Taxation of Couples:
Payroll Tax and Transferable Benefits

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Abstract

This paper examines the optimal design of payroll taxes and social insurance in settings where benefits are partially transferable across spouses. In many developing countries, one spouse can work informally while accessing coverage through their partner's formal job, creating household-level distortions in labor supply. I develop a model in which couples choose formality jointly, and the government sets both a payroll tax rate and a benefit transferability parameter to maximize welfare. The optimal policy depends on three elasticities: the responsiveness of male and female informality to the net-of-tax rate, and a cross-spousal elasticity capturing behavioral spillovers. To estimate these, I exploit Chile's Bono al Trabajo de la Mujer (BTM), a subsidy that reduced the effective payroll tax for low-income women. Using household survey data, I find that women eligible for the subsidy reduced informality substantially, especially those married to informal men, while their spouses became more likely to work informally. These results suggest that both payroll tax rates and benefit transferability should be set below current levels, and that ignoring household interactions may lead to inefficient tax and subsidy designs.

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1. Introduction

Social insurance and payroll tax systems have historically been designed around single-earner households. This means that workers are subject to payroll in exchange of getting benefits such as pensions or health insurance for themselves. However, in modern dual-earner households, benefits are often transferable to dependents or spouses. This shift may encourage new behavioral responses in the labor market: a worker can participate in the labor market informally (outside the taxed formal sector), avoid payroll taxes, yet still enjoy coverage through their partner's formal employment. As a result, the optimal design of payroll taxes and social insurance may need rethinking to account for these intra-household spillovers. In particular, policymakers face a tension between providing insurance to workers' families and preventing 'free-riding' incentives, where one spouse remains informal to evade taxes while the other contributes on behalf of the household.

These issues are especially acute in middle-income and developing countries, where informality is very high. Despite numerous formalization efforts, a large share of the workforce in developing economies continues to operate informally. For example, in Latin America, between 30 and 70% of workers work without being enrolled in the payroll system nor subject to any taxation. These high informality rates have proven persistent over time, reflecting deep-rooted social norms and institutional settings.

Workers weigh the costs of payroll taxes against the value of benefits; when benefits can be obtained without formal participation (for instance, via a spouse), the benefit to formal employment decreases. Informality can thus be viewed as an outcome of optimal behavior by workers given the institutional settings. This perspective aligns with evidence that household context plays a crucial role in labor supply decisions. If one spouse's formal job secures the household's social insurance, the other spouse may find it optimal to remain untaxed and informal. Such intra-household coordination of formal and informal work presents a novel challenge for tax design: there is a disconnection between who pays for social insurance and who ultimately benefits.

Motivated by this context, this paper develops a partial-equilibrium model of married couples' labor informality with partially transferable benefits. Each household consists of two spouses who jointly decide whether to work in the formal sector (paying payroll taxes and receiving benefits for themselves and the spouse) or in the informal sector (avoiding taxes, foregoing benefits, but potentially receiving them from the spouse). A key feature of the model is a transferability parameter ($0 \leq \gamma \leq 1$) that represents what fraction of a formal worker's benefits can be transferred to their spouse. At one extreme, $\gamma = 0$ represents a system with no spousal benefit sharing; at the other extreme, $\gamma = 1$ represents fully transferable benefits (a one-earner couple can cover both members). The government chooses two policy instruments: (i) a payroll tax rate (τ) on formal employment income, and (ii) the degree of benefit transferability (γ).

I find that the optimal combination of the payroll tax rate and the degree of benefit transferability depends on two key elasticities: the elasticity of informal employment with respect to the payroll tax and the elasticity with respect to the transferability parameter. A higher elasticity with respect to the payroll tax lowers the optimal tax rate, as expected, while a higher elasticity with respect to transferability raises the optimal transferability. This is because increasing transferability reduces the incentives to remain fully informal, as informal workers can now access better benefits through their spouse. Thus, if the government seeks to raise more revenue to fund higher payroll benefits, the optimal policy depends critically on which group is more responsive: formal workers reacting to higher taxation or informal workers reacting to greater access to benefits.

An additional insight is that the benefits and costs of these policies are not borne by the same individuals: while the gains from expanded payroll benefits are enjoyed by all households with at least one formal worker, the tax burden is borne exclusively by formal individuals. In the case of transferability, the direct benefits of increasing transferability are enjoyed only by informal spouses whose partners are formal, while the costs—arising from the fact that higher transferability lowers the per-capita payroll benefit—are shared across all households receiving benefits. Thus, raising the degree of transferability redistributes welfare within the pool of beneficiaries, expanding coverage for some while diluting benefit levels for all. The optimal policy will depend on which individuals the government values more in the social welfare function.

After deriving the optimal policy, I estimate key behavioral elasticities to apply the model's formulas: the extensive-margin elasticities of informality for each spouse, as well as the cross-spousal elasticity. I exploit the staggered rollout of Chile's Bono al Trabajo de la Mujer (BTM)—a subsidy that reduced the effective payroll tax rate for women—as a source of quasi-experimental variation to identify these elasticities. These estimates provide the inputs to compute the optimal payroll tax and benefit transferability parameters in a calibrated version of the model for the Chilean economy.

This study contributes to the literature on the taxation of couples and multi-person households (e.g., Saez 2002; Kleven, Kreiner, and Saez 2009; Golosov and Tsetlin-Krakovich 2024). Previous models of couple taxation have typically assumed a fully joint tax schedule or solved a multi-dimensional screening problem to design optimal taxes based on both spouses' incomes. For example, Kleven et al. (2009) model couples as a unitary household with a primary and a secondary earner, and show that the optimal tax system features complex jointness—the tax rate on one spouse may depend on the earnings of the other. Similarly, recent mechanism-design approaches derive optimal nonlinear taxes for couples, allowing for different marginal rates across spouses and accounting for assortative matching (Golosov and Krasikov, forthcoming).

While powerful, existing models are highly complex and often difficult to implement in practice. In contrast, this paper focuses on individual taxation with spillovers. It does not require the government to set fully separate tax schedules for couples or to observe the joint distribution of earnings. Instead, household interactions are captured through the single transferability parameter (γ) in the benefit formula. This gives a tractable framework that still reflects key policy questions surrounding couples' labor supply decisions. By solving for the optimal payroll tax and transferability parameter, the study offers an alternative lens on couple taxation: rather than redesigning the entire tax schedule for two earners, the government can adjust the degree of benefit transferability to address inefficiencies arising from intra-household dynamics. This simpler policy lever could be more feasible in practice (for instance, adjusting whether non-contributing spouses are eligible for full, partial, or no benefits).

This study also relates to the literature on informality in developing economies (e.g., Maloney 2004; Loayza 2018; Ulyssea 2020). A rich body of research examines why informal employment remains high and how it responds to taxes, regulations, and enforcement. However, much of this work analyzes individuals or firms in isolation. Here, the household is centered as the decision-making unit, highlighting a new channel for informality.

This paper shows that inter-spousal incentives can distort labor supply: a worker's decision to enter or stay in the formal sector depends not only on their own costs and benefits, but also on whether their partner is already formal and can share benefits. This mechanism helps explain observed patterns such as couples rarely both working informally. It also suggests that conventional policies to reduce informality (such as tax incentives) might have unintended consequences unless they account for family ties. This paper highlights one specific policy margin—benefit transferability—that can either mitigate or exacerbate informality.

