Family-Friendly Policies and Fertility: What Firms Got to Do With It?*

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May 19, 2025

Abstract

Family-friendly policies aim to help women balance work and family life and to encourage them to participate in the labor market. How effective are such policies in increasing fertility? We answer this question using a search model of the labor market where firms make hiring, promotion, and firing decisions, taking into account how these decisions affect their workers' fertility incentives and participation decisions. We estimate the model using administrative data from Spain, a country with very low fertility and a highly regulated labor market. We use the model to study family-friendly policies and show that firms' reactions generate a trade-off: Policies that increase fertility reduce women's participation in the labor market and depress lifetime earnings.

Keywords: Family-Friendly Policies, Fertility, Flexibility, Search and Matching, Human Capital Accumulation, Gender Gaps, Welfare
JEL Codes: J08, J13, J18

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1 Introduction

Fertility rates in high-income countries have fallen to strikingly low levels, averaging 1.8 in the U.S., 1.6 in Germany, and 1.3 in Spain. This trend has raised serious concerns about population aging and shrinking workforces. While many factors contribute to low fertility, increasing attention is being paid to the difficulty of balancing work and family life and the role of family policies (Doepke et al., 2023). At the same time, the effect of children on women's careers, the so-called child penalties, have been extensively documented (Kleven et al., 2024).

In response, governments have adopted a range of family-friendly policies—such as childcare subsidies, parental leave, and flexible work arrangements. These policies have been extensively studied for their effects on labor supply, gender wage gaps, and fertility. Yet a key player remains understudied: firms. Firms shape the reach and effectiveness of family policies, influencing not only employment and wages but also fertility and women's welfare. On the one hand, family-friendly policies can raise labor costs and reduce demand for mothers (Olivetti and Petrongolo, 2017). On the other, as men's and women's human capital at labor market entry converges, women's occupational sorting becomes central to understanding the gender gap (Goldin, 2014), and firm responses to these policies are crucial.[1].

This paper builds and estimates a search and matching model to study how family-friendly policies affect fertility and labor market outcomes when firms' decisions are explicitly modeled and mediate the effects of policies. The model economy is populated by male and female workers and has four building blocks. First, workers experience employment and non-employment spells, building human capital while working. Second, jobs differ in how fast women can accumulate human capital. In jobs labeled as non-flexible (Goldin, 2014), women accumulate human capital at a lower rate, and this is particularly pronounced if they have children. Third, labor markets have a dual structure; jobs start as temporary (or fixed-term) with low firing costs and high separation rates, and firms decide whether to convert them into permanent (or open-ended) with higher firing costs and lower separations. Hence, promotions are costly for firms. Finally, female workers decide

[1]There is growing empirical evidence that women value job flexibility, e.g., the ability to choose working hours or shorter commuting times. See, among others, Le Barbanchon et al. (2020), Mas and Pallais (2017), an Wiswall and Zafar (2018)

how many children to have and when to have them.

In the model, firms make hiring, firing, and promotion decisions, understanding how these affect their workers' choices on fertility and participation. On the other hand, female workers decide whether to participate and to have children, understanding how these choices affect firms' hiring, promotion, and firing probabilities. In equilibrium, decisions by the workers and firms are consistent with their expectations.

We estimate the model using administrative data from Spain, an ideal setting due to its combination of low fertility and a rigid labor market with limited turnover. Spain also offers a unique natural experiment, which we exploit to discipline model parameters. The 1999 Work and Family Reconciliation Act allows parents with a child up to age 6 to request part-time work (which we refer to as a workweek reduction). The firms are obliged to grant such requests and can't fire workers as long as they are on a workweek reduction. While this might not be a constraint for temporary contracts, which have short and fixed durations, the regulation provides flexibility and job protection for women with young children who work with permanent contracts.

The benchmark economy is estimated with data for the 2000-2006 period. The main data source for the quantitative analysis is the Spanish Social Security records (Muestra Continua de Vidas Laborales con Datos Fiscales, MCVL). The MCVL is a 4% random sample of individuals registered to the Spanish Social Security during a reference year. Starting from a reference year, e.g., 2005, and going back, the MCVL traces the social security records of individuals up to their first employment, allowing us to construct a panel. The MCVL is also matched with the municipality records, which provide information on other household members, including gender and date of birth, allowing us to determine marital status and new births.

The model performs an excellent job of generating a life-cycle profile for the share of women in temporary jobs, the gender wage gap, and the fertility rate observed in the data. The model also captures well the share of women who choose a workweek reduction. In the data, we characterize flexible and nonflexible jobs as those where men work less or more than 50 hours per week, following Cortés and Pan

(2019), and match wage growth in inflexible and nonflexible jobs. Finally, we estimate the adverse effect of workweek reduction in policies on the promotion of women. Consistent with available empirical evidence that exploits this policy change, such as Fernández-Kranz and Rodríguez-Planas (2021), we find a negative effect and select model parameters to replicate it.

First, we focus on workweek reduction as a family-friendly policy, which provides the possibility of working fewer hours with job protection to mothers. The policy makes hiring and promoting a woman costly for firms. As a result, more women stay out of the labor force, only more productive ones get jobs, and those who do get jobs have more children. However, while overall fertility increases, the lifetime earnings of women decline. For welfare, the second effect dominates, and women are worse off with this policy. The reaction of firms is crucial in generating a decline in women's welfare. If we ignored firms, i.e., if we introduced this policy but forced firms to make hiring and promotion decisions as if the policy did not exist, the average welfare of women would increase significantly.

Then, we use the model economy as a quantitative laboratory to study various policies and understand how they affect female earnings, fertility, and welfare. These policies can be grouped into three categories. The first group pertains to policies that affect labor market fluidity, such as introducing a unique contract or higher or lower firing costs for permanent contracts. The second group focuses on the effects of maternity leave and workweek reduction. Finally, we also study policies that provide direct financial incentives to workers or firms, such as child subsidies for mothers or subsidies for hiring and promoting women for firms.

