-elasticity in wage units, $w_e f_{eg}/F_{eg}$
ε_e	market elasticity, $\sum_g \theta_{eg}\varepsilon_{eg}$, with θ_{eg} a share of participants

Policy

a^W_{eg}	payment conditional on work; a function of w_e from Section 4.3 on
a^N_{eg}	payment conditional on nonwork
$\dot{a}^W_{eg}$, m_{eg}	earnings derivative of a^W_{eg}, and $m_{eg} = 1 + \dot{a}^W_{eg}$
$\tau_{eg} = -(a^W_{eg} - a^N_{eg})/w_e$	average tax rate on working; baseline payment difference is $-w_e\tau_{eg}$
$\mathrm{d}\tau_{eg}$	reform's change in that rate, $-(\mathrm{d}a^W_{eg} - \mathrm{d}a^N_{eg})/w_e$
$q_e = -\sum_g \theta_{eg}\varepsilon_{eg}\mathrm{d}\tau_{eg}$	policy shock: participation change at fixed wages
$\mathcal{T}$	common lump-sum tax, per person

Production and factor markets

Y, A	output and Hicks-neutral productivity
$\mathcal{L}$	CES labor aggregate; ϕ_e is the weight on type e
$\rho < 0$	negative of the labor substitution elasticity
K, r	capital and its rental rate
$C(K)$	cost of supplying K units of capital, in units of output
α	labor's exponent in the outer Cobb–Douglas
ξ, G, $g(\cdot)$	producer entry cost, its distribution and density
$\varepsilon_K = rg(r)/G(r)$	capital supply elasticity
J	mass of potential producers
w_e, $\bar{w}$	type-e annual earnings and the unit cost of the labor aggregate
$c(\boldsymbol{w}, r)$	unit cost of final output
s_e, s_L, s_K	cost shares; $s_L = \alpha$, $s_K = 1 - \alpha$
$\widehat{L}_e$, $\widehat{w}_e$	a hat denotes a proportional change, e.g. $\widehat{w}_e = \mathrm{d}w_e/w_e$

Incidence

z	common labor-demand shifter, the same number for every type
Λ	aggregate adjustment term, $(1 + \varepsilon_K)/s_K + (1 + \rho)/s_L$
$Q = \sum_e s_e q_e/(\varepsilon_e - \rho)$	aggregate own-market wage effect; YQ is the employer amount
$S = \sum_e s_e/(\varepsilon_e - \rho)$	cost-share-weighted incidence denominators
$\kappa = 1/(1 + \Lambda S)$	share of the employer amount retained by capital
γ_0, Γ_0	two-type partial equilibrium effect and general equilibrium spillover

Outcomes and fiscal accounting

$\mathrm{d}E_{eg}$	change in gross earnings
$\mathrm{d}X_{eg}$	net total transfer: mechanical policy payment plus wage-price effect
$\mathrm{d}I_{eg}$	net earnings: adds the earnings of changed participation; $\sum_{eg} \mathrm{d}I_{eg} = \mathrm{d}M + \mathrm{d}E$
$\mathrm{d}D_{eg}$	disposable income: adds tax and transfers changes to wages and participation
$\mathrm{d}V_{eg}$	change in average indirect utility
$\mathrm{d}M$	mechanical spending
$\mathrm{d}B$	participation externality, $-\sum_{eg} w_e \tau_{eg} \mathrm{d}L_{eg}$
$\mathrm{d}R$	incumbent wage-revenue channel, $\sum_{eg} L_{eg} \dot{a}^W_{eg} \mathrm{d}w_e$
$\mathrm{d}C = \mathrm{d}M + \mathrm{d}B + \mathrm{d}R$	net fiscal cost
$\mathrm{d}W = \mathrm{d}M + \mathrm{d}R$	unfinanced aggregate willingness to pay
$\mathrm{MVPF} = \mathrm{d}W/\mathrm{d}C$	marginal value of public funds

Nontechnical Summary

A subsidy meant to increase employment can lower its recipients' wages. More workers competing for jobs can push wages down, while the effects also reach other workers and capital owners who receive no direct payment. Earlier studies of tax credits tied to work have emphasized recipients' wages or compared transfers while holding wider market responses fixed. This paper follows the adjustment across labor markets, capital markets, and firms.

I derive formulas in a model where workers differ in skill and employers cannot replace one group perfectly with another. Policy changes wages through competition within affected labor markets and adjustments common to all workers. The formulas require a few measurable inputs: how work decisions respond to pay, how easily employers substitute among worker groups, income shares paid to workers and capital owners, and the policy's effect on the return to work. The analysis focuses on whether people work rather than changes in hours. A wage decline that appears as an employer gain when other markets are held fixed ultimately affects capital returns and wages throughout the economy. If new firms can enter freely, capital owners retain none of this gain; wage changes redistribute income among workers.

I apply the formulas to a small expansion of the 1992 Earned Income Tax Credit (EITC) and a negative income tax (NIT) with the same initial spending, using the March 1993 Current Population Survey. Each reform would add about $100 million in benefits if nobody changed their work decision. The EITC requires earnings; the NIT pays most when earnings are zero and declines as earnings rise. In the simulation, the EITC draws women into work and puts downward pressure on wages in the directly affected labor markets. The NIT induces some women to leave work and has the opposite wage effect. Men receive no direct payment under either reform, yet their wages rise under the EITC and fall under the NIT.

The ranking depends on what is counted. A narrow measure that adds program payments to wage changes for women already working favors the NIT. A broader measure that also counts the earnings of women entering or leaving work and changes in existing taxes and benefits favors the EITC. Women's disposable income rises by $1.18 per dollar of initial program spending under the EITC, compared with $0.88 under the NIT. Because the EITC brings more women into work, it also reduces spending on existing benefits for nonworkers. Its estimated private value per net public dollar is 1.04, compared with 0.89 for the NIT. The historical application illustrates why judging transfer policies solely by their payments, or solely by recipients' wage changes, can miss important effects.