Overall, this work bridges the gap between traditional individual-based tax theory and the reality of households in middle-income economies, providing guidance for how to tailor payroll tax policies when one worker's benefits effectively extend to two people. The remainder of the paper formalizes the model, characterizes the optimal payroll tax and transferability parameter, and discusses the results and their implications for policy and future research.

2. Model

This is a partial-equilibrium model that shows how transferable payroll benefits and a payroll tax can generate spillovers in spouses' formality decisions, with implications for optimal policy design.

Set-Up We consider an economy with N married men (m) and women (f), normalized such that $N = 1$. No one remains single, and marriages are exogenously formed through random matching. Each individual $i \in m, f$ differs along one dimension: a stigma cost of informality, c_i. This cost reflects legal or social repercussions associated with informal employment. For men and women, these costs are drawn from gender-specific distributions $f_m(c_i^m)$ and $f_f(c_i^f)$, with corresponding cumulative distribution functions F_m and F_f. These costs are drawn independently across individuals, with no within-couple correlation between c_m and c_f[1].

There is a linear payroll tax (τ), levied only on formal employment. Paying payroll taxes gives individuals access to payroll benefits (b), which enter their utility. The economy has no income tax. Payroll benefits are partially transferable between spouses: if one spouse has a formal job (and thus pays payroll taxes and receives benefits), the other receives a share of those benefits, γb. Both τ and γ are policy instruments chosen by the planner. Finally, there is a subsidy s for women's formal employment that reduces their effective payroll tax rate. I assume this subsidy is exogenously given. It allows for differentiated effective payroll tax rates between men and women.

The main assumptions are as follows: (i) wages (z_m, z_f) are exogenous; (ii) although informality costs are independently distributed across spouses, employment decisions are made jointly to maximize household utility; and (iii) the subsidy s is exogenous.

Workers Individuals are fully employed, and their only labor-supply margin is whether to work formally or informally. For spouse i, pre-tax income is z_i, where z_m denotes male wages and z_f denotes female wages. Wages are assumed to be constant across formal and informal jobs and differ only by gender.

Formal workers are subject to a linear payroll tax τ (reduced by a subsidy s for women) and gain access to payroll benefits b. Their spouse also receives a share γb of those benefits. Thus, the utility of a formal male worker is:

$$u_m^F = (1 - \tau)z_m + b \tag{1}$$

For a formal female worker:

$$u_f^F = [1 - (1 - s)\tau]z_f + b \tag{2}$$

[1] Assuming independent stigma costs abstracts from sorting in the marriage market but simplifies the analysis of joint household decisions. Introducing assortative matching or correlated costs could yield richer predictions about how couples sort into formality based on shared attitudes toward informality.

Informal workers avoid payroll taxes but incur a stigma cost c_i. If their spouse is formally employed, they still receive a share γb of the benefits. Hence, the utility of an informal worker i with spouse j is:

$$u_i^I = z_i - c_i + \Big(1 - \mathbb{1}\, j \text{ is informal}\Big), \gamma b \tag{3}$$

where the indicator $\mathbb{1}\{j \text{ is informal}\} = 1$ if spouse j is informal and 0 otherwise.

The total household utility is defined as the sum of the male and female individual utilities:

$$U^{\text{HH}} = u_m + u_f, \tag{4}$$

Each household (couple) jointly chooses among four possible outcomes:

1. **FF:** Both spouses are formal.
2. **FI:** Husband is formal and wife is informal.
3. **IF:** Husband is informal and wife is formal.
4. **II:** Both spouses are informal.

The household utility under each regime is given by:

$$U^{\text{FF}} = (1-\tau)z_m + (1 - {\scriptstyle (1-s)}\tau)z_f + 2b, \tag{3}$$
$$U^{\text{FI}} = z_m(1-\tau) + b + z_f + \gamma b - c_f, \tag{4}$$
$$U^{\text{IF}} = z_m + \gamma b - c_m + (1 - {\scriptstyle (1-s)}\tau)z_f + b, \tag{5}$$
$$U^{\text{II}} = z_m + z_f - (c_m + c_f). \tag{6}$$

Households choose the regime that yields the highest U^{HH} among the four options. The indifference conditions between regimes are derived by equating the corresponding utility expressions:

$$\text{(FF vs. FI):} \quad c_f = {\scriptstyle (1-s)}\tau z_f - (1-\gamma)b, \tag{5}$$
$$\text{(FF vs. IF):} \quad c_m = \tau z_m - (1-\gamma)b, \tag{6}$$
$$\text{(FI vs. II):} \quad c_m = \tau z_m - (1+\gamma)b, \tag{7}$$
$$\text{(IF vs. II):} \quad c_f = {\scriptstyle (1-s)}\tau z_f - (1+\gamma)b, \tag{8}$$
$$\text{(FI vs. IF):} \quad c_m - c_f = \tau(z_m - z_f) \tag{9}$$

These equations define the boundaries that partition the (c_m, c_f) plane into four regions, each corresponding to one household regime. For example, consider the region corresponding to the **FF** outcome (both spouses formal). This occurs when both spouses have sufficiently high costs of informality and thus prefer formal employment despite the payroll tax. Specifically, the household chooses FF if:

$$c_m \geq \tau z_m - (1-\gamma)b \quad \text{and} \quad c_f \geq (1-s)\tau z_f - (1-\gamma)b. \tag{10}$$

The probability that a randomly selected couple falls in the FF region is given by:

$$P_{\text{FF}} \;=\; \int_{c_m=\tau z_m-(1-\gamma)b}^{\infty} \int_{c_f=(1-s)\tau z_f-(1-\gamma)b}^{\infty} f_m(c_m) f_f(c_f)\, dc_f\, dc_m. \tag{11}$$

After comparing all boundaries, one can identify that only two are binding—one for each spouse: $T_m = \tau z_m - (1-\gamma)b$ and $T_f = (1-s)\tau z_f - (1-\gamma)b$.

We can further simplify the expressions for the regime probabilities. Since the husband's and wife's informality costs, c_m and c_f, are drawn independently from distributions $F_m(c)$ and $F_f(c)$, with densities $f_m(c)$ and $f_f(c)$, the joint density is: $f_{m,f}(c_m, c_f) = f_m(c_m)\, f_f(c_f)$.

Moreover, the decision rules derived from the indifference conditions imply that each household's regime choice depends solely on whether each spouse's individual cost exceeds their respective threshold. Because these thresholds are independent of the partner's cost, the decision regions in the (c_m, c_f) space are rectangular (separable). For instance, a household chooses the (FF) outcome if the husband's cost exceeds $T_m = \tau z_m - (1-\gamma)b$ and the wife's cost exceeds $T_f = (1-s)\tau z_f - (1-\gamma)b$. The probability of this outcome is:

$$\begin{aligned} P_{\text{FF}} &= \int_{T_m}^{\infty} \int_{T_f}^{\infty} f_m(c_m) f_f(c_f), dc_f, dc_m \\ &= \left[\int_{T_m}^{\infty} f_m(c_m), dc_m\right] \left[\int_{T_f}^{\infty} f_f(c_f), dc_f\right] \\ &= [1 - F_m(T_m)]\, [1 - F_f(T_f)]\,. \end{aligned} \tag{12}$$

