Centre for Economic Performance

Discussion Paper

ISSN 2042-2695

No. 2140
January 2026

Household taxation, nonlinear occupations, and gender gaps

Piotr Denderski
Tim Obermeier

The London School of Economics and Political Science

Economic and Social Research Council

Abstract
An enduring source of gender inequality is that some high-paying ("nonlinear") occupations penalize balancing work and household time commitments, as emphasized by Goldin (2014). We ask how household taxation interacts with these occupational differences to shape gender gaps in hours, wages, and occupational choice, and whether these differences materially affect the impact of tax reforms. We address these questions in a structural Roy model of household labor supply with occupation-specific earnings–hours nonlinearities and progressive taxation, calibrated to US data. We find that a balanced-budget switch to separately filed progressive taxes significantly reduces the gender gaps in hours and occupational choice, while the wage gap declines more modestly. These improvements arise because the reform lowers marginal tax rates for secondary earners and raises them for primary earners. By contrast, proportional taxation yields much smaller reductions in gender gaps. In both reforms, the standard labor-supply channel accounts for roughly two-thirds of the overall taxable- income response, while the convex earnings–hours relationship amplifies these effects and explains most of the remainder. Occupational switching contributes little because those who do switch are negatively selected.

Keywords: household taxation; nonlinear occupations; occupational choice; gender inequality
JEL codes: H24, H31, J22, J24, J16

This paper was produced as part of the Labour Programme. The Centre for Economic Performance is financed by the Economic and Social Research Council.

We thank James Banks, Alexander Bick, Thiess Büttner, Philipp Grübener, Leo Kaas, Kai Liu and Michèle Tertilt as well as seminar and conference participants at the University of Wuppertal, the University of Manchester, the University of Mannheim, the T2M Macro Conference 2024 in Amsterdam, the EEA Annual Conference 2024 in Rotterdam, the IIPF Annual Congress 2024, the Gender Gaps Conference 2024 in Warsaw, and the 2024 Annual Conference of the Verein fuer Socialpolitik for helpful comments. Financial support from the British Academy through grant 231796 is gratefully acknowledged.
Piotr Denderski, University of Leicester and Institute of Economics, Polish Academy of Sciences. Tim Obermeier, University of Leicester, IFS and Centre for Economic Performance at London School of Economics.

Published by
Centre for Economic Performance
London School of Economic and Political Science
Houghton Street
London WC2A 2AE

1 Introduction

Certain occupations offer high pay but only to workers who can, and are willing to, put in many hours. The selection into these "nonlinear" occupations has been shown to matter for gender gaps in the labor market, as women are more likely to pursue lower-paying "linear" occupations that do not penalize balancing work and family time commitments (Cortés and Pan, 2019). Because spouses choose labor supply jointly, the importance of families for tax policy is well-recognized (Kleven, Kreiner, and Saez, 2009; Guner, Kaygusuz, and Ventura, 2011; Gayle and Shephard, 2019). However, much less is known about how taxation shapes the gender gaps that arise through occupational selection in couples. This matters because, even after convergence in education and participation, the nonlinearity of certain occupations, and the selection it induces, remains an important source of gender gaps (Goldin, 2014). In this paper, we therefore ask how taxation affects gender gaps through occupational selection, and how the earnings–hours nonlinearities that drive such selection interact with tax reforms.

To this end, we extend the Roy model of occupational selection with earnings–hours nonlinearities and non-work time commitments from Erosa, Fuster, Kambourov, and Rogerson (2022) by introducing labor income taxes and gender heterogeneity in abilities and preferences for work. Thanks to the latter, the calibrated model closely matches the gender gaps in occupational choice, wages, and hours from US data. In the model, households jointly decide on labor supply and occupations of both members in the presence of progressive taxes on household income. There are two large occupations that differ in convexity between hours and earnings.

The model highlights two ways in which occupations matter for tax analysis and gender gaps. First, taxes can distort entry into the nonlinear occupation, especially for secondary earners facing high marginal tax rates under joint filing. Second, because wages follow occupation-specific hours–earnings profiles, tax-induced changes in labor supply also change wages, amplifying the effects of tax reforms on taxable income and gender gaps. To assess these mechanisms, we use the calibrated model to simulate two revenue-neutral tax reforms in the US economy: progressivity-preserving switch to individual taxation (separate filing), and eliminating tax progressivity by switching to proportional taxes. This design isolates the role of joint filing from progressivity.

We have two main findings. First, we show how the two tax reforms affect gender gaps in hours worked, wages and participation in the nonlinear occupation. The effect of the separate filing reform on gender gaps is strongest. We find that introducing separate filing would close the gender gap in hours by 14%, the gender wage gap by 3.4%, and the gender occupation gap by 6.7%.[1] While the reform substantially increases women's hours in the linear occupation, occupational switching remains modest: only women with a weak comparative advantage in the linear occupation switch. This selection generates asymmetric wage-gap responses: the nonlinear occupation sees little change because entrants have relatively low wages (relative to incumbent population), whereas the linear-occupation gender wage gap falls by by 4.6%. The proportional tax reform closes gender gaps by one-half to two-thirds less, because both women and men work more after the reform, muting the relative improvement in gender gaps. The key distinction lies in how the two reforms change incentives within the household. Separate filing lowers marginal tax rates for secondary earners (mostly women) and raises them for primary earners, generating asymmetric labor-supply responses within the household. Proportional taxes lack this asymmetry: marginal tax rates are identical for both spouses and independent of hours worked.

Second, we study the role of the convex earnings-hours relationships and occupational switching in shaping the response of taxable income, which we use as a summary measure of the behavioral response to the reforms. In a standard Mirrleesian framework, changes in taxable income would only be determined by the labor supply response. In our model, there are three separate margins how taxable income adjusts: changes in hours, wages, and occupations. We decompose the role of these margins quantitatively. The key finding is that endogenous wages - due to the earnings/hours convexity - play an important role in amplifying the effects of tax reforms and account for between 20-30% of the response of taxable income to the reforms. Changes in occupations account for a smaller fraction of 1-15%. This is due to both the modest amount of occupational switches and switchers being negatively selected and experiencing below-average gains from entering the nonlinear occupation.

The main contribution of our paper is that it connects two literatures which so far have been

[1] These numbers are a conservative lower bound. In an alternative calibration featuring plausibly more elastic labor supply, the effects of switch to separate filing on gender gaps are significantly stronger. The hours gap decreases by approximately one-fourth, the occupation gap goes down by 17.1% and the wage gap by 8.6%.

considered in isolation. A recent literature has studied multi-occupation models with a convex relationship between earnings and work hours (Erosa et al. (2022); Jang and Yum (2022), Erosa et al. (2025), Bang (2021)). In particular, Erosa et al. (2022) embed the narrative of Goldin (2014) into a structural model of family labor supply and self-selection into occupations, while abstracting from the tax system. At the same time, the large literature which studies the taxation of couples (e.g. Boskin and Sheshinski (1983); Kleven, Kreiner, and Saez (2009); Immervoll, Kleven, Kreiner, and Verdelin (2011); Cremer, Lozachmeur, and Pestieau (2012); Gayle and Shephard (2019); Guner, Kaygusuz, and Ventura (2011, 2023); Holter, Krueger, and Stepanchuk (2019, 2023); Wu and Krueger (2021); Bronson, Haanwinckel, and Mazzocco (2024)) typically abstracts from modeling self-selection into occupations and occupation-specific earnings-hours schedules. To bridge these two literatures, we incorporate income taxation into the model of Erosa et al. (2022) and study the design of income taxation (joint vs separate filing and proportional taxes) in this framework. This allows us to quantify how tax reforms propagate through hours, occupation choice, and the induced wage changes that arise from working longer in nonlinear occupations, and how they affect gender gaps along these margins.

Our paper also complements studies on optimal taxation in models with occupational choice and self-selection (e.g. Rothschild and Scheuer (2013); Ales and Sleet (2022); Ales, Kurnaz, and Sleet (2015); Gomes, Lozachmeur, and Pavan (2018); Boadway, Song, and Tremblay (2017); Laroque and Pavoni (2017)). This literature typically considers choices between job types or sectors that differ in technology or skill intensity, abstracting from gender and the nonlinear earnings–hours relationship emphasized by Goldin (2014). We instead analyze how tax reforms interact with occupational choice with nonlinearities in a two-earner household. Methodologically, we quantitatively study tax policy in a calibrated model with rich multi-dimensional heterogeneity, where the optimal schedule would be difficult to characterize analytically.

2 Model

Our model extends that of Erosa et al. (2022) by integrating progressive income taxation and gender heterogeneity in skills and preferences into a Roy model of family labor supply and occupational choice with nonlinear occupations. The model is static and earnings, wages, and work hours are interpreted as average lifetime outcomes.[2] The model therefore captures the long-run effects of tax reforms.

2.1 Model Primitives

The economy is inhabited by a measure one of couples comprising two agents of opposite gender g: a man m and a woman f.[3] Each of them can supply labor in one of the two technologies that produces the single final good that we refer to as occupations, indexed by $o \in \{1,2\}$. Every agent is endowed with occupation-specific abilities. An individual of ability a_o working h hours in occupation o generates $e_o(h, a_o) = a_o f_o(h)$ efficiency units, where the function $f_o(h)$ captures occupation-specific convexity of efficiency units with respect to hours worked:

$$f_o(h) = \begin{cases} h^{1+\theta_o} \text{ if } h \leq \bar{h}, \\ \\ B_o h \text{ otherwise.} \end{cases}$$

The main difference between occupations is in the parameter θ_o, which describes how strongly efficiency units increase with respect to hours, as long as hours are below the threshold value $\bar{h}$. When hours are greater than $\bar{h}$, the efficiency units become linear in h. B_o is chosen so that $f_o(h)$ is continuous in work hours, which requires $B_o = \bar{h}^{\theta_o}$. We will refer to occupation 1 as the "nonlinear" occupation (or NL occupation), which features a larger extent of convexity. Occupation 2 has less convexity with $\theta_2 < \theta_1$, and will be referred to as the "linear" occupation (or L occupation, respectively). Production y in each occupation is linear in efficiency units e, $y = e$. The price of the final good is normalized to unity, and the markets for efficiency units of labor in each occupation, and for the final good, are perfectly competitive. The hourly wage for an individual who produces $e_o(h, a_o)$ is $w_o = e_o(h, a_o)/h$.