We find that across different policies, a trade-off emerges: policies that increase fertility lower lifetime earnings for women. In the benchmark economy, temporary contracts last about 4.5 years, i.e., firms must at some point decide whether to promote the worker or fire her at zero firing cost. Also, workers with temporary contracts do not have access to a workweek reduction. Consider a policy that makes temporary contracts shorter or a single-contract policy with a positive firing cost where all workers can access workweek reduction. These policies make jobs much more secure for women. But, these policies are costly for firms, so getting these jobs becomes harder, and women's employment declines. With these policies, the fertility rate increases from 1.67 in the benchmark to around 2, a significant rise. Fertility increases as more women stay out of the labor force, and non-employed women tend to have more children. However, those who get jobs also choose to have more children with increased job security. However, these policies lower women's employment and lifetime earnings by around 7 p.p. Firms are much less willing to hire women. Hence, women spend a larger share of their lives as non-employed and do not build as much human capital as in the benchmark economy. Child subsidies or more generous parental leave policies, which make hiring a woman more expensive, operate in a similar way.

In contrast, by eliminating the existing workweek reduction policy, the government can increase female employment and lifetime earnings. Yet the fertility rate would decline from 1.67 to 1.63. Hiring and promoting a woman is less costly for firms. However, having children is less attractive since they lose the option of working reduced hours. Other policies that make the labor market more fluid, such as lower firing costs for permanent contracts or longer duration for temporary contract work, operate similarly. They increase women's employment and lifetime earnings. Yet, they reduce job security and discourage fertility.

Only one policy consistently improves both fertility and earnings: a promotion subsidy. By lowering the cost of promoting women to permanent positions, firms become more willing to do so despite uncertainty over their workers' childbearing. Employment, earnings, and fertility all rise with this policy. Women's employment and lifetime earnings increase by about 3 p.p, and the total fertility rises from 1.67 to 1.74.

How does fertility-income trade-off affect women's welfare? We find that policies that lead to higher fertility and lower lifetime earnings, as well as those with lower fertility and higher lifetime earnings, can result in higher welfare compared to the benchmark economy. The best policy is promotion subsidies since they increase women's fertility and their lifetime earnings. However, policies that significantly lower lifetime earnings and result in higher fertility (such as child subsidies or a single contract) or that lower fertility but result in higher lifetime earnings (such as eliminating workweek reduction) also generate welfare gains.

Related Literature. The analysis here builds on two strands of literature. First, we contribute to the labor and macroeconomics literature on female labor force participation, the gender wage gap, and fertility. Recent reviews include Greenwood et al. (2017), Albanesi and Petrongolo (2023), and Doepke et al. (2023). Within this field, Caucutt et al. (2002) and Cruces (2024) highlight the role of returns to experience in fertility timing, while Da Rocha and Fuster (2006) emphasize labor market frictions—both mechanisms feature in our analysis. Occupational choices and the role of job flexibility have also been studied: Erosa et al. (2022) show that a substantial fraction of the observed gender wage gap is due to women's occupational choice and labor supply decisions. Adda et al. (2017) build models with endogenous fertility and occupational choice to study how children affect women's career choices. The impact of childcare costs has been analyzed by Attanasio et al. (2008), Bick (2016), and Guner et al. (2020). Guner et al. (2024) focus on Spain, examining how dual labor markets, job flexibility, and childcare subsidies shape fertility. However, none of these studies model firms' hiring, promotion, and firing decisions .[2]

Second, we build on papers that use search-and-matching models, hence with an explicit role for firms, to study the gender pay gap. Within this literature, Flabbi and Moro (2012), Le Barbanchon et al. (2020), Morchio and Moser (2024), and Xiao (2024) focus, as we do, on the role of amenities (job flexibility), while Flinn et al. (2025) study returns to different personality traits. Beyond the gender pay gap, the current paper is also related to broader search-and-matching literature focusing on human capital accumulation, e.g., Lise et al. (2016) and Bagger et al. (2014), on amenities, e.g., Dey and Flinn (2005), and on dual labor markets, e.g., Bentolila et al. (2012).[3] This literature, however, has not studied how labor market frictions and policy affect fertility decisions, which is our focus here. An important exception is Erosa et al. (2010), who study parental policies in a search-and-matching model with fertility decisions.

[2]In the analysis here, social norms do not play a role. Kim et al. (2024) study how parents' concerns for status externalities can lead to low fertility.

[3]In a model of imperfect information and optimal contracts, Albanesi and Olivetti (2009) study how firms' expectations about their male and female workers' home hours affect the gender pay gap.

2 Model

The model economy has four key components. First, there are labor market frictions captured by a matching function, and workers move between employment and non-employment, accumulating human capital while working. Second, some jobs are non-flexible and offer lower human capital accumulation to women, especially those with children. Third, the labor market has a dual structure: jobs begin as temporary with low firing costs and high turnover, and firms decide whether to make them permanent, increasing job security. Finally, female workers choose the timing and number of children, balancing these decisions with their employment prospects. Firms, in turn, make hiring, firing, and promotion decisions, considering their impact on workers' fertility and participation choices, while female workers weigh career factors in their fertility decisions.

2.1 Demographics and Fertility

Consider an economy populated by equal numbers of women and men, indexed by w and m. Time is discrete, and individuals potentially live forever, but in each period, they face a constant probability ρ^d of death. They discount the future at rate $\widetilde{\rho}$, so the effective discount factor is $\rho = \widetilde{\rho}(1-\rho^d)$.

Women are heterogeneous: they differ in their human capital level, or abilities, $a \in \mathcal{A} := \{\underline{a}, .., a_i, .., \bar{a}\}$, where i, $a_{i+1} - a_i = \Delta$ for all i, and in the number of children living in the household, $n \in \mathcal{N} = [0, 1, 2, 3, ...]$. Men are homogeneous: they possess the same level of human capital, which is normalized to one, and have no child attached to them. Furthermore, as explained below, men and women search for jobs in the same labor market and can be employed or non-employed. Both women and men have linear preferences. Men only value consumption, while women get utility from having children, equal to $\gamma_e n$ when they are employed and $\gamma_u n$ when they are not.

Every period, women have the opportunity of having a new child with a probability $\sigma(n)$, which differs by the number of children they already have. Conditional on this opportunity, women decide whether to have another child or not. Having a newborn entails a one-time fixed cost, κ_n. Each period, children in the household become teenagers and leave the house with probability ρ^c, and upon this event, women become childless again.

2.2 Jobs and Human Capital Accumulation

Workers can be employed with temporary or permanent contracts. For men, all contracts start as permanent and remain so until their termination. For women, a share χ_p of new vacant jobs is posted as temporary, while the rest are posted as permanent. Each period, firms decide whether to convert a temporary job to a permanent one, which we refer to as a promotion. If a firm decides not to promote a woman, they might still be forced to convert a temporary contract to a permanent one or dismiss the worker, with an exogenous probability π^t, which captures the fact that temporary contracts have a fixed duration. Below, we use temporary and fixed-term (FT) contracts interchangeably.