Thus, the joint probability factorizes into the product of marginal probabilities. This simplification follows from the independence of c_m and c_f, along with the structure of the decision rule, which yields separable threshold conditions for each spouse. The resulting probabilities for the four regimes are:

$$\begin{aligned} P_{\text{FF}} &= [1 - F_m(T_m)]\, [1 - F_f(T_f)]\,, \\ P_{\text{FI}} &= [1 - F_m(T_m)]\, F_f(T_f), \\ P_{\text{IF}} &= F_m(T_m)\, [1 - F_f(T_f)]\,, \\ P_{\text{II}} &= F_m(T_m), F_f(T_f). \end{aligned} \tag{13}$$

Planner I assume the planner maximizes a generalized social welfare function. The planner chooses the linear payroll tax τ (and associated benefit b) and the level of transferability of payroll benefits γ to maximize welfare. Thus, the social welfare function is defined as:

$$\begin{aligned}\mathrm{SWF}(\tau,\gamma) &= P_{\mathrm{FF}}\, G(U^{\mathrm{FF}}) + P_{\mathrm{FI}}\, G(U^{\mathrm{FI}}) + P_{\mathrm{IF}}\, G(U^{\mathrm{IF}}) + P_{\mathrm{II}}\, G(U^{\mathrm{II}}) \\ &= \;P_{\mathrm{FF}}\, G(u_m^F + u_f^F) + P_{\mathrm{FI}}\, G(u_m^F + u_f^I) \\ &\quad + P_{\mathrm{IF}}\, G(u_m^I + u_f^F) + P_{\mathrm{II}}\, G(u_m^I + u_f^I)\end{aligned} \tag{14}$$

where $G(\cdot)$ is an increasing, concave function (e.g., log or CRRA) representing the government's redistributive preferences. The planner evaluates welfare at the household level, considering total household utility rather than the utilities of individual spouses.

The government collects revenue through a payroll tax: men pay a rate τ, while women pay a reduced rate $(1-s)\tau$ due to the subsidy. In a couple with outcome (FF), both spouses contribute: the man pays τz_m and the woman pays $(1-s)\tau z_f$. In a (FI) household, only the man pays τz_m, and in a (IF) household, only the woman pays $(1-s)\tau z_f$. Formally, total tax revenue is:

$$\mathrm{Revenue}(\tau) = \tau\Big[\underbrace{(z_m + (1-s)z_f), P_{\mathrm{FF}}}_{\text{both pay}} + \underbrace{z_m\, P_{\mathrm{FI}}}_{\text{only } m \text{ pays}} + \underbrace{(1-s)z_f\, P_{\mathrm{IF}}}_{\text{only } f \text{ pays}}\Big] \tag{15}$$

In this economy, payroll benefits are partially transferable between spouses. Any household with at least one formal worker receives full coverage for one spouse and partial coverage (a share γ) for the other. Thus, households in (FF) receive $2b$, while those in (FI) and (IF) each receive $(1+\gamma)b$. Total government expenditure on benefits is:

$$\mathrm{Expenditure}(\tau) = b\big[2P_{\mathrm{FF}} + (1+\gamma)P_{\mathrm{FI}} + (1+\gamma)P_{\mathrm{IF}}\big] \tag{16}$$

Imposing a balanced-budget condition, one obtains the following government budget constraint:

$$\mathrm{Revenue}(\tau,\gamma) = \mathrm{Expenditure}(\tau,\gamma) \tag{17}$$

The planner chooses τ and γ to maximize:

$$\mathcal{L}(\tau,\gamma,\lambda) \;=\; \mathrm{SWF}(\tau,\gamma) + \lambda\big[\mathrm{Revenue}(\tau,\gamma) - \mathrm{Expenditure}(\tau,\gamma)\big] \tag{18}$$

Differentiating with respect to τ and setting $\mathrm{d}\mathcal{L}/\mathrm{d}\tau = 0$ yields the optimal tax condition:

$$\frac{\mathrm{d}\,\mathrm{SWF}(\tau,\gamma)}{\mathrm{d}\tau} \;+\; \lambda\frac{\mathrm{d}}{\mathrm{d}\tau}\Big[\mathrm{Revenue}(\tau,\gamma) - \mathrm{Expenditure}(\tau,\gamma)\Big] = 0 \tag{19}$$

Similarly, differentiating with respect to γ and setting $\mathrm{d}\mathcal{L}/\mathrm{d}\gamma = 0$ yields the optimal transferability condition:

$$\frac{\mathrm{d}\,\mathrm{SWF}(\tau,\gamma)}{\mathrm{d}\gamma} \; + \; \lambda\frac{\mathrm{d}}{\mathrm{d}\gamma}\Big[\mathrm{Revenue}(\tau,\gamma) - \mathrm{Expenditure}(\tau,\gamma)\Big] = 0 \tag{20}$$

3. Optimal Payroll Tax and Transferability

Before getting into the optimal formulas, I define the following elasticities of informality for $i \in \{m, f\}$:

$$\epsilon_i = \frac{\delta F_i}{\delta(1-\tau)} \cdot \frac{1-\tau}{F_i}, \qquad \eta_i = \frac{\delta F_i}{\delta \gamma} \cdot \frac{\gamma}{F_i} \tag{21}$$

where F_m and F_f denote the probabilities of informality for men and women, respectively.

The terms ϵ_m and ϵ_f represent the extensive-margin elasticities of informality with respect to the net-of-tax rate, while η_m and η_f capture the elasticities with respect to the transferability parameter γ.

Then I define the total income subject to the payroll tax:

$$Z = (z_m + (1-s)z_f)P_{\text{FF}} + z_m P_{\text{FI}} + (1-s)z_f P_{\text{IF}} \tag{22}$$

which is the sum of the income of households where both spouses are formal, the income of households where only the husband is formal, and the income of households where only the wife is formal. Thus revenue is $R = \tau Z$.

I also define the following ratios:

$$\alpha_m = \frac{z_m F_m}{Z} \qquad \alpha_f = \frac{(1-s)z_f F_f}{Z} \tag{23}$$

Here, α_m and α_f are the ratio of total informal income earned by men and women to total formal income in the economy, respectively

$$\beta_i = \frac{F_i(1-\gamma+2\gamma F_j)}{2P_{\text{FF}} + (1+\gamma)P_{\text{FI}} + (1+\gamma)P_{\text{IF}}} \tag{24}$$

The term β_i captures the ratio of informal households to households where at least one spouse is formal, adjusted for the transferability parameter γ. When $\gamma = 1$ (full transferability), the expression simplifies to: $\beta_i = \frac{F_i F_j}{P_{\text{FF}}+P_{\text{FI}}+P_{\text{IF}}}$, which corresponds to the share of fully informal households among those with at least one formal member.

Finally, λ is the budget constraint multiplier, thus I define the following average social welfare weights at the household level:

$$g^{\text{FF}} = \frac{G'(U^{\text{FF}})}{\lambda}, \qquad g^{\text{FI}} = \frac{\int_0^{T_f} \int_{T_m}^{\infty} G'(U^{IF}) dF_m(c_m) dF_f(c_f)}{P_{\text{FI}}\lambda} \tag{25}$$

$$g^{\text{IF}} = \frac{\int_0^{T_m} \int_{T_f}^{\infty} G'(U^{\text{FI}}) dF_f(c_f) dF_m(c_m)}{P_{\text{IF}}\lambda}, \qquad g^{\text{II}} = \frac{\int_0^{T_m} \int_0^{T_f} G'(U^{\text{II}}) dF_f(c_f) dF_m(c_m)}{P_{\text{II}}\lambda}$$

Note that in the budget constraint, total payroll revenue (τZ) finances the payroll benefits for all eligible households. Thus, the individual benefit b is a function of the tax rate, total revenue, and the benefits received by eligible households. The latter depends on γ, since households with only one formal spouse receive $(1+\gamma)b$.