Agents face a gendered, non-market time commitment: T_g hours must exogenously be supplied

[2]While the static nature of the model simplifies the analysis compared to life-cycle models (e. g. Adda, Dustmann, and Stevens (2017), Blundell, Costa Dias, Meghir, and Shaw (2016)), its advantage is that it allows us to incorporate rich heterogeneity in willingness to work and occupational abilities for both spouses, and to study how the tax system interacts with self-selection along these dimensions.

[3]When talking about the spouse of gender g, we will refer to the other spouse as $-g$, that is, $g = f \implies -g = m$ and $g = m \implies -g = f$.

at home before supplying h_g hours in the market. We interpret these time commitments as being determined by social norms. Individuals' preferences over consumption c_g and total work $T_g + h_g$ are given by:

$$u_g(c_g, T_g + h_g) = \log(c_g) - \phi_g \frac{(T_g + h_g)^\eta}{\eta} \quad \text{with gender } g \in \{m, f\}.$$

The scaling factor ϕ_g captures the distaste for work. The utility of a couple is a sum of its members' utilities: $U(c_f, c_m, h_f, h_m) = u_m(c_m, h_m) + u_f(c_f, h_f)$.

Agents differ with respect to the idiosyncratic draws of distaste for work ϕ_g, and occupation-specific abilities a_{og}. Thus, heterogeneity across couples is described by $(a_{1m}, a_{2m}, \phi_m, a_{1f}, a_{2f}, \phi_f)$, jointly log-normally distributed. As an important departure from Erosa et al. (2022), the distributions of abilities and distaste for work are gender-specific.

The government operates a tax-and-transfer system in this economy imposed on the production of the final good. To capture the salient features of the tax and transfer system in the US, we take the joint production of a couple, $e_f + e_m$, as the model counterpart of gross income, which we will also refer to as taxable income. We follow Heathcote, Storesletten, and Violante (2017) and specify the disposable income of a couple, denoted e^d, as:

$$e^d = \lambda \left(e_f^{1-\tau\psi} + e_m^{1-\tau\psi} \right)^{\frac{1-\tau}{1-\tau\psi}}, \tag{1}$$

with λ capturing the level, τ the progressivity, and ψ the jointness of the tax-and-transfer system. As our baseline case, we will set $\psi = 0$ and $\tau > 0$ a fully joint, progressive tax system. In counterfactual exercises, we will consider two alternatives: a separate-filing progressive system ($\psi = 1$, τ unchanged), and a proportional tax system, $\tau = 0$. The former isolates the effect of jointness on the labor market choices and resulting gender gaps, while the latter removes progressivity making ψ irrelevant.

2.2 Optimal Choices

Given household type $\chi = (a_{1m}, a_{2m}, \phi_m,\ a_{1f}, a_{2f}, \phi_f)$, couples choose occupations, hours, and consumption to maximize the sum of the utilities of spouses. The optimization problem can be solved sequentially. For any occupation assignment, the household first chooses labor supply and consumption, and then compares the resulting utilities across all possible occupation assignments. Formally:

$$U^*(\chi) = \max_{o_g \in \{1,2\}^2} \max_{c_m, c_f, h_m, h_f} u_m(c_m, T_m + h_m) + u_f(c_f, T_f + h_f)$$

$$\text{subject to } c_m + c_f = \lambda \left(\sum_{g \in \{m,f\}} \left(a_{o_g g} f_{o_g}(h_g) \right)^{1-\tau\psi} \right)^{\frac{1-\tau}{1-\tau\psi}}.$$

Consumption and Hours Consider the optimization problem given an occupational profile $\mathbf{o} = (o_m, o_f)$. It is optimal for the household to equalize consumption between spouses, $c_f = c_m = c$ so that $2c = e^d$. At an interior solution for hours worked, the first order condition reads:

$$\underbrace{e_g \phi_g \left(T_g + h_g \right)^{\eta - 1}}_{\text{eff. units-weighted cost of work}} = \underbrace{\frac{2(1-\tau) e_{o_g}^{1-\tau\psi}(h_g, a_{o_g})}{e_{o_g}^{1-\tau\psi}(h_g, a_{o_g}) + e_{o_{-g}}^{1-\tau\psi}(h_{-g}, a_{o_{-g}})}}_{\text{net-of-tax weight}:=\omega_g(\tau,\psi)} \times \underbrace{a_{o_g g} f'_{o_g}(h_g)}_{\text{marginal product}}. \tag{2}$$

Thus, the cross-effects on hours are negative, as $\partial h_g / \partial h_{-g} < 0$ directly from Equation (2), and they depend on individual heterogeneity in abilities and distaste for work and on tax system parameters. Furthermore, an exogenous increase in $\omega_g(\tau, \psi)$ encourages spouse g to increase h_g since it acts as an increase in marginal reward.

Occupations Moving on to the optimal choice of occupations, let $(h_m^*(\mathbf{o}), h_f^*(\mathbf{o}), c^*(\mathbf{o}))$ be the hours and common consumption implied by the hour FOCs under (τ, ψ) and the occupational profile $\mathbf{o}$. To understand how taxation interacts with incentives to work in different occupations, it is useful to write the change in household utility induced by spouses switching their occupations from $\mathbf{o}$ to $\mathbf{o}'$ as follows:

$$\Delta U[o_m, o_f \to o'_m, o'_f] = \underbrace{2\left[\log c^*(o') - \log c^*(o)\right]}_{\text{consumption gain}} - \underbrace{\frac{\phi_m}{\eta}\left[(T_m + h^*_m(o'))^\eta - (T_m + h^*_m(o))^\eta\right]}_{\text{work cost of } m}$$
$$- \underbrace{\frac{\phi_f}{\eta}\left[(T_f + h^*_f(o'))^\eta - (T_f + h^*_f(o))^\eta\right]}_{\text{work cost of } f},$$

This expression highlights the economic considerations associated with occupational switching. Imagine a woman who switches from linear to nonlinear occupation. Let us also assume this woman is more productive in this new occupation, but also works more hours there. On the one hand, the switch increases the utility from consumption, both due to higher productivity and work hours. On the other hand, the switch changes each spouse's optimal work hours in both sectors and therefore the disutility of labor. Taxation interacts with both of these aspects. High marginal tax rates for secondary earners directly reduce the consumption gain of working more in the nonlinear occupation, reducing the incentives to choose it. In addition, the tax system also influences optimal work hours. This means that fully assessing the impact of tax reforms requires a quantitative model that takes into account changes in relative work hours between occupations.

2.3 Tax Reforms

The first–order conditions above show how taxation enters household choices. Denote as e^*_g the optimal choice of hours worked in the baseline case of joint taxation. Then, the net-of-tax weight is:

$$\omega^*_g(\tau, 0) = 2(1-\tau)\frac{e^*_g}{e^*_g + e^*_{-g}}, \tag{3}$$

and is proportional to the g-spouse's share in the gross household income.

Hours Worked Keeping occupations fixed, under separate filing, the net-of-tax weight at e^*_g is

$$\omega^*_g(\tau, 1) = 2(1-\tau)\frac{{e^*_g}^{1-\tau}}{{e^*_g}^{1-\tau} + {e^*_{-g}}^{1-\tau}}. \tag{4}$$

As long as $0 < \tau < 1$, the switch from the joint to separate filing decreases the net-of-tax weight for primary earner and increases it for the secondary earner at optimal choice under joint filing. Formally, and employing symmetry of $\omega(\tau, \psi)$ with regard to e_g and e_{-g}:

$$\text{fix } e_g^* \text{ and } e_{-g}^*, \text{ then: } e_g^* > e_{-g}^* \implies \omega_g^*(\tau, 0) > \omega_g^*(\tau, 1). \tag{5}$$

Regarding the proportional tax reform, setting $\tau = 0$ *increases* the net-of-tax weight *for both spouses* when evaluated at e_g^*. Thus, the direct effect of the switch to proportional taxes is for both spouses to increase hours worked.

Occupational Choice In both cases, the tax reforms lead households to reassess the ranking of the spouses' occupational choices, since they change the returns to effort. Spousal heterogeneity in abilities and distaste for work is crucial for this ranking. In addition, there is an important difference between the two tax reforms regarding occupational choice. Under separate filing, the marginal tax rates faced by a worker may differ across occupations. Because of these marginal tax rate differences, for example, a spouse who was indifferent between occupations under joint filing now faces an incentive to choose the occupation with the lower marginal tax rate when filing separately. Such considerations are absent when taxes are proportional. Thus, given the rich household-level heterogeneity, a full assessment of the effects of the tax reforms in the model requires quantitative analysis.

3 Quantitative Analysis

In this section we provide details on how we take the model to the data, assess its fit and document the selection patterns of couples into occupations in the model.