Jobs, permanent or temporary, can be terminated by firms. Termination of a temporary job comes at no cost. Termination of a permanent job comes at a cost: there are red-tape firing costs, denoted by f_p. Jobs also get destroyed exogenously with probabilities, δ_w^t and δ_w^p. Permanent jobs held by men are exogenously destroyed with probability δ_m^p. Because permanent contracts are more expensive to terminate, promoting a worker to a permanent position represents an implicit investment by the firm. If firms expect that childbearing will reduce women's future productivity, they may be less willing to promote them. This logic also applies to any job ladder model where promotions are costly for firms.

Jobs can be flexible or non-flexible, indexed by $j \in \{0, 1\}$. When we map non-flexible jobs into data, we assume that jobs requiring long working hours are non-flexible. Non-flexibility jobs, $j = 0$, result in lower human capital accumulation, as women have a harder time combining work and family responsibilities.

Each woman enters the labor market with an initial level of human capital, a_0, drawn from a log-normal distribution,$\Gamma_w^0(a)$, given by,

$$\Gamma_w^0(a) = \log\mathcal{N}\left(-\frac{\alpha_a^2}{2}, \alpha_a\right).$$

After the initial draw, women's human capital changes endogenously during employment. We assume employed women face a one-step jump forward in human capital with probability $\pi_w^e(j,n)$, which depends on the type of job and the number of children. The function $\Gamma_w^e(a'|a,j,n)$ is parametrized as follows:

$$a' = \begin{cases} a + \Delta, & \text{with probability} \quad \pi_w^e(j,n), \\ a, & \text{otherwise}, \end{cases}$$

where jump magnitude is independent of current ability level a and equal to a fixed predetermined value, $\Delta > 0$. It is assumed that the jump probability is lower for inflexible jobs, i.e., $\pi_w^e(0,n) < \pi_w^e(1,n), \forall n$, and more so when a higher number of children is in the households, i.e., $\pi_w^e(0,n) < \pi_w^e(0,0)$.

2.3 Labor Market Frictions

The labor market is subject to search and matching frictions. To hire workers, firms need to post vacancies, which costs κ_v. To find a job, workers need to search. The search is random, and only the non-employed can search. Let u be the measure of non-employed workers and v be the aggregate measure of job openings. The number of new contacts between workers and firms each period is equal to

$$m(u,v) = \eta\sqrt{Uv},$$

where $\eta > 0$ governs the matching efficiency. This function implies a job contact rate for workers given by

$$\phi_u = \frac{m(u,v)}{v} = \eta\sqrt{\theta^{-1}},$$

and a worker contact rate for firms given by

$$\phi_v = \frac{m(u,v)}{u} = \eta\sqrt{\theta},$$

where $\theta = v/u$ is the equilibrium labor market tightness.

Hence, men and women search in the same market and enter the same pool of non-employed individuals. Let $\psi_w^u(a,n)$ be the distribution of non-employed woman workers with characteristics (a,n) respectively and $\mu_w^u = \int\int \psi_w^u(a,n)dadn$ be the share of women who are non-employed. Similarly, let μ_m^u be the share of non-employed men. If a firm gets in contact with a worker, the worker will be a woman of type-(a, n) with probability $0.5\mu_w^u \psi_w^u(a, n)$, and a man with probability $0.5\mu_m^u$. Individuals who fail to form a match sustain themselves using a benefit, b_m and b_f.

2.4 Production

Output is produced by worker-firm pairs. Once firms and workers get in contact, they draw a productivity level z from $\Lambda(z)$, which is set to be uniform over the unit interval, and decide whether to form a match. We assume that each period firms draw a new z from $\Lambda(z)$, with probability φ_z. For women workers, a worker-firm pair also draws the flexibility of the job, with the share of type-j jobs given by χ_j. Given z, j, and the worker's characteristics, if there is a positive surplus, production takes place.

Production of men-firm pairs does not depend on productivity level. The output produced by a match between a firm and a man, y_m, is constant and equal to an aggregate shifter A, i.e.,

$$y_m = A$$

Consider a woman with human capital a and n children matched with a type$-j$ firm with productivity z. This match produces $y_w(z, a)$ units of final output, equal to:

$$y_w(z, a) = (1 - \omega_g)Aza$$

where the parameter ω_g captures an exogenous gender gap. Finally, production requires a fixed cost of operation, specific to the type of the contract, κ^t and κ^p.

2.5 Wages

Wages are determined as the solution of a bargaining protocol as in Binmore et al. (1986) and Hall and Milgrom (2008). In this protocol, threats of permanent suspension of negotiations are not credible: even with a breakdown, the firm will wish to resume negotiations with the same worker in the subsequent period. Temporary disruption of production due to a delayed agreement is the only credible threat in the negotiation. Since wages are renegotiated every period, the effective surplus is the marginal flow surplus.

Bargaining problem for men. Consider the bargaining problem of a firm with a man. The sharing rule reads as follows:

$$\beta[A - w_m] = (1-\beta)[w_m - b_m],$$

which leads to the following wage solution:

$$w_m = (1-\beta)b_m + \beta A,$$

where β is the workers' bargaining power.

Bargaining problem for women. Consider the bargaining problem of a woman with skill a, and n children, matched under temporary contract with match productivity z. The sharing rule is given by

$$\beta[(1-\omega_g)Aza - w_w^t(z,a,n)] = (1-\beta)[w_w^t(z,a,n) - (b_w + (\gamma_e - \gamma_e)n)],$$

where $\beta \in (0,1)$ denotes the worker's bargaining power. The term $b_w + (\gamma_e - \gamma_u)n$ denotes the flow value of non-employment, which sums benefits b_w, and the net monetary utility of children, $(\gamma_e - \gamma_u)n$. This rule implies the following wage schedule:

$$w_w^t(z,a,n) = (1-\beta)[b_w + (\gamma_u - \gamma_e)n] + \beta[(1-\omega_g)Aza].$$

Following the same protocol solution as above, the wage for a woman employed under a permanent contract takes the same functional form, i.e.,

$$w_w^p(z,a,n) = w_w^t(z,a,n)$$

Notice that when $n = 0$, the wage schedule reduces to:

$$w_w^p(z,a) = w_w^t(z,a) = (1-\beta)b_w + \beta(1-\omega_g)Aza,$$

which is very similar to the wage schedule for males above.