As a result, the optimality conditions for both τ and γ must account for the fact that b is endogenous. In particular, the formulas involve derivatives of b with respect to τ and γ. Initially, for clarity, I leave $\frac{\delta b}{\delta \tau}$ and $\frac{\delta b}{\delta \gamma}$ explicitly in the expressions to highlight their roles. In a subsequent step, I substitute these derivatives using the budget constraint to obtain the final closed-form expressions for the optimal tax and transferability parameters.

3.1. Optimal τ

The optimal tax rate follows:

$$\tau^* = \frac{1-\bar{g}+\frac{\delta b}{\delta \tau}\frac{\Sigma}{Z}}{1-\bar{g}+\frac{\delta b}{\delta \tau}\frac{\Sigma}{Z}-\Big[\epsilon_m(\alpha_m-\beta_m)+\epsilon_f(\alpha_f-\beta_f)\Big]}. \tag{26}$$

where the numerator captures the net social gain from raising one additional dollar of revenue, and the denominator captures the corresponding efficiency cost.

The numerator is the net benefit of collecting tax revenue. Here, $\bar{g} = g^{\mathrm{FF}}\frac{P^{\mathrm{FF}}z_m+P^{\mathrm{FF}}(1-s)z_f}{Z} + g^{\mathrm{FI}}\frac{P^{\mathrm{FI}}z_m}{Z} + g^{\mathrm{IF}}\frac{P^{\mathrm{IF}}(1-s)z_f}{Z}$ is the income-weighted average welfare weight of *formal* workers. Thus, the first part of the numerator, 1-$\bar{g}$, represents the classical net gain from raising one additional dollar of tax revenue from formal taxpayers.

The additional revenue finances a higher per-capita payroll benefit b, thus $\frac{\partial b}{\partial \tau} > 0$. The welfare impact of a marginal increase in b is $\Sigma = 2P^{\mathrm{FF}}(g^{\mathrm{FF}}-1)+(1+\gamma)P^{\mathrm{FI}}(g^{\mathrm{FI}}-1)+(1+\gamma)P^{\mathrm{IF}}(g^{\mathrm{IF}}-1)$ where each $(g-1)$ term reflects the net social value (benefit minus unit cost) of an additional dollar of benefits for the corresponding household type. Because transferability allows an informal spouse to share the benefit while only the formal spouse bears the tax burden, a higher γ amplifies these welfare gains of an increase in τ.

The denominator are the efficiency costs of increasing revenue. The bracketed term $\epsilon_m(\alpha_m-\beta_m)+\epsilon_f(\alpha_f-\beta_f)$ captures the distortionary effect of taxation. Here, $\epsilon_i < 0$ denotes the extensive-margin elasticity of informality with respect to the net-of-tax rate; larger (in absolute value) elasticities imply greater efficiency losses, thus lowering the optimal tax rate. The term $\alpha_i = z_i F_i/Z$ measures the share of income at risk of shifting to informality (the revenue channel); a higher α_i reduces the optimal τ.

The term $\beta_i = \frac{F_i(1-\gamma+2\gamma F_j)}{2P_{\mathrm{FF}}+(1+\gamma)(P_{\mathrm{FI}}+P_{\mathrm{IF}})}$ captures the ratio of fully informal (uncovered) households relative to at-least-partially covered households, adjusted for γ. Under full transferability ($\gamma=1$), it simplifies to $\beta_i = \dfrac{P_{\text{II}}}{P_{\text{FF}} + P_{\text{FI}} + P_{\text{IF}}}$. A larger β_i means that a marginal switch to informality destroys proportionally more coverage and increases revenue and b for all the remaining covered individuals, thus decreasing the social cost of distortions and thereby increasing the optimal tax rate.

To further simplify the optimal payroll tax rate, one can compute the change in the individual benefit b when the payroll-tax rate τ changes:

$$\frac{\partial b}{\partial \tau} \;=\; \frac{Z}{N^{\text{recipients}}}\left[1 + \frac{\tau}{1-\tau}\left(\epsilon_m\left(\alpha_m - \beta_m\right) + \epsilon_f\left(\alpha_f - \beta_f\right)\right)\right], \tag{27}$$

where

$$N^{\text{recipients}} \;=\; 2P_{\text{FF}} \;+\; (1+\gamma)\big(P_{\text{FI}} + P_{\text{IF}}\big)$$

is the number of individuals who receive benefits.

This expression can be interpreted as a mechanical gain minus a behavioral loss. The term $Z/N^{\text{recipients}}$ captures the mechanical effect: if behavior were fixed, an extra dollar of revenue ($dR/d\tau = Z$) would raise the benefit paid to each eligible person proportionally. The bracketed term captures the erosion of revenue and coverage when higher taxes induce workers to exit the formal sector. Since the elasticities ϵ_i are negative, behavioral responses reduce the mechanical increase in b.

Substituting this expression for $\frac{\partial b}{\partial \tau}$ into the optimal tax formula yields:

$$\tau^* = \frac{1 - \bar{g} + \dfrac{\Sigma}{N}}{1 - \bar{g} + \dfrac{\Sigma}{N} - \left(1 + \dfrac{\Sigma}{N}\right)\left[\epsilon_m(\alpha_m - \beta_m) + \epsilon_f(\alpha_f - \beta_f)\right]}, \tag{28}$$

where Σ/N represents the per-recipient net social value of an additional unit of benefit.

The term $\epsilon_i(\alpha_i - \beta_i)$ captures the efficiency cost associated with informality responses. The factor $1 + \Sigma/N$ rescales this loss by its social valuation. When benefits are highly valued ($\Sigma/N > 0$), losing a taxpayer implies not only the loss of a dollar of revenue but also the loss of benefits that society values above their cost. The distortion is thus magnified, requiring a lower optimal payroll tax rate τ to avoid large welfare losses. Conversely, when benefits are of low (or even negative) social value ($\Sigma/N < 0$), each dollar of lost revenue also prevents the government from paying a benefit that society values less than its cost. In this case, the net social loss per dollar is smaller ($1 + \Sigma/N < 1$), and the planner can afford to set a higher payroll tax rate.

3.2. Optimal γ

The optimal transferability rate follows:

$$\gamma^* = \frac{\tau\Big[\eta_m(\alpha_m - \beta_m) + \eta_f(\alpha_f - \beta_f)\Big]}{\tau\Omega + \dfrac{\partial b}{\partial \gamma}\dfrac{\Sigma}{Z}}, \tag{29}$$

where

$$\Omega = \frac{1}{N}\Big[P_{\text{IF}}(g^{\text{IF}} - 1) \;+\; P_{\text{FI}}(g^{\text{FI}} - 1)\Big].$$

The numerator are the efficiency benefits of raising γ, similar to the distortionary costs in the optimal tax formula. The terms η_m and η_f represent the elasticities of informality with respect to transferability. In this setting, a higher γ increases the opportunity cost of informality—because informal spouses can gain benefits without themselves contributing—which encourages formality. Thus, the larger the η_i, the more responsive workers are to transferability, and the lower the distortion from raising γ. Intuitively, if small changes in γ are sufficient to induce formalization, then a larger γ^* is optimal.