3.1 Model Calibration and Fit

To calibrate the model, we closely follow the strategy of Erosa et al. (2022). We set the upper bound on hours for occupations to feature convexity at 2500 hours annually which roughly corresponds to 50 hours per week. The parameters θ_1 and θ_2, which determine the convexity of the earnings-hours functions, are set to 0.6 and 0.2, respectively.[4] The curvature of the disutility of labor is set to $\eta = 3$.[5] The exogenous time spent on home production is $T_f = 500$ and $T_m = 0$. We then set the tax progressivity parameter at $\tau = 0.133$ following Wu and Krueger (2021) who estimate this coefficient using PSID data for 1999-2009, which is broadly comparable to the period analyzed in Erosa et al. (2022) in the Current Population Survey data.

The main difference between our calibration strategy and theirs concerns the distribution of the household type $\chi = (a_{1m}, a_{2m}, \phi_m,\ a_{1f}, a_{2f}, \phi_f)$. Like them, we assume it to be drawn from a multivariate log-normal distribution. However, we allow for the means to be gendered in order to calibrate a model to match gender gaps in occupations, hours, and wages.[6] These gender differences in means are a reduced form for e.g. social norms or gendered investment and not a structural statement about innate differences. Thus, we expand the set of targeted moments by gender gaps in hours worked and wages within each occupation, and the gender difference in the share of workers in the NL occupation. Hence, we calibrate three additional parameters to map five additional targets. The occupational gap is defined as a difference between shares of men and women working in the NL occupation. The other four gaps are calculated as a logarithm of the ratio of the mean outcome of interest (wages, hours) for men divided by that for women.

As in Erosa et al. (2022), we normalize the mean of log-ability in the NL occupation for men to zero. The mean value of log ability of the L occupation matches the share of men's employment in that occupation. The mean value of log distaste for work (μ_ϕ) is linked to the mean level of hours worked by men. The variances of ability ($\sigma_{a_1}, \sigma_{a_2}$) are chosen to match the variance of observed men's log-wages in each occupation. The correlation of abilities across occupations (ρ_{a_1,a_2}) affects the wage gap between occupations for men. The variance of the work preference (σ_ϕ) is related to the variance of men's work hours. The correlation parameters for ability across

[4]Our results are robust to different assumptions on occupational convexity which we demonstrate in Online Appendix A.

[5]The elasticity of labor supply is important for the effects of counterfactual tax reforms and we also consider a robustness check with more elastic labor supply in Section 4.

[6]Erosa et al. (2022) study to what extent the narrative of Goldin (2014) can explain observed gender gaps. As a result, their calibration only matches part of the gender gaps in the data. For our tax analysis, however, it is important that the model replicates the data more closely. Formally, we scale the draws of abilities and distaste for work for women by a constant factor. Under log-normality it implies a shift in the mean but it has no effect on the variance-covariance matrix.

TABLE 1: Calibration: Model Parameters

Parameter	Description	Value
Exogenous (fixed)		
$\bar{h}$	Convexity upper bound, annual hours	2500
θ_1	Convexity, NL occupation	0.6
θ_2	Convexity, L occupation	0.2
η	Curvature of disutility of labor	3
T_f	Home production hours (women)	500
T_m	Home production hours (men)	0
τ	Tax progressivity	0.133
ψ	Tax jointness	0
$\mu_{a_{NL},m}$	Mean log-ability, NL occupation, men	0
Internally calibrated		
$\mu_{a_{NL},f}$	Mean log-ability, NL occupation, women	-0.425
$\mu_{a_L,m}$	Mean log-ability, L occupation, men	-0.169
$\mu_{a_L,f}$	Mean log-ability, L occupation, women	-0.357
$\mu_{\phi,m}$	Mean log-distaste for work, men	0.458
$\mu_{\phi,f}$	Mean log-distaste for work, women	0.041
$\sigma^2_{a_L}$	Std. dev. of log-ability, L occupation	0.188
$\sigma^2_{a_{NL}}$	Std. dev. of log-ability, NL occupation	0.390
σ^2_{ϕ}	Std. dev. of log-distaste for work	0.838
ρ_{a_1,a_2}	Correlation of log-ability across occupations	0.181
ρ_{a_f,a_m}	Correlation of log-ability in couples	0.696
ρ_{ϕ_f,ϕ_m}	Correlation of log-distaste for work in couples	0.506
$1-\lambda$	Tax level (unit adjustment)	4.533

Implied means				
Ability, NL occupation	Men:	1.099	Women:	0.718
Ability, L occupation	Men:	1.026	Women:	0.850
Distaste for work	Men:	2.246	Women:	1.480

Notes: Endogenously set parameters are estimated by minimizing the distance between model-implied moments and data moments. Tax level parameter is internally calibrated to preserve the tax function estimated by Wu and Krueger (2021) despite different scaling of income.

TABLE 2: Calibration: Model and Data Moments

Targeted Moments	Data	Model	Untargeted Moments	Data	Model
Log of mean hours, men	7.67	7.66	Log of mean hours, women	7.40	7.41
Std of log-wages in NL occ., men	0.45	0.51	Std of log-wages in NL occ., women	0.48	0.51
Std of log-wages in L occ., men	0.47	0.42	Std of log-wages in L occ., women	0.47	0.45
Std of log-hours, men	0.26	0.24	Std of log-hours, women	0.46	0.47
Wage gap between occs., men	0.37	0.34	Wage gap between occs., women	0.36	0.29
Share of men in NLocc.	0.60	0.61			
NL occupation gap	0.24	0.22			
Hours gap, NL occ.	0.23	0.20			
Hours gap, L occ.	0.23	0.25			
Wage gap, NL occ.	0.34	0.38			
Wage gap, L occ.	0.35	0.32			
Log-hours correlation in couples	0.02	0.02			
Log-wage correlation in couples	0.43	0.41			

Notes: The NL occupation gap is the difference between the share of men and share of women in the NL occupation. All the other gaps are defined as logarithm of the ratio of means of objects of interest. For the wage gaps between occupations, the ratio has mean wage in NL occupation in the numerator. The model is over-identified: apart from the unit adjustment which is attained by the calibration of the tax level λ to account for different scale of income between our model and that of Wu and Krueger (2021), we target 13 moments with 11 parameters. The data targets are as stated in Erosa et al. (2022) empirical work on Current Population Survey data.

spouses and the work preference across spouses (ρ_{a_f,a_m} and ρ_{ϕ_f,ϕ_m}) are linked to the wage and hours correlations.

Finally, as the unit of income is not normalized in our model, we endogenously calibrate the tax level parameter to preserve the tax system captured by the function estimated by Wu and Krueger (2021).[7] The endogenously calibrated model parameters are set to minimize the equally-weighted distance between data moments and model-implied moments. We target the data moments reported by Erosa et al. (2022), which are computed from CPS data. We summarize the parametrization of the model in Table 1, together with model-implied average levels of abilities

[7]Wages are determined by ability and hours. Erosa et al. (2022) normalize the mean of log ability in occupation 1 to 0, which affects the scaling of wages. We follow this strategy so that our calibration remains closely interpretable to theirs. The adjustment required to preserve the tax system properties exploits the fact that the Benabou tax function is homogeneous of degree $1-\tau$ in taxable income and the λ component needs to be multiplied by the scale difference raised to the power of the degree of homogeneity.

and distaste for work across genders.

In the presence of occupational convexity and home production time commitment falling entirely on women, the model rationalizes the data by women featuring, on average, lower distaste for work. Women are also found to have lower average ability in both occupations with the difference being greater in the NL occupation. The model implies positive assortative matching of spouses on abilities and distaste for work: respective correlations are fairly large and positive. Overall, the model fits the data well, including untargeted moments on hours and wages of women, see Table 2.[8]

3.2 Earning Gaps and Occupational Selection

In the light of analytical results in Section 2.3, income gaps between primary and secondary earners matter for how labor supply and occupational choices respond to tax reforms. These gaps, however, depend also on selection of workers into occupations. Hence, absolute and comparative advantages of the spouses matter. Thus, to understand the effects of tax reforms, one needs to know the distribution of primary and secondary earner shares in household income and the patterns of selection of households into occupations in the baseline joint taxation case. We provide data on this in Table 3 where we report the distribution of couples across the four occupational choice combinations.

About one third of couples have both spouses working in the nonlinear occupation. A similar share of couples feature both spouses working in the L occupation. However, there is a strong gendered asymmetry in the composition of occupationally mixed couples. Only one in seven of such couples have the woman working in the NL occupation. Only in this group does the woman work more hours than man, also earning more. Yet, both spouses in those couples earn less than average wages.

The income gaps between primary and secondary earners are greatest among the M:NL W:L couples and M:NL W:NL couples. In both of these household types women are secondary earners. However, an average household in the M:NL W:L category faces the lowest marginal tax

[8] Additionally, the model implies similar quantitative importance of home time commitment on gender gaps as in Erosa et al. (2022) which we provide more details on, together with the importance of other dimensions of individual heterogeneity for gender gaps, for interested readers in Online Appendix Section B.

TABLE 3: Distribution of occupational selection of couples.

Variable	Couple type			
	Man: NL Woman: NL	Man: L Woman: NL	Man: NL Woman: L	Man: L Woman: L
Population share	0.357	0.033	0.255	0.354
Primary earner income share	0.662	0.580	0.775	0.603
Primary earner gender	Man	Woman	Man	Man
MTR at avg. couple type income	0.327	0.292	0.276	0.282
ATR at avg. couple type income	0.225	0.184	0.166	0.171
Annual Hours (man)	2206	1752	2247	1975
Annual Hours (woman)	1801	2112	1353	1652
Gross wage (man)/ Avg. wage	1.526	0.724	1.196	0.964
Gross wage (woman)/Avg. wage	0.955	0.830	0.576	0.758
Ability NL occ. (man)	1.719	0.757	1.328	0.689
Ability, NL occ. (woman)	1.223	0.961	0.639	0.494
Ability L occ. (man)	0.745	0.873	0.885	1.134
Ability L occ. (woman)	0.620	0.726	0.737	0.927
Distaste for work (woman)	1.285	1.127	1.885	1.628
Distaste for work (man)	2.119	3.071	2.169	2.738

Notes: Annual hours report average annual hours and the ratio of gross wage to average wage has mean gross wage over household in each couple-type, average wage is population-wide mean gross wage. MTR stands for marginal tax rate, ATR stands for average tax rate. Average wage is population-wide mean of gross wage. The bottom six rows report averages of abilities and distaste (in levels) for work for members of households in each couple type.

rates.[9] The smallest earning gaps prevail in the remaining two household types and women are primary earners only in the M:L W:NL households.