2.6 Maternity Leave

Employed women are assumed to take maternity leave after childbearing. Maternity leave ends stochastically with probability ϱ and provides women ι fraction of their contracted wage, i.e., $w^l_w(z,a,n) = \iota w_w(z,a,n)$. During maternity leave, women do not work and enjoy utility from children as if they are not working, given by $\gamma_u n$. Their human capital stays intact.

2.7 Workweek Reduction

Women who are employed with a permanent contract and have children in the household are also entitled to a work-week reduction (WWR, henceforth). Under WWR, they work a lower number of hours and are protected from being fired.

Compared to women who are working full time, women in WWR enjoy a higher level of utility from children, given by $\gamma_e + \gamma_r$, where the second term is a utility bonus from being on WWR. This bonus captures the extra time mothers can spend with their children. On the other hand, their production is reduced by an amount $\omega_r \in (0,1)$,

$$y^r_w(z,a) = (1-\omega_g)\omega_r Aza.$$

Because they work a reduced number of hours, women under workweek reduction receive a wage equal to

$$w^r_w(z,a,n) = \bar{\omega}_r w^p_w(z,a,n),$$

where $\bar{\omega}_r \in (0,1)$ is a parameter governing the wage penalty from working reduced hours.

Note that if $\omega_r < \bar{\omega}_r$, the reduction in production associated with having a worker in WWR is more significant than the reduction in her wage. This can capture potential coordination costs of having a worker with reduced hours that firms might face, not reflected in wages. Finally, it is also assumed that women in WWR accumulate human capital at a lower rate, e.g., for a worker in job j with n children the probability of a human capital jump is given by $\bar{\omega}_r \pi^e_w(j,n)$. The production also requires a lower fixed cost of operation, given by $\bar{\omega}_r \kappa^p$.

2.8 Decisions by Firms

In the model, firms choose whom to hire, fire, and promote, anticipating how these decisions influence women's fertility and participation choices. Conversely, women decide whether to work and have children, considering how these choices affect their job prospects. In equilibrium, both sides' decisions align with their expectations. In this section, we describe the decisions of firms and delegate the decisions of workers to the Appendix.

Job value of having a woman worker under a temporary contract. We start by describing the value of a worker-firm pair with a temporary contract. First, consider the value for the firm of being matched with a worker without any children, $J^{e,t}_w(z,a,0,j)$, given by,

$$
\begin{aligned}
J^{e,t}_w(z,a,0,j) = {} & y_w(z,a) - w^t_w(z,a) - \kappa^t \\
& + \rho(1-\sigma(0)) \sum_{a' \in \mathcal{A}} \bar{J}^{e,t}_w(z,a',0,j) \Gamma^e_w(a'|a,j,0) \\
& + \rho\sigma(0) \sum_{a' \in \mathcal{A}} (1 - \mathbf{1}^{n,t}_w(z,a',0,j)) \bar{J}^{e,t}_w(z,a',0,j) \Gamma^e_w(a'|a,j,0) \\
& + \rho\sigma(0) \sum_{a' \in \mathcal{A}} \mathbf{1}^{n,t}_w(z,a',0,j) \bar{J}^{l,t}_w(z,a',1,j) \Gamma^e_w(a'|a,j,0).
\end{aligned}
$$

The first line gives the firm's profits, output minus wages and the fixed cost of operation. If the worker does not have the opportunity to have a child next period, the start-of-the-period value is given by $\bar{J}^{e,t}_w(z,a',0,j)$, where a' denotes the worker's human capital next period (second line). If the worker has an opportunity to have a child, the job value depends on the fertility decision of the worker. This decision is captured by the indicator function $\mathbf{1}^{n,t}_w(z,a',0,j)$, which is defined by the problem of a woman worker and taken as given by the firm. If a woman chooses not to have a child, the problem remains the same as the one for a woman without any fertility opportunity (third line). If a woman decides to have a child, then she will be on maternity leave, with the implied start-of-the-period value of

$\bar{J}_w^{l,t}(z, a', 1, j)$ (fourth line). Note that women's human capital level next period, a', depends on the flexibility of the current job, j.

What about a firm that has a woman worker with children? The problem, denoted by $J_w^{e,t}(z, a, n, j)$, is very similar, with the additional contingency that captures the possibility of children becoming a teenager:

$$
\begin{aligned}
J_w^{e,t}(z, a, n, j) = {} & y_w(z, a) - w_w^t(z, a, n) - \kappa^t \\
& + \rho\rho^c \sum_{a' \in \mathcal{A}} \bar{J}_w^{e,t}(z, a', 0, j)\Gamma_w^e(a'|a, j, 0) \\
& + \rho(1 - \rho^c)(1 - \sigma(n)) \sum_{a' \in \mathcal{A}} \bar{J}_w^{e,t}(z, a', n, j)\Gamma_w^e(a'|a, j, n) \\
& + \rho(1 - \rho^c)\sigma(n) \sum_{a' \in \mathcal{A}} (1 - \mathbf{1}_w^{n,t}(z, a', n, j))\bar{J}_w^{e,t}(z, a', n, j)\Gamma_w^e(a'|a, j, n) \\
& + \rho(1 - \rho^c)\sigma(n) \sum_{a' \in \mathcal{A}} \mathbf{1}_w^{n,t}(z, a', n, j)\bar{J}_w^{l,t}(z, a', n + 1, j)\Gamma_w^e(a'|a, j, n),
\end{aligned}
$$

where in the second line with probability ρ^c, the children leave the home, and the worker starts the next period without children. Human capital accumulation of women now also depends on the number of children, captured by $\Gamma_w^e(a'|a, j, n)$.