The denominator are the net costs of raising γ, similar to the numerator in the optimal tax formula. The two key terms are Ω and Σ. First, increasing transferability expands the number of beneficiaries without raising additional revenue, which mechanically reduces the per-capita benefit b; formally, $\partial b/\partial \gamma < 0$. All current recipients—both formal workers and their households—bear this loss in b. The term $\frac{\Sigma}{N}$ measures the net social valuation of b across all benefit recipients: the higher Σ, the more socially.

Second, Ω captures the welfare valuation specifically for households with exactly one formal spouse—the direct beneficiaries of increasing γ. Only these households experience an immediate gain from higher transferability, since informal spouses gain fuller coverage. Thus, expanding γ trades off the direct welfare gain to one-earner households (measured by Ω) against the indirect welfare loss from shrinking benefits for all recipients (measured by Σ).

One could further dissagregate the direct effect a change in γ on b:

$$\frac{\partial b}{\partial \gamma} = \frac{\tau Z}{N}\Big[\Big(\frac{P_{IF} + P_{FI}}{N}\Big) - \frac{1}{\gamma}\Big(\eta_m(\alpha_m - \beta_m) + \eta_f(\alpha_f - \beta_f)\Big)\Big] \tag{30}$$

where the first term represents the increase in the per capita benefit for households with exactly one informal spouse and the second term represents the decrease in the per capita benefits for all covered households.

And get the final optimal transferability parameter:

$$\gamma^* = \frac{(1+\frac{\Sigma}{N})\Big[\eta_m(\alpha_m - \beta_m) + \eta_f(\alpha_f - \beta_f)\Big]}{\Omega + \frac{\Sigma}{N}(\frac{P_{IF}+P_{FI}}{N})} \tag{31}$$

where

$$\frac{\Sigma}{N} = \frac{1}{N}\Big[2P^{\mathrm{FF}}(g^{\mathrm{FF}} - 1) + (1+\gamma)P^{\mathrm{FI}}(g^{\mathrm{FI}} - 1) + (1+\gamma)P^{\mathrm{IF}}(g^{\mathrm{IF}} - 1)\Big]$$

and

$$\Omega = \frac{1}{N}\Big[P_{\mathrm{IF}}(g^{\mathrm{IF}} - 1) \; + \; P_{\mathrm{FI}}(g^{\mathrm{FI}} - 1)\Big].$$

The optimal transferability parameter balances two effects. The numerator captures efficiency gains from reduced informality due to higher transferability, scaled by the social valuation of benefits.

In the numerator, $(1+\frac{\Sigma}{N})$ rescales the efficiency gains. Similar to the optimal tax case, if the payroll benefit b is highly valued ($\Sigma/N > 0$), then reducing informality (through increased transferability) delivers even higher social value. $\eta_m(\alpha_m - \beta_m) + \eta_f(\alpha_f - \beta_f)$ captures the efficiency gains due to decreased informality, as transferability makes formal jobs more attractive.

The denominator measures the net social cost of increasing transferability. This cost has two parts. Ω is the direct benefit to households with exactly one informal spouse (FI, IF). If these households highly value the benefit increase (higher $g^{\mathrm{IF}}, g^{\mathrm{FI}}$), Ω increases. $\frac{\Sigma}{N}\frac{P_{\mathrm{IF}}+P_{\mathrm{FI}}}{N}$ is the indirect effect on all benefit recipients from a reduction in b. Increasing γ mechanically expands the coverage of people receiving benefits through their spouses. With fixed revenue, this dilutes the per-capita benefit b. Thus, each beneficiary suffers a welfare loss proportional to Σ/N. This loss is proportional to the size of the group getting new coverage $(\frac{P_{\mathrm{IF}}+P_{\mathrm{FI}}}{N})^2$.

[2] Note: In the tax rate formula, the numerator measured the net gain of collecting taxes to finance higher b. Higher valuation meant a direct higher gain from raising the tax. In contrast, for transferability, the denominator measures how much γ you need to achieve a certain welfare improvement. If each small increment in γ already produces a substantial welfare benefit (large Ω), then achieving your welfare target requires less γ. This reversal arises from the fact that here, the instrument (γ) directly and immediately targets the recipients you value highly, as opposed to the tax instrument that indirectly affects recipients via increased revenue.

3.3. Elasticities

The key extensive-margin elasticities with respect to the net-of-tax rate are defined as:

$$\epsilon_m = \frac{dF_m}{d(1-\tau)}\frac{1-\tau}{F_m} \quad \text{and} \quad \epsilon_f = \frac{dF_f}{d(1-\tau)}\frac{1-\tau}{F_f} \tag{32}$$

where F_m and F_f are the fractions of men and women who work informally. This reflects the fact that the planner chooses a single payroll tax rate, τ, for all workers.

In the joint household model, the probability that a spouse is informal, denoted by F_i (where $F_i = P_{iF} + P_{iI}$), depends on the net-of-tax rate $1-\tau$ and also indirectly on their spouse informality probability F_j (with $F_j = P_{Fj} + P_{Ij}$) through joint decision-making. The probability that individual i includes the two cases, when the spouse is formal or informal. By the chain rule, the total derivative of F_i with respect to $1-\tau$ can be decomposed as

$$\frac{dF_i}{d(1-\tau)} = \frac{\partial F_i}{\partial(1-\tau)} + \frac{\partial F_i}{\partial F_j}\frac{dF_j}{d(1-\tau)} \tag{33}$$

Here, the first term represents the direct effect—the sensitivity of i's informality to changes in $1-\tau$ holding j's response constant—while the second term captures the indirect (cross-spousal) effect arising from the fact that a change in $1-\tau$ also alters F_j, which in turn influences F_i through the joint decision rule. We define the cross-spousal elasticity as

$$\phi_i = \frac{\partial F_i}{\partial F_j} \cdot \frac{F_j}{F_i}, \tag{34}$$

so that the overall elasticity for i can be expressed as

$$\epsilon_i = \frac{dF_i}{d(1-\tau)} \cdot \frac{1-\tau}{F_i} = \epsilon_i^{\text{direct}} + \phi_i\, \epsilon_j, \tag{35}$$

where $\epsilon_j = \frac{dF_j}{d(1-\tau)} \cdot \frac{1-\tau}{F_j}$ is the spouse elasticity defined with respect to $1-\tau$.

So far, the presence of the subsidy for women has being ignored. This subsidy is exogenously given and not a choice variable. As a result, the effective payroll tax rate for women is:

$$\tau_f = (1-s)\tau \tag{36}$$

and the corresponding effective net-of-tax rate for women is $1-\tau_f = 1-(1-s)\tau$. Given this, to capture the true behavioral response of women, it is more appropriate to define the elasticity with respect to the effective net-of-tax rate, since women respond to their actual effective tax burden in the economy:

$$\tilde{\epsilon}_f = \frac{dF_f}{d\left[1-(1-s)\tau\right]} \cdot \frac{1-(1-s)\tau}{F_f}, \tag{37}$$

where, as before, F_f denotes the probability that a woman works informally.

One can rewrite the effective-tax elasticity as:[3]

$$\tilde{\epsilon}_f = \frac{1-(1-s)\tau}{(1-s)(1-\tau)}\,\epsilon_f \tag{38}$$

Thus, to convert the elasticity defined with respect to the nominal net-of-tax rate (ϵ_f) into the one defined with respect to the effective net-of-tax rate ($\tilde{\epsilon}_f$), one multiplies by the factor $\frac{1-(1-s)\tau}{(1-s)(1-\tau)}$. Equivalently, one can express $\epsilon_f = \frac{(1-s)(1-\tau)}{1-(1-s)\tau}\,\tilde{\epsilon}_f$, which implies that $\epsilon_f < \tilde{\epsilon}_f$ whenever $s > 0$.