Regarding selection, we employ two measures, one capturing how strongly workers in a particular couple type differ from other members of their gender, and the other measure describes individual comparative advantages. Formally, let the couple type be $k \in \{(NL, NL), (L, NL), (NL, L), (L, L)\}$, where the first element indicates occupation chosen by man. The first measure, *population selection ratio* is $S_{x,g,k} = E[x_g \mid k]/E[x_g]$, and indicates whether individuals are above

[9]For completeness, the marginal tax rate at the average income in the population is approximately 30% and the average tax rate is about 20%, as in Wu and Krueger (2021).

or below their gender-specific mean in trait x. To capture within-person relative productivity, we define a *comparative advantage ratio* $C_{g,k} = E[a_{L,g} \mid k]/E[a_{NL,g} \mid k]$, with $C_{g,k} > 1$ indicating a relative advantage in the L occupation.

Couples in which both partners work in the nonlinear occupation are positively selected on NL ability, with women exhibiting markedly stronger selection than men, and both partners displaying below-average distaste for work.[10] The (L, L) couples are jointly positively selected on L-ability and to a similar extent relative to the population averages , with both partners having relatively high ϕ.[11] Mixed couples display sharp specialization. In (L, NL) households, women are positively selected on NL ability and have the lowest (across the four couple types) average distaste for work. By contrast, men are below average in both NL and L ability and exhibit high distaste for work, having a clear comparative advantage in the L occupation.[12] In M:NL, W:L households, the pattern reverses: men exhibit positive selection in NL-ability and have a relatively low ϕ, whereas women are below average in NL-ability, with a comparative advantage in the L-ability, and have significantly above-average distaste for work.[13] We conclude that the wage gaps across occupations would have been larger if it was not for a much stronger positive selection of women into the NL occupation.

4 Counterfactual Tax Reforms and Gender Gaps

In this section, we report the results of two counterfactual, balanced-budget tax reforms replacing the joint-progressive tax system with either separate filing (keeping progressivity constant) or proportional taxes.[14] Our analysis focuses on how these two reforms affect gender gaps in hours, wages and occupations, and to what extent changes in wages and occupations - which are the

[10]In the $k = (NL, NL)$ case the selection ratios are: $S_{m,a_{NL},k} \approx 1.41$ and $S_{f,a_{NL},k} \approx 1.52$ while for distaste for work: $S_{m,\phi,k} \approx 0.93$ and $S_{f,\phi,k} \approx 0.87$. Furthermore: $C_m \approx 0.745/1.719 = 0.43$ and $C_f \approx 0.620/1.223 = 0.51$.

[11]For $k = (L, L)$ the selection ratios for the L-ability are $S_{m,a_L,k} \approx 1.22$ and $S_{f,a_L,k} \approx 1.21$ and for distaste for work: $S_{m,\phi,k} \approx 1.26$ and $S_{f,\phi,k} \approx 1.27$. Comparative advantage in L is stronger for women: $C_{m,k} \approx 1.134/0.689 = 1.65$ and $C_{f,k} \approx 0.927/0.494 = 1.88$.

[12]For the $k = (L, NL)$ couple type, the following holds: $S_{m,a_L,k} \approx 1.20$, $S_{f,a_{NL},k} \approx 1.20$, $S_{m,\phi,k} \approx 1.35$ and $S_{f,\phi,k} \approx 1.12$. Comparative advantage ratios are: $C_{m,k} \approx 0.873/0.757 = 1.15$ and $C_{f,k} \approx 0.726/0.961 = 0.76$.

[13]In $k = (NL, L)$ couples we find: $S_{m,a_{NL},k} \approx 1.31$, $S_{f,a_L,k} \approx 1.20$. $S_{f,\phi,k} \approx 1.63$, $S_{m,\phi,k} \approx 1.02$. Comparative advantage ratios are: $C_{m,k} \approx 0.885/1.328 = 0.67$, $C_{f,k} \approx 0.737/0.639 = 1.15$.

[14]In both cases, the tax level parameter adjusts to ensure revenue neutrality.

TABLE 4: Tax Reforms and Gender Gaps

Scenario	Aggregate			By Occupation			
	Occupations	Wages	Hours	Wages		Hours	
				NL	L	NL	L
Panel A: $\eta = 3$ (main)							
Joint Taxation (Baseline)	0.222	0.435	0.254	0.382	0.320	0.196	0.248
Separate Filing	-0.015	-0.015	-0.036	-0.003	-0.015	-0.023	-0.040
+ *Fixed Occupations*	—	-0.014	-0.034	-0.020	-0.007	-0.034	-0.033
+ *Fixed Occupations & Wages*	—	—	-0.014	—	—	+0.014	-0.016
Proportional Taxes	-0.005	-0.005	-0.015	-0.005	-0.001	-0.011	-0.014
+ *Fixed Occupations*	—	-0.005	-0.014	-0.010	-0.003	-0.014	-0.013
+ *Fixed Occupations & Wages*	—	—	+0.007	—	—	+0.036	+0.003
Panel B: $\eta = 1.5$ (robustness)							
Joint Taxation (Baseline)	0.227	0.417	0.253	0.338	0.321	0.171	0.251
Separate Filing	-0.039	-0.036	-0.071	0.007	-0.047	-0.020	-0.094
Proportional Taxes	-0.015	-0.020	-0.036	-0.008	-0.016	-0.014	-0.039

Notes: The table reports gender gaps and the changes induced by tax reforms. Panel A corresponds to our main calibration. In Panel B we report the results under the assumption of more elastic labor supply. The Joint Taxation rows report gaps levels as in the calibrated baseline model. Separate Filing and Proportional Taxes rows report changes (in log-points) relative to the Joint Taxation baseline case. Additionally, in *Fixed Occupations* agents are constrained to remain in the occupations they chose in the baseline. Furthermore, in *Fixed Occupations & Wages* we further assume the wages are kept constant. The dashed cells indicate no change relative to baseline by construction.

main novel elements in the model compared to a standard Mirrleesian setting with exogenous wages - amplify the response of taxable income to the reform.

4.1 Separate Filing

Panel (A) of Table 4 first shows how the separate filing reform affects gender gaps in our calibrated model for the case of $\eta = 3$, which corresponds to a Frisch elasticity of labor supply of 0.5.[15] Replacing joint filing with separate filing primarily affects the gender gap in hours. In the

[15]While this value, which is used by Erosa et al. (2022), is roughly consistent with the micro-evidence on Frisch elasticities, it provides a conservative estimate of the long-run effects of taxes, which could involve larger elasticities. We therefore also consider the case of a larger Frisch elasticity in Section 4.3.

baseline calibration, the aggregate hours gap falls by about one-sixth (Table 4). This pattern follows directly from the analytical results in Section 2.3; under separate filing the net-of-tax weight rises for secondary earners and falls for primary earners. Because most women are secondary earners, their hours respond more strongly while men reduce hours only slightly (Table 5), particularly because the punishment to do so in the NL occupation is more severe. We also find that the shrinkage of the hours gap is driven almost exclusively by the linear occupation.

The separate filing reform increases the fraction of women who work in the nonlinear occupation, which goes up by 1.5 pp, closing roughly 7% of the gender occupation gap. Occupational switching comes solely from women in L from M:NL W:L couples, and only 5.6% of these women switches. These women are, on average, the least suited ones for the NL occupation (see Table 3).[16] The reduction in the occupation gap is smaller compared to the reduction in the hours gap, since even though many women in the linear occupation increase their labor supply, only those with a weak comparative advantage in the linear occupation will be induced to switch. Switchers are more likely to be women who have a below-average wage in the linear occupation, and they tend to enter the nonlinear occupation at relatively low wages compared to the incumbents there. The selection of switchers based on relative ability somewhat limits how much switching amplifies the effects of the tax reform.

For the gender wage gap, the separate filing reform leads to a modest reduction. Not only are the switchers to the NL occupation negatively selected, but also the largest increase in women's hours are concentrated in the L occupation, where response of wages to hours is weaker. Interestingly, the reduction of the gender wage gap is stronger in the linear occupation, where the wage-hours feedback is weaker. This is driven by selection, as the reform leads some women with a weak comparative advantage in the linear occupation to switch. Table 4 shows that in the absence of occupational switching, the reduction in the wage gap would be larger in the nonlinear occupation.

We further use our model to quantify the extent to which endogenous wages and occupational choice amplify the response of taxable income. Overall, women's taxable income increases by

[16] Similarly, the share of men leaving NL from M:NL–W:L couples is negligible. These men were more positively selected into the NL occupation than their spouses were into the L occupation. In the text, we report only non-negligible occupational flows. Additional information, including illustration of wage distributions of incumbents and switchers that we discuss next, are in section C of the Supplemental Appendix.

3% and men's decreases by 1% (Table 5). To understand the role of the underlying margins, we perform further decompositions where we hold occupations or wages constant.[17] The standard labor supply channel accounts for about 70% of the effect of the reform on taxable income. The two new channels introduced in our model, occupational convexity and occupational choice, are responsible for the remaining 30%. Importantly, wage changes matter much more than occupational switches (25-27% of the overall effect) since there is a modest number of switchers and they are negatively selected on the NL-ability relative to the incumbent population.