We can now define the start-of-the-period value functions that summarize what can happen to a firm that starts the next period with a particular worker. Let's start with $\bar{J}_w^{e,t}(z, a, n, j)$, the continuation value of being matched under a temporary contract with a woman who is not on maternity leave. It is given by

$$\bar{J}_w^{e,t}(z, a, n, j) = (1 - \delta_w^t)(1 - \mathbf{1}_w^{q,t}(z, a, n, j)) \max\{0, \mathrm{E}J_w^{e,t}(z, a, n, j)\}.$$

If the match is not destroyed exogenously, which happens with probably δ_w^t, and the worker decides not to quit, captured by indicator function $(1 - \mathbf{1}_w^{q,t}(z, a, n, j)))$, the firm decides whether to keep the worker. The quit decision is again defined by the problem of a woman worker and taken as given by the firm. The value of keeping the worker is given by

$$\mathrm{E}J_w^{e,t}(z,a,n,j) = \pi^t \max\left\{0, \sum_{z'\in\mathcal{Z}} J_w^{e,p}(z',a,n,j)\Lambda(z'|z)\right\}$$
$$+ (1-\pi^t)\max\left\{\sum_{z'\in\mathcal{Z}} J_w^{e,p}(z',a,n,j)\Lambda(z'|z), \sum_{z'\in\mathcal{Z}} J_w^{e,t}(z',a,n,j)\Lambda(z'|z)\right\}.$$

With probability π^t, the firm is forced to decide whether to promote the worker or end the contract (the first line). Recall that firing a temporary contract does not imply any cost for the firm. If the firm is not forced to convert the contract to a permanent one (the second line), it can still choose to promote the worker if the value of having the worker with a permanent contract dominates the value of keeping her as a temporary worker.

The solution to the firm problem defines an indicator function for the firing of a temporary worker, given by,

$$\mathbf{1}_w^{f,t}(z,a,n,j) = \begin{cases} 1 & \text{if} \quad \mathrm{E}J_w^{e,t}(z,a,n,j)) \geq 0 \\ 0 & \text{otherwise} \end{cases}.$$

It also defines an indicator function for promotions from temporary to permanent contracts, defined as

$$\mathbf{1}_w^{p,t}(z,a,n,j) = \begin{cases} 1 & \text{if} \quad \sum_{z'\in\mathcal{Z}} J_w^{e,p}(z',a,n,j)\Lambda(z'|z) \geq \sum_{z'\in\mathcal{Z}} J_w^{e,t}(z'.a,n,j)\Lambda(z'|z) \\ 0 & \text{otherwise} \end{cases},$$

Finally, it implies an indicator function for contract conversion, given by,

$$\mathbf{1}_w^{c,t}(z,a,n,j) = \begin{cases} 1 & \sum_{z'\in\mathcal{Z}} J_w^{e,p}(z',a,n,j)\Lambda(z'|z) \geq 0 \\ 0 & \text{otherwise} \end{cases}.$$

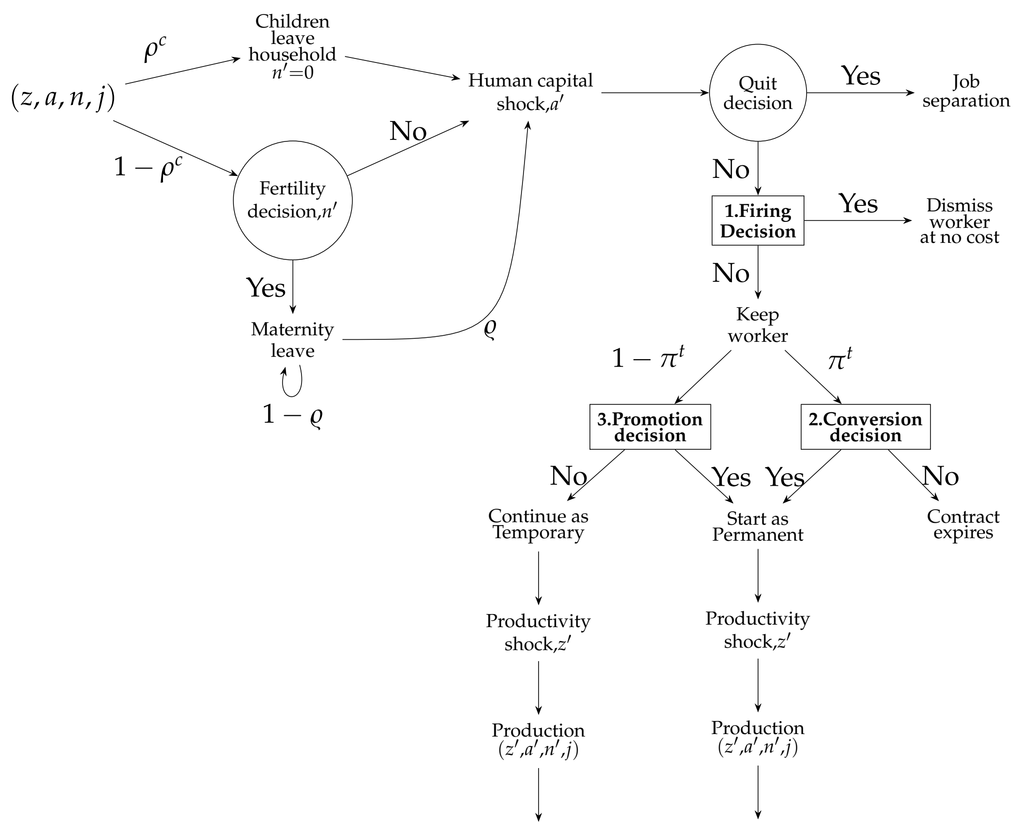
Given $\bar{J}_w^{e,t}(z,a,n,j)$, the continuation value of having a worker with a temporary contract who is on maternity leave, is given by

$$\bar{J}_w^{l,t}(z,a,n,j) = \rho[(1-\varrho)\bar{J}_w^{l,t}(z,a,n,j) + \varrho\bar{J}_w^{e,t}(z,a,n,j)],$$

where ϱ is the probability that the worker stays on parental leave.

Figure 1 describes the decisions of a firm with a woman worker in a permanent contract.

Figure 1: The problem of a firm under a temporary contract



NOTES: This figure describes the sequence of actions of a firm matched with a woman in a temporary contract.

Job value of a match with a woman under a permanent contract. Next, we turn to the value of a worker-firm pair with a permanent contract. The problem looks similar to the one faced in a temporary contract. One difference is that the firm has no promotion decision. The other difference is that a women with a permanent contract have the option of being in WWR, and firms do not have the option of firing her.