This distinction is important because ϵ_f—the elasticity with respect to the common statutory net-of-tax rate—is the relevant object that enters the optimal payroll tax formula. Even though women may exhibit a large behavioral response to their effective tax rate ($\tilde{\epsilon}_f$), from the planner's perspective, the efficiency cost of taxing women is captured by ϵ_f, which is smaller due to the subsidy. Intuitively, the subsidy protects women from the full statutory distortion, lowering the effective burden they experience relative to the statutory tax rate, and thus reducing their contribution to the marginal efficiency cost of raising payroll taxes.

Coming back to the decomposition of elasticities, one can write the elasticities for men and women as:

$$\epsilon_m = \epsilon_m^{\text{direct}} + \phi_m, \epsilon_f, \qquad \epsilon_f = \epsilon_f^{\text{direct}} + \phi_f, \epsilon_m \tag{39}$$

where $\epsilon_m^{\text{direct}}$ and $\epsilon_f^{\text{direct}}$ denote the direct elasticities of male and female informality with respect to the net-of-tax rate, and ϕ_m and ϕ_f capture cross-spousal effects (i.e., how changes in one spouse's formal status affect the other's incentives). Specifically, the female direct elasticity is related to the effective elasticity by:

$$\epsilon_f^{\text{direct}} = \frac{(1-s)(1-\tau)}{1-(1-s)\tau}\,\tilde{\epsilon}_f^{\text{direct}}. \tag{40}$$

In this setting, the female subsidy s reduces the effective tax rate for women to $(1-s)\tau$, directly affecting their informality response. The direct behavioral elasticity is captured by $\tilde{\epsilon}_f$, while the relevant elasticity for the optimal tax formula is $\epsilon_f^{\text{direct}}$, scaled down by the factor 1-s to reflect the reduced statutory burden. For men, the relevant elasticity is ϵ_m, which remains unaffected by s unless

[3]Denote $u = 1-\tau$ and $v = 1-(1-s)\tau$. Then $v = s + (1-s)u$. Differentiating v with respect to u gives $\frac{dv}{du} = 1-s$. Applying the chain rule, $\frac{dF_f}{dv} = \frac{dF_f}{du} \cdot \frac{du}{dv} = \frac{1}{1-s}\frac{dF_f}{du}$. Thus, the effective elasticity is: $\tilde{\epsilon}_f = \frac{dF_f}{dv} \cdot \frac{v}{F_f} = \frac{1}{1-s}\frac{dF_f}{du} \cdot \frac{v}{F_f}$. On the other hand, the elasticity with respect to the nominal net-of-tax rate is: $\epsilon_f = \frac{dF_f}{du} \cdot \frac{u}{F_f}$. Therefore, the relation between the two elasticities is: $\tilde{\epsilon}_f = \frac{v}{(1-s)u}\epsilon_f$.

spillover effects across spouses exist. Any change in male informality—captured by ϕ_m—thus reflects the cross-spousal transmission of the subsidy's effect.

This decomposition allows one to separately identify the direct responsiveness of each spouse to changes in $1 - \tau$ and the indirect effects transmitted through household dynamics, even though the planner's policy instrument remains the common payroll tax rate τ, with s treated as exogenous. Because payroll benefits are partially transferable within the household, the formality decision of one spouse affects the marginal value of formality for the other. When a spouse becomes formal and brings benefit coverage into the household, the incentive for the other spouse to seek formal employment is reduced. Thus, the cross-spousal elasticities ϕ_m and ϕ_f capture this substitutability in formality decisions driven by the transferability of benefits.

4. Empirics

This section exploits the introduction of a subsidy to formal employment in Chile to estimate the informality elasticity for women (ϵ_f) and the cross-elasticity between spouses (ϕ_m).

4.1. The Chilean Context

4.2. The Subsidy: Bono al Trabajo de la Mujer (BTM)

The BTM program was launched in Chile in 2012 following the enactment of Law No. 20.595, as a policy response to the persistently low rates of formal employment among women. It provides wage subsidies to both employees and employers conditional on the formal employment of women. As such, the program functions as a conditional cash transfer, with eligibility contingent upon maintaining formal employment. Formal employment is defined as having a signed contract with an employer registered in the Chilean Internal Revenue Service and making the required social security contributions.

Eligibility for BTM is determined through a continuous targeting score based on information from the Social Protection Form (Ficha de Protección Social, FPS) and household income data provided by SENCE. At launch in 2012, eligible women were those with a score of 98 points or lower, corresponding to the 30 percent most socioeconomically vulnerable women within the eligible age group. In January 2014, coverage was expanded to the 35 percent most vulnerable (score cutoff of 104), and in January 2015 to the 40 percent most vulnerable (score cutoff of 113).

The BTM benefits both the female worker and her employer. To qualify, the worker must be between 25 and 60 years of age, formally employed, and belong to the 30, 35, or 40% most vulnerable socioeconomic strata (depending on the year), as determined by FPS scores and household income per capita. The amount of the subsidy depends on the worker's gross earnings, providing a monthly benefit of up to 20% of the wage for the worker and up to 10% for the employer. Specifically:

- Phase-in (CLP 0 to 170,000): The worker receives 20% of her gross income; the employer receives 10% of the worker's gross income.
- Constant benefit (CLP 170,000 to 210,000): The worker receives a fixed transfer of CLP 34,000; the employer receives CLP 17,000.
- Phase-out (CLP 210,000 to 380,000): The worker receives CLP 34,000 minus 20% of the difference between her gross income and CLP 210,000; the employer receives CLP 17,000 minus 20% of that difference.

The maximum benefit is CLP 34,000 for the worker and CLP 17,000 for the employer, which accounts for up to 20% of the wage for the worker and up to 10% for the employer. See Figures 1 and 2.