Fixing occupations changes gender gaps only modestly.[18] By contrast, fixing wages eliminates roughly two-thirds of the shrinkage in the aggregate hours gap, reflecting the central role of occupational convexity in amplifying labor-supply responses (Table 4). Interestingly, the hours gap in the nonlinear occupation *increases* when we fix wages. When wages are fixed, there is no punishment from decreasing hours worked and this effect most strongly affects women in the nonlinear occupation. Because of that, it is also instructive to compare the response of gender gaps to taxation in a model where occupations and wages are fixed to begin with since the incentives to choose hours in the baseline change as well. In this version of the model, switching to separate filing closes about 11% of the aggregate hours gap (again almost two-thirds of the overall effect). The effect of proportional taxes on the hours gap in this environment is to decrease it by 3%. Thus, we conclude that occupational convexity is responsible for up to two-thirds of the response of the hours gap to removal of tax jointness.

4.2 Proportional Taxes

Setting $\tau = 0$ leads to a significantly weaker shrinkage of gender gaps. In fact, the wage and occupational gaps experience negligible changes. The reduction in the aggregate hours gap (now only 40% of the reduction under separate filing) is again primarily driven by the L occupation.

[17] To compute the fraction due to occupation changes, we compare the effect of the reform to a model version in which we force individuals to remain in the same occupation as initially. For the fraction due to wage changes, we write $y_i^k = w_i^k h_i^k$ with i representing individuals and $k = 0/1$ being a pre/post-reform indicator. We then compute counterfactual post-reform incomes $\tilde{y}_i^1 = w_i^0 h_i^1$, holding wages at the pre-reform level, to isolate the role of wage changes.

[18] Moreover, when switching is not allowed, the wage gap in the NL occupation shrinks by more, illustrating that switchers are negatively selected relative to NL incumbents.

The main reason behind the muted response of the aggregate gender gaps is that under proportional taxes, not only women, but also men increase, on average, their hours worked. For women, this increase is about 4.6% on average, while for men it is 3.0% (Table 5). Taken together, the taxable income increases by approximately 6% for women, and by almost 4% for men. As in the other tax reform, almost 30% of the effect comes from the two novel margins: wage and occupational changes.

The increase in labor supply is coupled with more men and women, on net, entering the nonlinear occupation. The share of women switching from the L occupation decreases by one-fourth (4.6% of women in the M:NL W:L couples), while it almost triples to nearly 10% for the men in M:L W:NL households. Unlike in the previous reform, about 2% of double-L households also sends one of their members to the nonlinear occupation.[19] The selection patterns are in line with the separate filing experiment; it is again the case that women entering the nonlinear occupation are negatively selected. The relative importance of occupational choice and occupational convexity margins resembles that under separate filing reform: the occupational switching matters little.

4.3 Sensitivity Analysis: More Elastic Labor Supply

To assess the importance of the labor supply elasticity we have re-calibrated the model with $\eta = 1.5$, implying a Frisch elasticity of 2. Overall the fit is as good as in the baseline specification.[20] The main mechanisms are unchanged and separate filing still reduces gender gaps more strongly than proportional taxation. However, the quantitative effects are substantially larger: separate filing now closes about 28% of the aggregate hours gap (versus about 15% in the baseline), roughly 17% of the occupation gap (versus 7%), and about 9% of the wage gap (versus about 3–4%). The decomposition of taxable income responses remains dominated by hours, although wage and occupation margins account for a somewhat larger share of the overall adjustment.

[19] In three out of four cases it is the man who goes to the NL occupation.
[20] We report on the estimated parameters and model fit in Section D of the Online Appendix.

TABLE 5: Effects of Tax Reforms on Labor Market Outcomes and Income Decomposition

	Separate Filing		Proportional Tax	
Variable	$\eta = 3$	$\eta = 1.5$	$\eta = 3$	$\eta = 1.5$
Panel A. Women				
Share in NL occupation	+1.48pp	+4.04pp	+1.18pp	+2.6pp
Annual hours	+3.03%	+6.16%	+4.61%	+7.86%
Hourly wage	+1.25%	+3.29%	+1.65%	+3.04%
Taxable income	+2.93%	+6.07%	+5.86%	+9.48%
Fraction due to wage changes	0.31	0.37	0.24	0.27
Fraction due to occ. changes	0.05	0.15	0.03	0.06
Panel B. Men				
Share in NL occupation	-0.02pp	+0.06pp	+0.72pp	+1.06pp
Annual hours	-0.59%	-1.09%	+3.03%	+4.05%
Hourly wage	-0.25%	-0.39%	+1.07%	+0.97%
Taxable income	-1.00%	-1.73%	+3.95%	+4.66%
Fraction due to wage changes	0.27	0.21	0.26	0.19
Fraction due to occ. changes	0.03	0.11	0.01	0.01

Notes: Changes are relative to the baseline joint taxation system. "Fraction due to" entries decompose the change in taxable income into wage and occupational components, the remaining component is the response of hours worked. In the decomposition, we keep either the wages, or the occupation at the pre-reform values.

5 Conclusions

Differences in the responsiveness of wages to hours across occupations are an important determinant of gender inequality. We study their implications for taxation using a model of household labor supply and occupational choice.

Calibrating the model to the US, we find that both a switch from joint to individual taxation and an increase in progressivity matter predominantly for the gender hours gap. Occupational convexity plays a key amplifying role, as changes in hours translate into different wages within occupations. This highlights the importance of accounting for feedback between hours and wages when evaluating tax reforms.

The paper also points to several avenues for future work. Empirically, the strong interaction between hours and wages underscores the need for better evidence on the dynamic wage effects of hours. Theoretically, future research could incorporate life-cycle wage growth and income risk, and extend models of optimal taxation for couples to allow for endogenous wages and occupational choice.

References

Adda, Jérôme, Christian Dustmann, and Katrien Stevens. 2017. "The career costs of children." *Journal of Political Economy* 125 (2):293–337.

Ales, Laurence, Musab Kurnaz, and Christopher Sleet. 2015. "Technical Change, Wage Inequality, and Taxes." *American Economic Review* 105 (10):3061–3101.

Ales, Luca and Christopher Sleet. 2022. "Optimal Taxation of Income-Generating Choice." *Econometrica* 90 (5):2397–2436.

Bang, Minji. 2021. "Job flexibility and household labor supply: Understanding gender gaps and the child wage penalty." .

Blundell, Richard, Monica Costa Dias, Costas Meghir, and Jonathan Shaw. 2016. "Female labor supply, human capital, and welfare reform." *Econometrica* 84 (5):1705–1753.

Boadway, Robin, Zhen Song, and Jean-François Tremblay. 2017. "Optimal Income Taxation and Job Choice." *Scandinavian Journal of Economics* 119 (4):910–938.

Boskin, Michael J and Eytan Sheshinski. 1983. "Optimal tax treatment of the family: Married couples." *Journal of Public Economics* 20 (3):281–297.

Bronson, Mary Ann, Daniel Haanwinckel, and Maurizio Mazzocco. 2024. "Taxation and household decisions: an intertemporal analysis." Tech. rep., National Bureau of Economic Research.

Cortés, Patricia and Jessica Pan. 2019. "When Time Binds: Substitutes for Household Production, Returns to Working Long Hours, and the Skilled Gender Wage Gap." *Journal of Labor Economics* 37 (2):351–398.

Cremer, Helmuth, Jean-Marie Lozachmeur, and Pierre Pestieau. 2012. "Income Taxation of Couples and the Tax Unit Choice." *Journal of Population Economics* 25 (2):763–778.

Erosa, Andrés, Luisa Fuster, Gueorgui Kambourov, and Richard Rogerson. 2022. "Hours, occupations, and gender differences in labor market outcomes." *American Economic Journal: Macroeconomics* 14 (3):543–590.

———. 2025. "Occupations, Human Capital Accumulation and Inequality." Tech. rep., National Bureau of Economic Research.

Gayle, George-Levi and Andrew Shephard. 2019. "Optimal Taxation, Marriage, Home Production, and Family Labor Supply." *Econometrica* 87 (1):291–326.

Goldin, Claudia. 2014. "A grand gender convergence: Its last chapter." *American Economic Review* 104 (4):1091–1119.

Gomes, Renato, Jean-Marie Lozachmeur, and Alessandro Pavan. 2018. "Differential Taxation and Occupational Choice." *The Review of Economic Studies* 85 (1):511–557.

Guner, Nezih, Remzi Kaygusuz, and Gustavo Ventura. 2011. "Taxation and household labour supply." *The Review of Economic Studies* 79 (3):1113–1149.

———. 2023. "Rethinking the welfare state." *Econometrica* 91 (6):2261–2294.

Heathcote, Jonathan, Kjetil Storesletten, and Giovanni L Violante. 2017. "Optimal tax progressivity: An analytical framework." *The Quarterly Journal of Economics* 132 (4):1693–1754.

Holter, Hans A, Dirk Krueger, and Serhiy Stepanchuk. 2019. "How does tax progressivity and household heterogeneity affect Laffer curves?" *Quantitative Economics* .

———. 2023. "Till the IRS do us part:(optimal) taxation of households." Tech. rep., Working Paper.

Immervoll, Herwig, Henrik J. Kleven, Claus T. Kreiner, and Nicolas Verdelin. 2011. "Optimal Tax and Transfer Programs for Couples with Extensive Labor Supply Responses." *Journal of Public Economics* 95 (11):1485–1500.

Jang, Youngsoo and Minchul Yum. 2022. "Nonlinear occupations and female labor supply over time." *Review of Economic Dynamics* 46:51–73.