The values of an active job under permanent contracts in occupation j and productivity z, filled by a woman with skill a and with either 0 or $n > 0$ children, denoted by $J^{e,p}_w(z,a,0,j)$ and $J^{e,p}_w(z,a,n,j)$, are equal respectively to:

$$
\begin{aligned}
J^{e,p}_w(z,a,0,j) = {} & y_w(z,a) - w^p_w(z,a) - \kappa^p \\
& + \rho(1-\sigma(0)) \sum_{a' \in \mathcal{A}} \bar{J}^{e,p}_w(z,a',0,j)\Gamma^e_w(a'|a,j,0) \\
& + \rho\sigma(0) \sum_{a' \in \mathcal{A}} (1 - \mathbf{1}^{n,p}_w(z,a',0,j))\bar{J}^{e,p}_w(z,a',0,j)\Gamma^e_w(a'|a,j,0) + \\
& + \rho\sigma(0) \sum_{a' \in \mathcal{A}} \mathbf{1}^{n,p}_w(z,a',0,j)\bar{J}^{l,p}_w(z,a',1,j)\Gamma^e_w(a'|a,j,0),
\end{aligned}
$$

and

$$
\begin{aligned}
J^{e,p}_w(z,a,n,j) = {} & y_w(z,a) - w^p_w(z,a,n) - \kappa^p \\
& + \rho\rho^c \sum_{a' \in \mathcal{A}} \bar{J}^{e,p}_w(z,a',0,j)\Gamma^e_w(a'|a,j,0) \\
& + \rho(1-\rho^c)(1-\sigma(n)) \sum_{a' \in \mathcal{A}} \bar{J}^{e,o}_w(z,a',n,j)\Gamma^e_w(a'|a,j,n) \\
& + \rho(1-\rho^c)\sigma(n) \sum_{a' \in \mathcal{A}} (1 - \mathbf{1}^{n,p}_w(z,a',n,j))\bar{J}^{e,o}_w(z,a',n,j)\Gamma^e_w(a'|a,j,n) \\
& + \rho(1-\rho^c)\sigma(n) \sum_{a' \in \mathcal{A}} \mathbf{1}^{n,p}_w(z,a',n,j)\bar{J}^{l,p}_w(z,a',n+1,j)\Gamma^e_w(a'|a,j,n).
\end{aligned}
$$

The value function for a worker without any children under a permanent contract looks very similar to the one for a childless worker under a temporary contract. For women with children, however, there is an important difference between temporary and permanent contracts, as those with a permanent contract have the option to work under workweek reduction, captured by $\bar{J}^{e,o}_w(z,a,n,j)$ term above.

Again, we can define different continuation values. The $\bar{J}^{l,p}_w(z,a,n,j)$ term is the continuation value of being matched under a permanent contract with a woman on maternity leave, given by,

$$
\bar{J}^{l,p}_w(z,a,n,j) = \rho[(1-\varrho)\bar{J}^{l,p}_w(z,a,n,j) + \varrho\bar{J}^{e,o}_w(z,a,n,j)]
$$

The function $\bar{J}^{e,p}_w(z,a,0,j)$ is the continuation value of a job under permanent contract filled by a woman who is not on maternity leave and does not have the option of taking a work-week reduction, which is equal to:

$$\bar{J}_w^{e,p}(z,a,0,j) = (1-\delta_w^p)(1-\mathbf{1}_w^{q,p}(z,a,0,j))\max\{-f_p, \mathrm{E}J_w^{e,p}(z,a,0,j)\}$$

where

$$\mathrm{E}J_w^{e,p}(z,a,0,j) = \sum_{z'\in\mathcal{Z}} J_w^{e,p}(z',a,0,j)\Lambda(z'|z)$$

The function $\bar{J}_w^{e,o}(z,a,n,j)$ is the continuation value of a job under a permanent contract, filled by a woman who has the option of choosing reduced work time, equal to:

$$\begin{aligned}\bar{J}_w^{e,o}(z,a,n,j) =&(1-\delta_w^p)(1-\mathbf{1}_w^{q,p}(z,a,n,j))(1-\mathbf{1}_w^{r,p}(z,a,n,j))\max\{-f_p, \mathrm{E}J_w^{e,p}(z,a,n,j)\}\\ &+(1-\delta_w^p)(1-\mathbf{1}_w^{q,p}(z,a,n,j))\mathbf{1}_w^{r,p}(z,a,n,j)\mathrm{E}J_w^{r,p}(z,a,n,j)\end{aligned}$$

where

$$\mathrm{E}J_w^{r,p}(z,a,n,j) = \sum_{z'\in\mathcal{Z}} J_w^{r,p}(z',a,n,j)\Lambda(z'|z).$$

Again, the continuation values for the firm depend on decisions by women, who might quit, indicted by $\mathbf{1}_w^{q,p}(z,a,n,j)$, and if they continue to work, might decide to choose workweek reduction, indicated by $\mathbf{1}_w^{r,p}(z,a,n,j)$.

Finally, $J_w^{r,p}(z,a,n,j)$ is the value of a job filled by a woman working reduced hours under a permanent contract, equal to