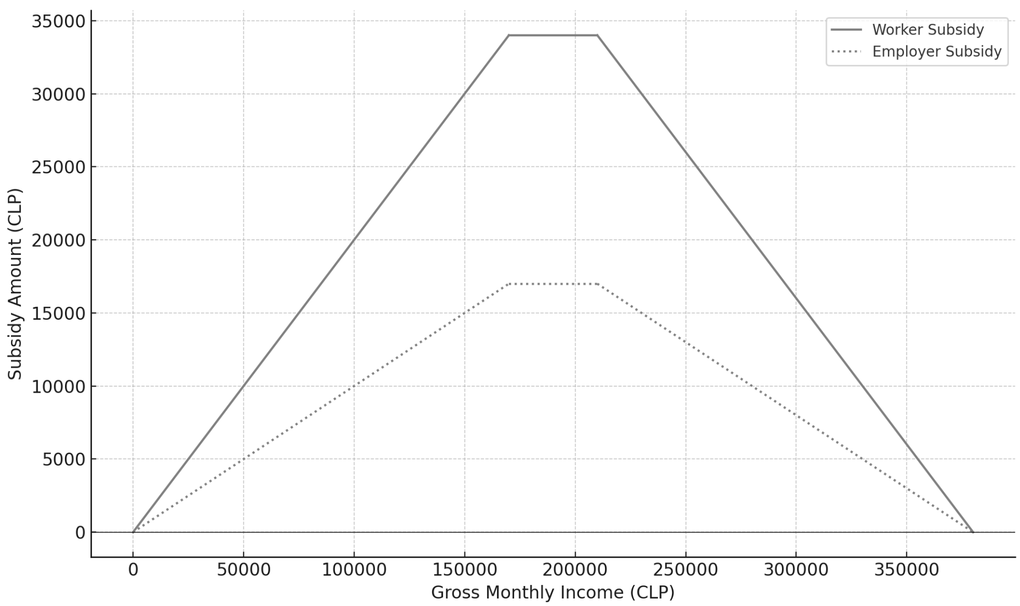

Figure 1: Monthly BTM Subsidy Amount by Gross Monthly Income

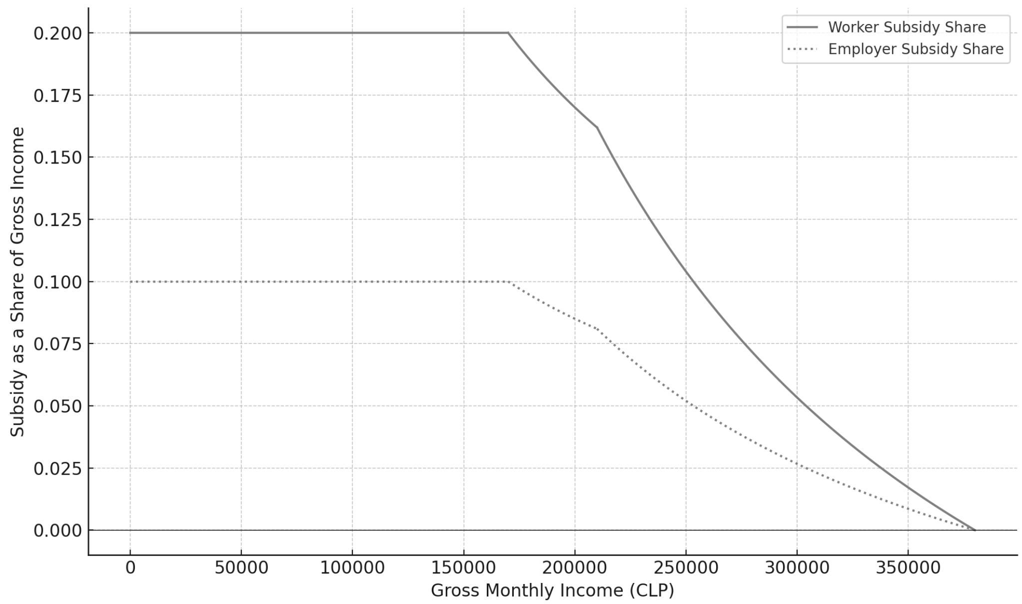

Figure 2: BTM Subsidy as a Share of Gross Monthly Income

4.3. Estimating the Elasticities

Informality is measured using households surveys as administrative dataset only capture the behavior of workers in the formal sector[4]. Thus I use the socioeconomic household survey (CASEN) for 2011, 2013 and 2015.

4.4. Methods

I exploit variation in predicted eligibility for the Bono al Trabajo de la Mujer (BTM) subsidy to estimate its impact on women's informality status, explicitly focusing on households with dual earners. I estimate heterogeneous intention-to-treat (ITT) effects by household type through difference-in-differences (DiD). Eligibility for the BTM subsidy depends on both household vulnerability and individual income, so I construct a binary indicator of predicted eligibility using administrative program rules applied to nationally representative household survey data.

Then I restrict the sample to partnered women aged 25–60 living in households meeting the BTM's household-level eligibility criterion—specifically, being in the bottom three deciles of household vulnerability. Within this eligible household sample, I define the treatment group as women whose individual monthly wages fall below the subsidy's income threshold of 380,000 Chilean pesos, making them individually eligible. The control group includes otherwise similar women in eligible households who exceed the individual wage threshold, and therefore are individually ineligible for the subsidy.

[4]With administrative data, I could measure whether the spouses respond by leaving the formal force altogether and I would have to assume that is a proxy for informal employment.

I focus on estimating ITT effects rather than average treatment effects on the treated (ATT) because the BTM subsidy is only distributed to women who already participate formally in the labor market. Hence, it is not possible to estimate ATT effects on informality directly, since subsidy receipt is conditional upon already having the outcome of interest (formal employment). Therefore, by analyzing predicted eligibility, I capture how the availability of transferable benefits within households shapes women's incentives to become formally employed, irrespective of actual subsidy receipt.

The ITT estimation for women follows the equation below, separately for different household types (cohabiting, married to a formal worker, and married to an informal worker):

$$\mathrm{Y}_{it} = \sum_{t=2011}^{2015} \beta_t^f D_{it} + \mathbf{X}_{it}' \delta + \alpha_t + \varepsilon_{it} \tag{41}$$

where i and t index household and year, respectively. Y_{it} is an indicator equal to one if the woman in the household is informally employed, D_{it} is an indicator equal to one if the woman is eligible to receive the subsidy. α_t are time fixed effects. $\mathbf{X}_{it}$ are controls for age, education, region, and number of children. The coefficient of interest is β^f for each year. Results are summarized in an event-study plot to show the ITT estimates around the subsidy's introduction year 2011.

4.5. Results

Figure 3 shows the estimated ITT effects on informality by household type over time that come from Equation (41). Each point represents the ITT estimate for a given household-type and year combination, with vertical bars indicating 95% confidence intervals. Event time is centered at the subsidy introduction year 2012. Note that the survey is collected every two years, that is why there are estimates every two years.

The results show that predicted eligibility for the BTM subsidy significantly reduces informality, but these effects depend on household composition. The largest reductions—up to 25 percentage points three years after subsidy introduction—occur among women married to informal men. These households previously lacked formal social insurance coverage entirely, making formalization incentives more valuable. In contrast, women married to formal men exhibit moderate reductions in informality, especially in the immediate years following subsidy implementation, though the effect diminishes over time. These households already benefit from transferable social insurance through the husband's formal employment, thus the marginal benefit from formalizing the second spouse appears lower, consistent with a scenario in which households strategically coordinate to have at least one formal earner.

Finally, cohabiting women show no statistically significant response to subsidy eligibility, suggesting weaker intra-household coordination or difficulties in leveraging household-level transferability of benefits due to administrative or institutional barriers.