Kleven, Henrik Jacobsen, Claus Thustrup Kreiner, and Emmanuel Saez. 2009. "The Optimal Income Taxation of Couples." *Econometrica* 77 (2):537–560.

Laroque, Guy and Nicola Pavoni. 2017. "Optimal Taxation in Occupational Choice Models: An Application to the Work Decisions of Couples." IFS Working Paper W17/07, Institute for Fiscal Studies (IFS).

Rothschild, Casey and Florian Scheuer. 2013. "Redistributive taxation in the Roy model." *The Quarterly Journal of Economics* 128 (2):623–668.

Wu, Chunzan and Dirk Krueger. 2021. "Consumption insurance against wage risk: Family labor supply and optimal progressive income taxation." *American Economic Journal: Macroeconomics* 13 (1):79–113.

Online Appendix

Household Taxation, Nonlinear Occupations, and Gender Gaps

Piotr Denderski, Tim Obermeier

December 3, 2025

A Sensitivity Analysis: Occupational Convexity

We re-estimate model parameters under varying specifications of the degree of occupational convexity to assess the robustness of our quantitative findings about tax reforms. To this end, we allow for three alternative choices of θ_1 and θ_2 parameters. In the main body of the paper, we set these at $\theta_1 = 0.6$ and $\theta_2 = 0.2$. Here we consider, firstly, decreasing the difference between occupations by making the NL occupation less convex, $\theta_1 = 0.5$ while keeping $\theta_2 = 0.2$. Secondly, we try increasing the difference between occupations and set $\theta_1 = 0.7$ and $\theta_2 = 0.2$. Thirdly and finally, we also investigate making the L occupation fully linear: $\theta_1 = 0.6$, $\theta_2 = 0$.

We report the estimated parameters, data and model moments, and effects of tax reforms on gender gaps in A.1 - A.3 for Case I, A.4 - A.6 for Case II and A.7 - A.9 for Case III.

Across the three robustness exercises varying the convexity of occupations, the qualitative and quantitative patterns of the tax-reform effects remain largely the same as in the baseline, minimal quantitative differences occur in predictable ways. When the nonlinear occupation is made less convex (Case I), the earnings–hours schedule becomes flatter, reducing the amplification of hours changes into wage changes. As a result, the reductions in gender gaps under separate filing and proportional taxation are only slightly smaller than in the baseline, and the occupational margin responds even less. Conversely, when the nonlinear occupation is made more convex (Case II), the wage response to hours is stronger. This slightly increases the importance of occupational convexity relative to occupational switching, but the overall changes in gender gaps remain close to those in the baseline: hours gaps still fall most strongly under separate filing, the wage gap responds modestly, and the occupational gap adjusts only minimally. When the linear occupation is made fully linear (Case III), the distinction between occupations becomes sharper, but the overall tax-reform effects again closely mirror the baseline case. Separate filing continues to reduce gender gaps primarily through hours adjustments, and the wage response remains concentrated in the nonlinear occupation where convexity persists. Making the linear occupation fully linear does not meaningfully alter the limited occupational reallocation observed in the baseline, because selection patterns continue to limit workers' movement across occupations.

TABLE A.1: Robustness Check I (less convex NL occ.): Parameters

Parameter	Description	Value
Exogenous (fixed)		
$\bar{h}$	Convexity upper bound, annual hours	2500
θ_1	Convexity, NL occupation	0.5
θ_2	Convexity, L occupation	0.2
η	Curvature of disutility of labor	3
T_f	Home production hours (women)	500
T_m	Home production hours (men)	0
τ	Tax progressivity	0.133
ψ	Tax jointness	0
$\mu_{a_{NL},m}$	Mean log-ability, NL occupation, men	0
Internally calibrated		
$\mu_{a_{NL},f}$	Mean log-ability, NL occupation, women	-0.439
$\mu_{a_L,m}$	Mean log ability, L occupation, men	-0.169
$\mu_{a_L,f}$	Mean log ability, L occupation, women	-0.356
$\mu_{\phi,m}$	Mean log distaste for work, men	0.530
$\mu_{\phi,f}$	Mean log distaste for work, women	0.074
$\sigma^2_{a_L}$	Std. dev. of ability, L occupation	0.188
$\sigma^2_{a_{NL}}$	Std. dev. of ability, NL occupation	0.378
σ^2_{ϕ}	Std. dev. of distaste for work	0.819
ρ_{a_1,a_2}	Correlation of ability across occupations	0.343
ρ_{a_f,a_m}	Correlation of ability in couples	0.680
ρ_{ϕ_f,ϕ_m}	Correlation of distaste for work in couples	0.477
λ	Tax level (unit adjustment)	4.098

Notes: Endogenously set parameters are estimated by minimizing the distance between model-implied moments and data moments. Tax level parameter is internally calibrated to preserve the tax function estimated by Wu and Krueger (2021) despite different scaling of income.

TABLE A.2: Robustness Check I (less convex NL occ.): Model and Data Moments

Targeted Moments	**Data**	**Model**	**Untargeted Moments**	**Data**	**Model**
Log of mean hours, men	7.67	7.65	Log of mean hours, women	7.40	7.41
Std of log-wages in NL occ., men	0.45	0.52	Std of log-wages in NL occ., women	0.48	0.51
Std of log-wages in L occ., men	0.47	0.42	Std of log-wages in L occ., women	0.47	0.45
Std of log-hours, men	0.26	0.24	Std of log-hours, women	0.46	0.40
Wage gap between occ., men	0.37	0.34	Wage gap between occ., women	0.36	0.26
Share of men in NL occ.	0.60	0.62			
NL occ. gap	0.24	0.22			
Hours gap, NL occ.	0.23	0.20			
Hours gap, L occ.	0.23	0.24			
Wage gap, NL occ.	0.34	0.39			
Wage gap, L occ.	0.35	0.29			
Log-hours correlation in couples	0.02	-0.01			
Log-wage correlation in couples	0.43	0.41			

Notes: The NL occupation gap is the difference between the share of men and share of women in the NL occupation. All the other gaps are defined as logarithm of the ratio of means of objects of interest. For the wage gaps between occupations, the ratio has mean wage in NL occupation in the numerator. The model is over-identified: apart from the unit adjustment which is attained by the calibration of the tax level $1 - \lambda$ to account for different scale of income between our model and that of Wu and Krueger (2021), we target 13 moments with 11 parameters.

TABLE A.3: Robustness Check I (less convex NL occ.). Tax Reforms and Gender Gaps.

Scenario	**Aggregate**			**By Occupation**			
	Occupations	Wages	Hours	Wages		Hours	
				NL	L	NL	L
Joint Taxation (Baseline)	0.219	0.424	0.245	0.391	0.290	0.198	0.240
Separate Filing	-0.012	-0.012	-0.033	-0.001	-0.014	-0.022	-0.036
Proportional Tax	-0.004	-0.005	-0.014	-0.004	-0.004	-0.011	-0.013

Notes: The Joint Taxation rows report gaps levels as in the calibrated model. Separate Filing and Proportional Taxes rows report changes (in log-points) relative to the Joint Taxation baseline case.

TABLE A.4: Robustness Check II (more convex NL occ.): Parameters

Parameter	Description	Value
Exogenous (fixed)		
$\bar{h}$	Convexity upper bound, annual hours	2500
θ_1	Convexity, NL occupation	0.7
θ_2	Convexity, L occupation	0.2
η	Curvature of disutility of labor	3
T_f	Home production hours (women)	500
T_m	Home production hours (men)	0
τ	Tax progressivity	0.133
ψ	Tax jointness	0
$\mu_{a_{NL},m}$	Mean log-ability, NL occupation, men	0
Internally calibrated		
$\mu_{a_{NL},f}$	Mean log-ability, NL occupation, women	-0.383
$\mu_{a_L,m}$	Mean log ability, L occupation, men	-0.211
$\mu_{a_L,f}$	Mean log ability, L occupation, women	-0.396
$\mu_{\phi,m}$	Mean log distaste for work, men	0.343
$\mu_{\phi,f}$	Mean log distaste for work, women	-0.066
$\sigma^2_{a_L}$	Std. dev. of ability, L occupation	0.189
$\sigma^2_{a_{NL}}$	Std. dev. of ability, NL occupation	0.345
σ^2_{ϕ}	Std. dev. of distaste for work	0.865
ρ_{a_1,a_2}	Correlation of ability across occupations	0.268
ρ_{a_f,a_m}	Correlation of ability in couples	0.712
ρ_{ϕ_f,ϕ_m}	Correlation of distaste for work in couples	0.522
λ	Tax level (unit adjustment)	5.035

Notes: Endogenously set parameters are estimated by minimizing the distance between model-implied moments and data moments. Tax level parameter is internally calibrated to preserve the tax function estimated by Wu and Krueger (2021) despite different scaling of income.

TABLE A.5: Robustness Check II (more convex NL occ.): Model and Data Moments

Targeted Moments	**Data**	**Model**	**Untargeted Moments**	**Data**	**Model**
Log of mean hours, men	7.67	7.68	Log of mean hours, women	7.40	7.43
Std of log-wages in NL occ., men	0.45	0.50	Std of log-wages in NL occ., women	0.48	0.51
Std of log-wages in L occ., men	0.47	0.41	Std of log-wages in L occ., women	0.47	0.45
Std of log-hours, men	0.26	0.24	Std of log-hours, women	0.46	0.49
Wage gap between occ., men	0.37	0.35	Wage gap between occ., women	0.36	0.31
Share of men in NL occ.	0.60	0.65			
NL occ. gap	0.24	0.23			
Hours gap, NL occ.	0.23	0.17			
Hours gap, L occ.	0.23	0.26			
Wage gap, NL occ.	0.34	0.37			
Wage gap, L occ.	0.35	0.31			
Log-hours correlation in couples	0.02	0.03			
Log-wage correlation in couples	0.43	0.40			

Notes: The NL occupation gap is the difference between the share of men and share of women in the NL occupation. All the other gaps are defined as logarithm of the ratio of means of objects of interest. For the wage gaps between occupations, the ratio has mean wage in NL occupation in the numerator. The model is over-identified: apart from the unit adjustment which is attained by the calibration of the tax level $1-\lambda$ to account for different scale of income between our model and that of Wu and Krueger (2021), we target 13 moments with 11 parameters.