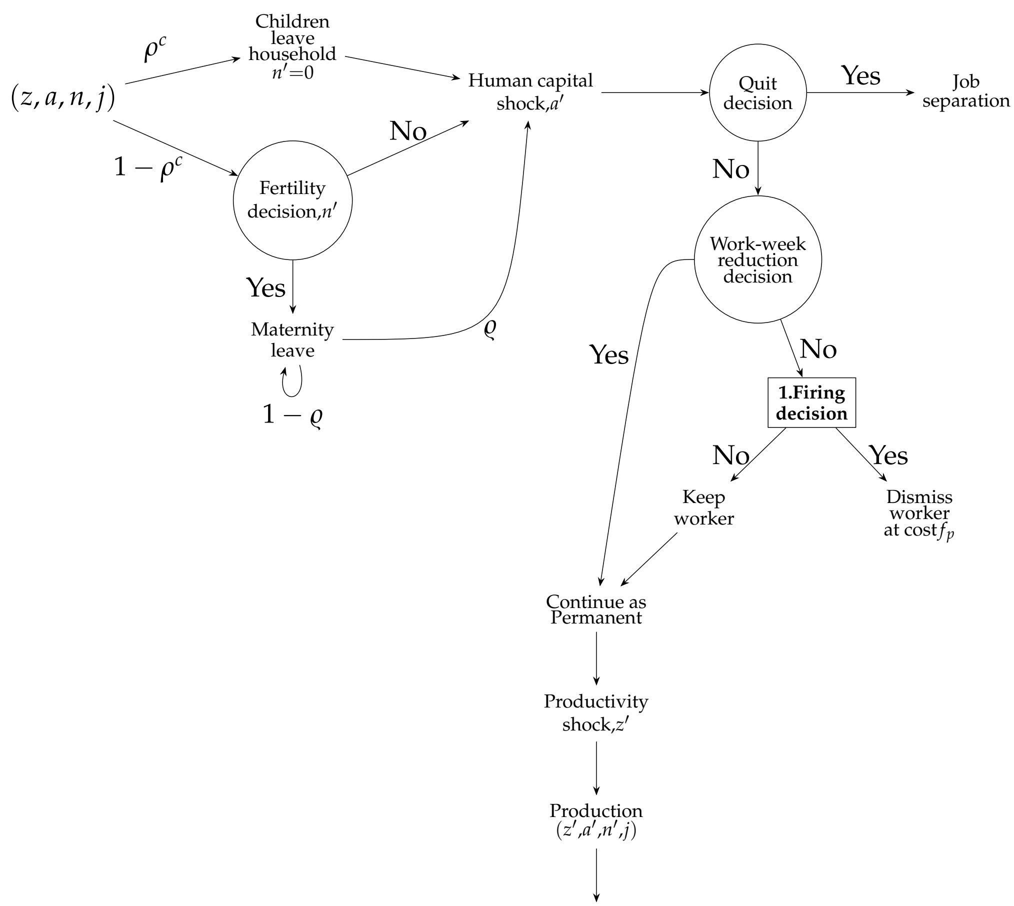
$$\begin{aligned}J_w^{r,p}(z,a,n,j) =& y_w^r(z,a,n) - w_w^r(z,a,n) - \kappa^r\\ &+\rho\rho^c \sum_{a'\in\mathcal{A}} \bar{J}_w^{e,p}(z,a',0,j)\Gamma_w^e(a'|a,j,0)\\ &+\rho(1-\rho^c)(1-\sigma(n)) \sum_{a'\in\mathcal{A}} \bar{J}_w^{e,o}(z,a',n,j)\Gamma_w^e(a'|a,j,n)\\ &+\rho(1-\rho^c)\sigma(n) \sum_{a'\in\mathcal{A}} (1-\mathbf{1}_w^{n,r}(z,a',n,j))\bar{J}_w^{e,o}(z,a',n,j)\Gamma_w^e(a'|a,j,n)\\ &+\rho(1-\rho^c)\sigma(n) \sum_{a'\in\mathcal{A}} \mathbf{1}_w^{n,r}(z,a',n,j)\bar{J}_w^{l,p}(z,a',n,j)\Gamma_w^e(a'|a,j,n).\end{aligned}$$

A solution to this problem is an indicator function for the firing of a permanent contract job, defined as

$$\mathbf{1}_{w}^{f,p}(z,a,n,j) = \begin{cases} 1 & \text{if} \quad \mathrm{E}J_{w}^{e,p}(z,a,n,j)) \geq -f_p \\ 0 & \text{otherwise.} \end{cases},$$

Figure 2 describes the decisions of a firm with a woman worker in a permanent contract.

Figure 2: The problem of a firm under a permanent contract



NOTES: This figure describes the sequence of actions of a firm matched with a woman in a permanent contract.

Job value of a match with a man. For men, all jobs are permanent, and their human capital is normalized to 1 and is constant. Then, the job value of a match with a man is equal to

$$J_m^e = y_m - w_m - \kappa^p + \rho(1-\delta_m)J_m^e.$$

Value of a vacant job. Finally, the value of creating a vacancy for a firm, denoted by J^v, is equal to

$$J^v = -\kappa_v + \phi_v \mathrm{E}J^v,$$

with

$$\begin{aligned}
\mathrm{E}J^v &= 0.5\mu_u^w(1-\chi_p)\sum_{a\in\mathcal{A}}\sum_{z\in\mathcal{Z}}\sum_{j\in\{0,1\}}\chi_j \mathbf{1}_w^{u,t}(z,a,n,j)\max\{0, J_w^{e,t}(z,a,n,j)\}\psi_u^w(a,n)\Lambda(z) \\
&+ 0.5\mu_u^w\chi_p\sum_{a\in\mathcal{A}}\sum_{z\in\mathcal{Z}}\sum_{j\in\{0,1\}}\chi_j \mathbf{1}_w^{u,p}(z,a,n,j)\max\{0, J_w^{e,p}(z,a,n,j)\}\psi_u^w(a,n)\Lambda(z) \\
&+ 0.5\mu_u^m \mathbf{1}_m^u \max\{0, J_m^e\},
\end{aligned}$$

where J_m^e and $J_w^{e,t}(z,a,n,j)$ are the values of filling a vacancy with a man and a woman, while μ_m^u and μ_w^u are the share of men and women who are non-employed in the economy, which are endogenous objects that reflect workers decisions. A solution to this problem is a hiring indicator into temporary and permanent jobs for women, given by,

$$\mathbf{1}_w^{h,t}(z,a,n,j) = \begin{cases} 1 & \text{if} \quad J_w^{e,t}(z,a,n,j) > 0 \\ 0 & \text{otherwise,} \end{cases}$$

and

$$\mathbf{1}_w^{h,p}(z,a,n,j) = \begin{cases} 1 & \text{if} \quad J_w^{e,p}(z,a,n,j) > 0 \\ 0 & \text{otherwise,} \end{cases}$$

and a hiring indicator for men, given by,

$$\mathbf{1}_m^h = \begin{cases} 1 & \text{if} \quad J_m^e > 0 \\ 0 & \text{otherwise.} \end{cases}$$

In Appendix A, we report values and policies functions for employed and non-employed women and men, we define the equilibrium and describe the numerical algorithm used to solve the model.

3 Data

3.1 Spanish Social Security Records

The quantitative analysis uses data from the 2005–2015 Continuous Sample of Working Lives with Fiscal Data (Muestra Continua de Vidas Laborales con Datos Fiscales, MCVL). The MCVL is a 4% random sample of individuals registered with the Spanish Social Security system in a given year. For each reference year, it tracks individuals' social security histories back to their first job or 1980 for older cohorts. Using multiple reference years expands the sample beyond 4% of the workforce. Individuals appear in the data if they are employed or receiving unemployment benefits. The unit of observation is a labor market spell—either a job with a specific contract or a period of unemployment—defined by a start date, end date, and employer identifier.