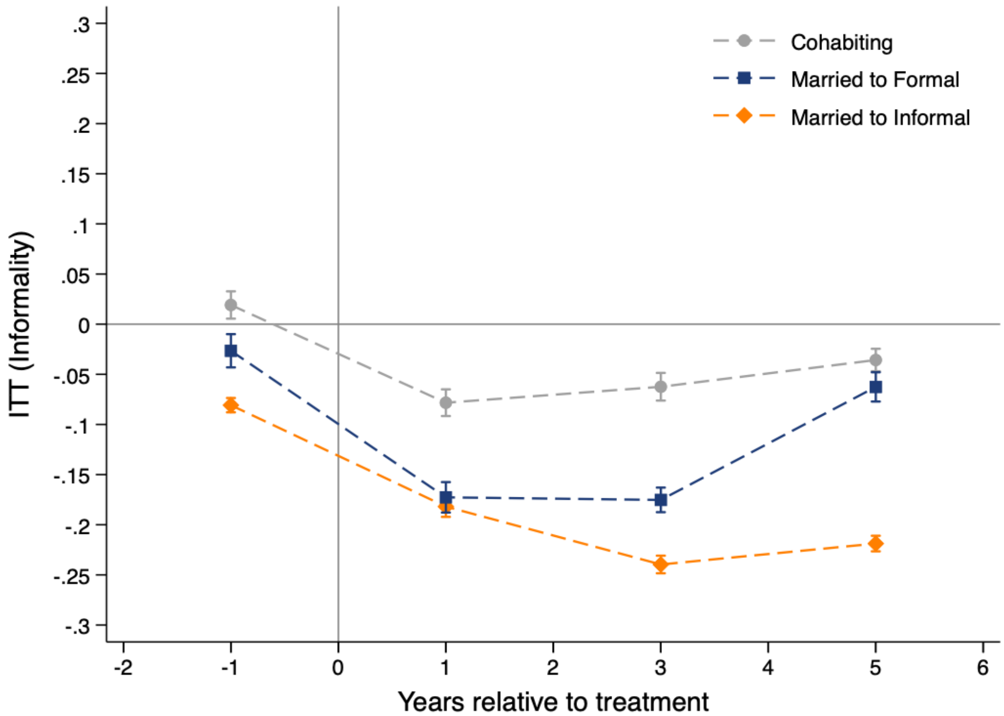

Figure 3: ITT Effects on Informality by HH Type

These results align with the theoretical framework presented earlier. When social insurance benefits are fully transferable—as in the case of the Chilean system—households display strong behavioral responses at the margin of formality. Households initially lacking formal coverage experience substantial gains in formalization incentives. However, households with existing formal coverage through one spouse may maintain partial informality, highlighting potential unintended effects of transferable social insurance systems.

Spillover Effects on Men. To investigate intra-household spillovers, I estimate reduced-form ITT effects of female eligibility on male informality outcomes. The estimation for men follows the same specification as for women (Equation 41), but it is conducted on the pooled sample of all married men, rather than by household type.

The reason for this pooled estimation is that, once the subsidy is introduced, women's labor market responses are endogenous to the policy. Dividing men based on their partner's observed formality status (e.g., married to a formal or informal woman) would condition on a post-treatment outcome and bias the estimated effect. In contrast, using predicted female eligibility as the treatment maintains exogeneity and allows identification of the total behavioral response of men to the policy shock affecting their spouse. The estimated coefficient thus captures both direct and indirect intra-household spillovers, including the husband's response to his partner's changing incentives and behavior.

Figure 4 plots the estimated effects for husbands in eligible households over time. Each point reflects the average change in male informality when a female partner becomes eligible. The results show that men's informality increases by up to 5 percentage points following their wives' eligibility for the subsidy. This increase in male informality—while there is a decrease in female informality—suggests within-household substitution in formality decisions. Once social insurance coverage is secured through the wife's formalization, the incentive for the husband to remain formal diminishes. This behavioral pattern is consistent with the model's prediction that transferable benefits introduce incentives for partial informality within couples.

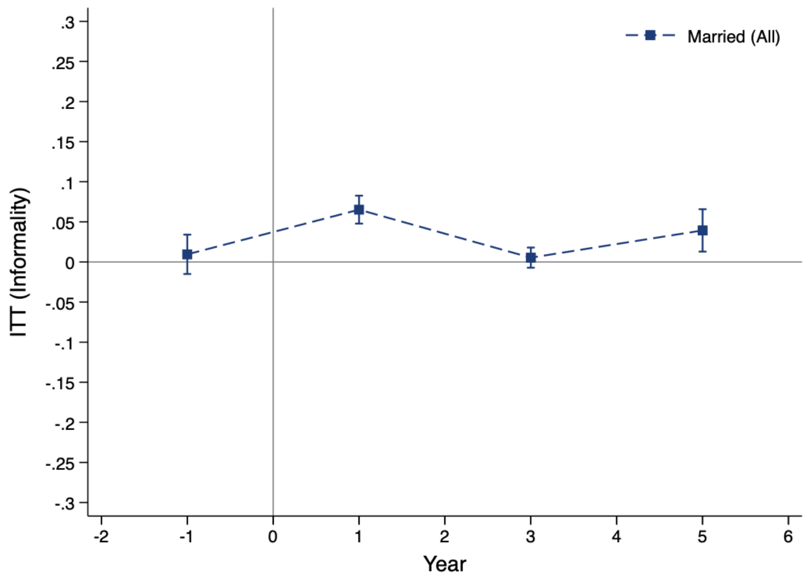

Figure 4: ITT Effects on Informality for Men (Married Households)

4.6. Converting Estimates to Elasticities

To connect the empirical results to the theoretical model, I convert the ITT estimates into behavioral elasticities of informality with respect to the net-of-tax rate.

Recall that in the theoretical framework, extensive-margin elasticities are composed of two components: a direct effect of the net-of-tax rate on the individual, and an indirect effect that operates through the spouse:

$$\epsilon_i = \epsilon_i^{\text{direct}} + \phi_i \epsilon_j \tag{42}$$

The empirical estimates capture total elasticities, incorporating both the direct and cross-spousal responses.

For women, the estimated elasticity corresponds to the response to their *effective* net-of-tax rate, which reflects the presence of a subsidy s. This effective elasticity is defined as:

$$\tilde{\epsilon}_f = \frac{dF_f}{d[1-(1-s)\tau]} \cdot \frac{1-(1-s)\tau}{F_f} \tag{43}$$

However, from the planner's perspective, what matters is the elasticity with respect to the *statutory* net-of-tax rate, since the optimal policy problem is defined over a single payroll tax rate τ. The two elasticities are related by:

$$\epsilon_f = \frac{(1-s)(1-\tau)}{1-(1-s)\tau} \cdot \tilde{\epsilon}_f \tag{44}$$

This adjustment scales down the effective elasticity to reflect the fact that the planner observes only the statutory distortion, not the subsidized rate experienced by women.

Empirically, the elasticity of female informality with respect to the effective net-of-tax rate is computed as:

$$\tilde{\epsilon}_f = \frac{\beta^f}{\Delta v} \cdot \frac{v}{\bar{F}_f} \tag{45}$$

where β^f is the ITT estimate for women, Δv is the change in the effective net-of-tax rate induced by eligibility, $v = 1-(1-s)\tau$, and $\bar{F}_f$ is the baseline informality rate for women.

For men, the statutory tax rate remains unchanged, so there is no direct effect from the policy. Instead, male informality responds only through the household-level spillover, implying that:

$$\epsilon_m = \phi_m \cdot \epsilon_f \tag{46}$$

Thus, the empirical elasticity estimated for men allows me to recover the *cross-spousal elasticity* ϕ_m, which is defined as:

$$\phi_m = \frac{\partial F_m}{\partial F_f} \cdot \frac{F_f}{F_m} \tag{47}$$

Finally, the cross-spousal elasticity is computed as:

$$\phi_m = \frac{\beta^m}{\beta^f} \cdot \frac{\bar{F}_f}{\bar{F}_m} \tag{48}$$

where β^f is the ITT effect of eligibility on female informality, β^m is the ITT effect on male informality, and $\bar{F}_f, \bar{F}_m$ denote the baseline informality rates for women and men, respectively. This expression captures the degree to which changes in women's informality induced by the subsidy spill over to affect the informality decisions of their male partners.

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