TABLE A.6: Robustness Check II (more convex NL occ.). Tax Reforms and Gender Gaps.

Scenario	**Aggregate**			**By Occupation**			
	Occupations	Wages	Hours	Wages		Hours	
				NL	L	NL	L
Joint Taxation (Baseline)	0.226	0.428	0.249	0.368	0.312	0.169	0.257
Separate Filing	-0.021	-0.018	-0.037	0.000	-0.021	-0.016	-0.046
Proportional Tax	-0.012	-0.007	-0.017	0.000	-0.007	-0.006	-0.016

Notes: The Joint Taxation rows report gaps levels as in the calibrated model. Separate Filing and Proportional Taxes rows report changes (in log-points) relative to the Joint Taxation baseline case.

TABLE A.7: Robustness Check III (fully linear L occ.): Parameters

Parameter	Description	Value
Exogenous (fixed)		
$\bar{h}$	Convexity upper bound, annual hours	2500
θ_1	Convexity, NL occupation	0.6
θ_2	Convexity, L occupation	0.0
η	Curvature of disutility of labor	3
T_f	Home production hours (women)	500
T_m	Home production hours (men)	0
τ	Tax progressivity	0.133
ψ	Tax jointness	0
$\mu_{a_{NL},m}$	Mean log-ability, NL occupation, men	0
Internally calibrated		
$\mu_{a_{NL},f}$	Mean log-ability, NL occupation, women	-0.439
$\mu_{a_L,m}$	Mean log ability, L occupation, men	-0.218
$\mu_{a_L,f}$	Mean log ability, L occupation, women	-0.444
$\mu_{\phi,m}$	Mean log distaste for work, men	0.455
$\mu_{\phi,f}$	Mean log distaste for work, women	0.005
$\sigma^2_{a_L}$	Std. dev. of ability, L occupation	0.188
$\sigma^2_{a_{NL}}$	Std. dev. of ability, NL occupation	0.371
σ^2_{ϕ}	Std. dev. of distaste for work	0.750
ρ_{a_1,a_2}	Correlation of ability across occupations	0.188
ρ_{a_f,a_m}	Correlation of ability in couples	0.684
ρ_{ϕ_f,ϕ_m}	Correlation of distaste for work in couples	0.503
λ	Tax level (unit adjustment)	4.529

Notes: Endogenously set parameters are estimated by minimizing the distance between model-implied moments and data moments. Tax level parameter is internally calibrated to preserve the tax function estimated by Wu and Krueger (2021) despite different scaling of income.

TABLE A.8: Robustness Check III (fully linear L occ.): Model and Data Moments

Targeted Moments	**Data**	**Model**	**Untargeted Moments**	**Data**	**Model**
Log of mean hours, men	7.67	7.65	Log of mean hours, women	7.40	7.38
Std of log-wages in NL occ., men	0.45	0.50	Std of log-wages in NL occ., women	0.48	0.49
Std of log-wages in L occ., men	0.47	0.41	Std of log-wages in L occ., women	0.47	0.41
Std of log-hours, men	0.26	0.24	Std of log-hours, women	0.46	0.41
Wage gap between occ., men	0.37	0.34	Wage gap between occ., women	0.36	0.30
Share of men in NL occ.	0.60	0.64			
NL occ. gap	0.24	0.25			
Hours gap, NL	0.23	0.16			
Hours gap, L	0.23	0.27			
Wage gap, NL	0.34	0.37			
Wage gap, L	0.35	0.32			
Log-hours correlation in couples	0.02	0.02			
Log-wage correlation in couples	0.43	0.44			

Notes: The NL occupation gap is the difference between the share of men and share of women in the NL occupation. All the other gaps are defined as logarithm of the ratio of means of objects of interest. For the wage gaps between occupations, the ratio has mean wage in NL occupation in the numerator. The model is over-identified: apart from the unit adjustment which is attained by the calibration of the tax level $1 - \lambda$ to account for different scale of income between our model and that of Wu and Krueger (2021), we target 13 moments with 11 parameters.

TABLE A.9: Robustness Check III (fully linear L occ.). Tax Reforms and Gender Gaps.

	Aggregate			**By Occupation**			
Scenario	Occupations	Wages	Hours	Wages		Hours	
				NL	L	NL	L
Joint Taxation (Baseline)	0.248	0.441	0.267	0.370	0.322	0.165	0.266
Separate Filing	-0.023	-0.011	-0.037	0.007	-0.010	-0.014	-0.043
Proportional Tax	-0.007	-0.002	-0.015	0.000	0.000	-0.009	-0.010

Notes: The Joint Taxation rows report gaps levels as in the calibrated model. Separate Filing and Proportional Taxes rows report changes (in log-points) relative to the Joint Taxation baseline case.

B Gender Gaps and Individual Heterogeneity

Apart from predictions on the effects of taxes on gender gaps, the model can also be used to investigate the quantitative importance of three dimensions of individual heterogeneity: the home production commitments, the abilities, and the distaste for work. To surgically identify the contribution of each of these factors in isolation, we solve the model in three scenarios. Firstly, we set $T_m = T_f = 250$, thus removing the heterogeneity in home production. Then, we solve the model assuming the log-abilities of men and women are drawn from distributions with identical means. Finally, we perform an analogous exercise by solving the model assuming the distribution of distaste for work ϕ are not gendered. The results of this exercise are displayed in Table B.1.

TABLE B.1: Individual Heterogeneity and Gender Gaps

	Aggregate			**By Occupation**			
Scenario	Occupations	Wages	Hours	Wages		Hours	
				NL	L	NL	L
Baseline	0.222	0.435	0.254	0.382	0.320	0.196	0.248
Home Production	-0.090	-0.114	-0.287	-0.065	-0.104	-0.216	-0.336
Abilities	-0.181	-0.385	-0.140	-0.358	-0.265	-0.108	-0.109
Distaste for Work	+0.048	+0.075	+0.197	+0.055	+0.062	+0.155	+0.134

Notes: The baseline column contains the information on gaps as predicted by our calibrated model. The remaining three columns contain information on changes in these gaps if we removed heterogeneity in: the home production time commitments T_g, in abilities a_{ig} and in distaste for work ϕ_g. For the *Home Production* column we set $T_m = T_f = 250$, and for the remaining columns we assume the means of distributions of variables of interest are identical across genders.

In the aggregate, we find that the time commitment heterogeneity is responsible for a bit less than a half of the occupational gap, one-third of the wage gap, and entirety of the hours gap. This is qualitatively and quantitatively similar to the findings of Erosa et al. (2022) in a model without heterogeneity in abilities and distaste for work. The heterogeneity in abilities is found to be the strongest driver of the occupational and wage gap. Finally, since women dislike labor less than men, closing this gap enlarges all gaps, having the strongest effect on hours worked.

C Couple Type Changes and Tax Reforms

We report transition matrices for couple types in the two tables below.

TABLE C.1: Couple Type Changes: Separate Filing

	M:NL W:NL	**M:L W:NL**	**M:NL W:L**	**M:L W:L**
M:NL W:NL	0.997	0.003	0.000	0.000
M:L W:NL	0.036	0.964	0.000	0.000
M:NL W:L	0.056	0.000	0.941	0.003
M:L W:L	0.000	0.001	0.000	0.999

Notes: Rows denote pre-reform couple types; columns denote post-reform couple types. The table is a transition matrix (numbers in rows sum up to 1) showing how households move across occupational combinations under separate filing.

Figure C.1c focuses on women who switch from the linear into the nonlinear occupation and shows the wages they would obtain in either occupation. Panel (a) first shows the wage distribution of switchers if they had remained in the linear occupation and compares it to the rest of women in that occupation. Panel (b) shows an analogous comparison for the NL occupation. Panel (c) finally shows the increase in wages, hours and earnings which switchers obtain by entering the nonlinear occupation.

A proportional tax reform leads to the changes in distribution of couple types as reported in Table C.2. Relative to the separate filing reform two changes stand out. Firstly, many more men move to nonlinear occupations, particularly so out of M:L W:NL couples. Furthermore, fewer women switch to the nonlinear occupation. Figure C.2c focuses on women who switch

TABLE C.2: Couple Type Changes: Proportional Taxes

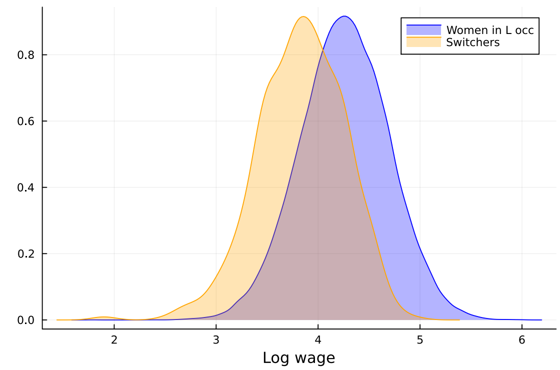
	M:NL W:NL	**M:L W:NL**	**M:NL W:L**	**M:L W:L**
M:NL W:NL	1.000	0.000	0.000	0.000
M:L W:NL	0.096	0.904	0.000	0.000
M:NL W:L	0.040	0.000	0.960	0.000
M:L W:L	0.000	0.005	0.015	0.980

Notes: Rows denote pre-reform couple types; columns denote post-reform couple types. The table is a transition matrix (numbers in rows sum up to 1) showing how households move across occupational combinations under separate filing.

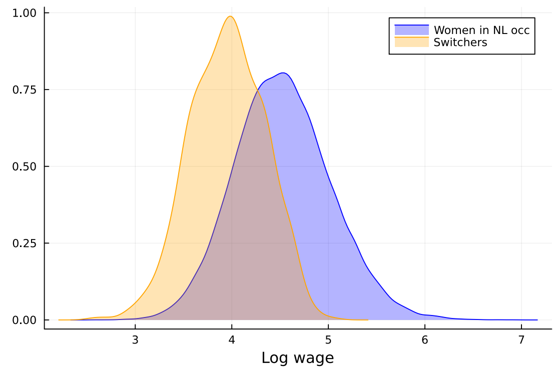
from the linear into the nonlinear occupation and shows the wages they would obtain in either

FIGURE C.1: Characteristics of Switchers (Women, Separate Filing)

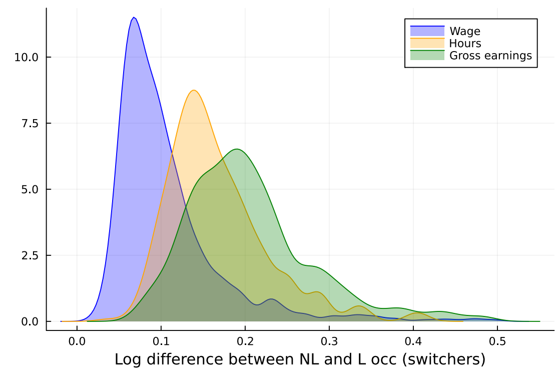
(a) Wage in L occupation vs all L women



(b) Wage in NL occupation vs all NL women



(c) Increase in wage/hours/earnings

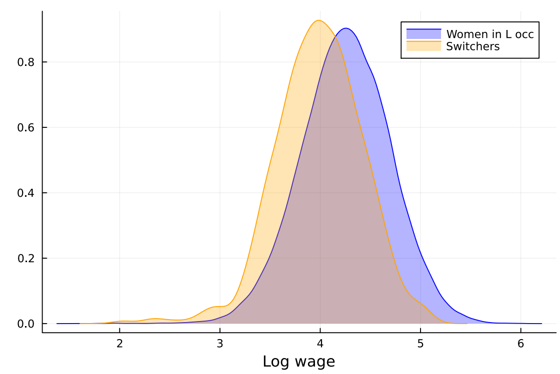


Notes: This figure shows how the separate filing reform affects selection into occupations. Panel (a) first compares the wage which those women who switch from the linear into the nonlinear occupation would have obtained in the linear occupation to all women in the linear occupation. Panel (b) similarly compares the wage which switchers get in the nonlinear occupation to all women in the nonlinear occupation. Panel (c) shows the increase in wages, hours and earnings which switchers obtain by choosing the nonlinear occupation over the linear occupation.

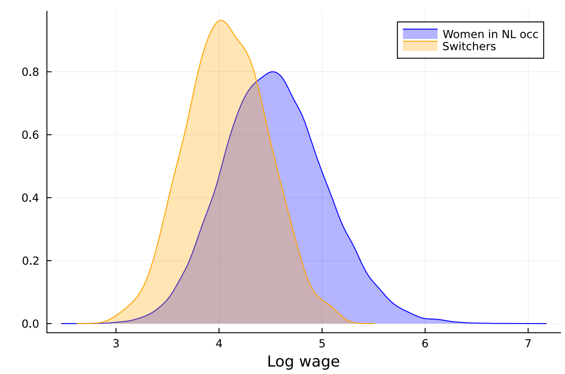
occupation. Panel (a) first shows the wage distribution of switchers if they had remained in the linear occupation and compares it to the rest of women in that occupation. Panel (b) shows an analogous comparison for the NL occupation. Panel (c) finally shows the increase in wages, hours and earnings which switchers obtain by entering the nonlinear occupation.

FIGURE C.2: Characteristics of Switchers (Women, Proportional Tax)

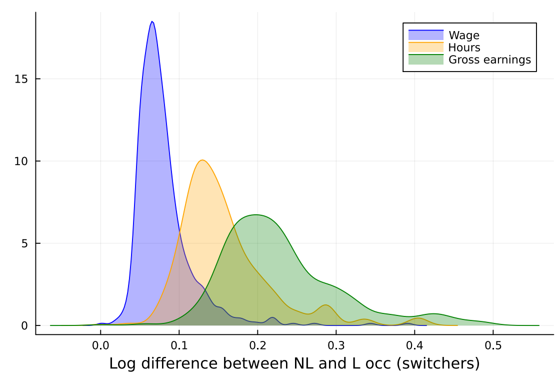
(a) Wage in L occupation vs all L women



(b) Wage in NL occupation vs all NL women



(c) Increase in wage/hours/earnings



Notes: This figure shows how the proportional tax reform affects selection into occupations. Panel (a) first compares the wage which those women who switch from the linear into the nonlinear occupation would have obtained in the linear occupation to all women in the linear occupation. Panel (b) similarly compares the wage which switchers get in the nonlinear occupation to all women in the nonlinear occupation. Panel (c) shows the increase in wages, hours and earnings which switchers obtain by choosing the nonlinear occupation over the linear occupation.

D Sensitivity Analysis: Elasticity of Labor Supply

In the main text we report how tax reforms affect gender gaps when labor supply is assumed to be more elastic ($\eta = 1.5$) than in the main calibration ($\eta = 3$). Here we provide additional information on the estimated parameters and model fit.

On the parameter side, reducing η requires substantial adjustments to the joint distribution of abilities and distaste for work. In the robustness calibration, women's mean abilities in both occupations become less negative, the mean distaste for work for both spouses is lower, the variance of distaste for work shrinks markedly, and assortative matching in both ability and preferences becomes stronger.

Regarding model fit, the targeted moments are matched comparably well in both calibrations. The more elastic specification improves the match for some *untargeted* moments—particularly the wage gaps by occupation for women, which move closer to their data counterparts. However, this improvement comes at the cost of worse fit for other non-targeted objects. Most notably, the dispersion of women's hours is larger whereas the baseline calibration almost exactly matches it.

TABLE D.1: Robustness Check IV (lower η): Parameters

Parameter	Description	Value
Exogenous (fixed)		
$\bar{h}$	Convexity upper bound, annual hours	2500
θ_1	Convexity, NL occupation	0.6
θ_2	Convexity, L occupation	0.2
η	Curvature of disutility of labor	1.5
T_f	Home production hours (women)	500
T_m	Home production hours (men)	0
τ	Tax progressivity	0.133
ψ	Tax jointness	0
$\mu_{a_{NL},m}$	Mean log-ability, NL occupation, men	0
Internally calibrated		
$\mu_{a_{NL},f}$	Mean log-ability, NL occupation, women	-0.380
$\mu_{a_L,m}$	Mean log ability, L occupation, men	-0.137
$\mu_{a_L,f}$	Mean log ability, L occupation, women	-0.300
$\mu_{\phi,m}$	Mean log distaste for work, men	0.229
$\mu_{\phi,f}$	Mean log distaste for work, women	-0.101
$\sigma^2_{a_L}$	Std. dev. of ability, L occupation	0.184
$\sigma^2_{a_{NL}}$	Std. dev. of ability, NL occupation	0.356
σ^2_{ϕ}	Std. dev. of distaste for work	0.297
ρ_{a_1,a_2}	Correlation of ability across occupations	0.183
ρ_{a_f,a_m}	Correlation of ability in couples	0.824
ρ_{ϕ_f,ϕ_m}	Correlation of distaste for work in couples	0.857
λ	Tax level (unit adjustment)	4.635

Notes: Endogenously set parameters are estimated by minimizing the distance between model-implied moments and data moments. Tax level parameter is internally calibrated to preserve the tax function estimated by Wu and Krueger (2021) despite different scaling of income.

TABLE D.2: Robustness Check IV (lower η): Model and Data Moments

Targeted Moments	**Data**	**Model**	**Untargeted Moments**	**Data**	**Model**
Log of mean hours, men	7.67	7.74	Log of mean hours, women	7.40	7.49
Std of log-wages in NL occ., men	0.45	0.50	Std of log-wages in NL occ., women	0.48	0.48
Std of log-wages in L occ., men	0.47	0.41	Std of log-wages in L occ., women	0.47	0.54
Std of log-hours, men	0.26	0.21	Std of log-hours, women	0.46	0.98
Wage gap between occ., men	0.37	0.34	Wage gap between occ., women	0.36	0.37
Share of men in NL occ.	0.60	0.60			
NL occ. gap	0.24	0.23			
Hours gap, NL occ.	0.23	0.17			
Hours gap, L occ.	0.23	0.25			
Wage gap, NL occ.	0.34	0.34			
Wage gap, L occ.	0.35	0.32			
Log-hours correlation in couples	0.02	0.02			
Log-wage correlation in couples	0.43	0.39			

Notes: The NL occupation gap is the difference between the share of men and share of women in the NL occupation. All the other gaps are defined as logarithm of the ratio of means of objects of interest. For the wage gaps between occupations, the ratio has mean wage in NL occupation in the numerator. The model is over-identified: apart from the unit adjustment which is attained by the calibration of the tax level $1-\lambda$ to account for different scale of income between our model and that of Wu and Krueger (2021), we target 13 moments with 11 parameters.