For each spell in the sample, we observe basic demographic characteristics of the worker, such as age and gender, as well as job-related features like contract type (temporary vs. permanent; public vs. private), industry, and an occupational skill level. The data also reports an indicator for part-time vs. full-time contracts and a part-time coefficient that measures working hours as a fraction of full-time hours in the same firm. The MCVL is matched with the Municipal Registry of Individuals (Padrón), which provides basic demographic information for all individuals living in the household of the MCVL reference person, including gender and date of birth. Marital status, number of children, and new births are inferred from the age and gender of household members.[4]

All MCVL waves from 2005 to 2015 are used to construct a quarterly panel spanning from 1996 (or the worker's first employment) to 2006. Data prior to 1996 is excluded due to unreliable classification of temporary and permanent contracts. As detailed below, the sample ends in 2006 to capture the effects of a family-friendly

[4] As a result, marriage implies living in the same household and includes also those cohabiting.

Table 1: Descriptive Statistics

	Mean	SD	Min	Max	N.Obs.
age (years)	34.1	5.56	25	44	7946291
female	0.42	0.49	0	1	7946291
college	0.23	0.42	0	1	7938394
spouse present	0.42	0.49	0	1	7946291
# children	1.01	1.04	0	9	7946291
childless	0.40	0.49	0	1	7946291
full-time	0.89	0.31	0	1	6936443
permanent jobs	0.69	0.46	0	1	7946291
temporary jobs	0.31	0.46	0	1	7946291
flexible jobs	0.56	0.50	0	1	7882681
# jobs in a quarter	1.04	0.22	1	6	7946291
experience (years)	8.60	5.31	0	27	7946291
tenure (years)	4.30	4.56	0	26	7946291
daily earnings	60.7	40.1	4.07	1844.7	7823534
daily earnings, log	3.95	0.53	1.40	7.52	7823534

NOTES: The sample refers to native individuals with non-missing wages and sector, age 25-44 y.o., continuously employed in the quarter of reference. Earnings are expressed in 2015 euros using the CPI index. Age, experience, and job tenure are expressed in years. SOURCE: MCVL 1996-2006.

policy introduced in Spain in 1999. In each quarter, employed workers are assigned to a job (or contract), which is straightforward when only one contract is held. Once assigned, we observe their quarterly and daily earnings, with the latter calculated by dividing quarterly earnings by days worked. The construction of the quarterly panel and job assignment follows Roca and Puga (2016) and Guner et al. (2024). Additional details are provided in Appendix B.

Table 1 reports descriptive statistics for key variables. The sample includes Spanish-born workers aged 25–44 with non-missing earnings and industry information, who are continuously employed within a quarter. Women make up 42% of all individual-quarter observations. About 23% hold a college degree, and 42% have a spouse in the household. On average, workers have 1.01 children aged 0–18, with 40% being childless. In terms of labor market outcomes, 89% of observations correspond to full-time jobs. Labor market duality is notable, with over 30% of jobs being temporary. Workers have, on average, 8.6 years of experience and 4.3

years of tenure in their current job.[5] The number of jobs in a quarter is close to one as about 95% of workers in the sample hold a single job in a given quarter. Finally, average daily earnings are around 60 euros, which amounts to around 5,500 euros of quarterly earnings.

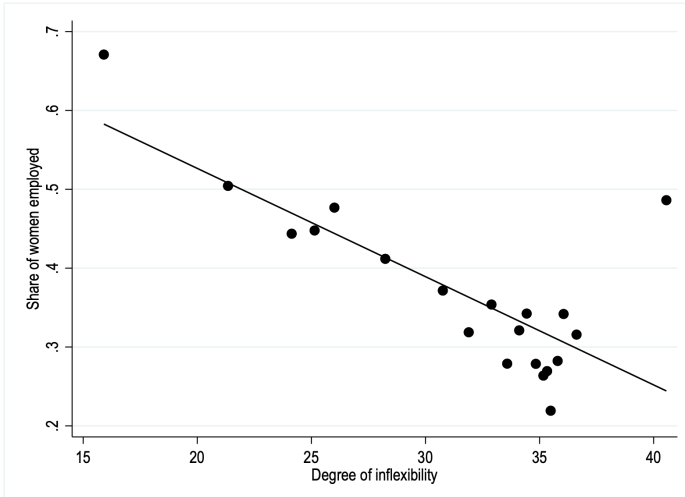
3.2 Flexible and Inflexible Jobs

For the quantitative analysis, inflexible jobs are defined as those that require long working hours. The idea is that these jobs make it more difficult for women to combine household responsibilities. Following Cha and Weeden (2014) and Cortes and Pan (2017), "overwork" is defined as working more than 50 hours a week, and we classify industries as inflexible when there is a high share of men working more than 50 hours. To this end, we use the U.S. labor market as a benchmark, assuming that occupational sorting in the U.S. better reflects underlying technologies and skills. Using the 2010 American Community Survey (ACS), we calculate the share of men working over 50 hours weekly for each SOC occupation. These shares are then aggregated to the industry level using occupational employment shares within each industry. Finally, we merge the ACS-based job flexibility measures with the MCVL dataset by mapping U.S. industry codes (NAICS) to the Spanish classification (CNAE-2009, Clasificacion Nacional de Actividades Economicas).

Figure 3 illustrates the relationship between job inflexibility—measured as the share of men working more than 50 hours—and the share of women employed across Spanish industries. Each dot represents a bin of industries grouped into 5-percentile intervals based on inflexibility, from the bottom to the top 5%. The figure shows a strong negative relationship: the share of women exceeds 50% in more flexible industries, such as education, but falls below 20% in less flexible sectors like certain manufacturing activities, such as printing (see Appendix B for details). For the quantitative analysis, jobs are classified as flexible or inflexible depending on whether the industry's share of men working over 50 hours per week is below or above the median. Under this definition, 56% of all observations in the quarterly panel are in flexible jobs (Table 1).

[5] Although the panel begins in 1996, the MCVL includes employment histories prior to that year, allowing for the construction of experience and tenure variables.

Figure 3: Inflexible jobs and women's employment



NOTES: The figure reports women's employment as a share of total employment across sectors with different degrees of inflexibility. The sample refers to native workers with non-missing wages and sector information, age 25-44 y.o., continuously employed in the quarter of reference. SOURCE: MCVL 2000-2006.

Inflexible jobs hinder women's human capital accumulation, as reflected in slower wage growth. Table 2 shows the change in daily wages between consecutive quarters for women in flexible versus inflexible jobs. Overall, women experience an average quarterly wage growth of 1.67%. However, those in inflexible jobs have a wage growth of about 0.7 percentage points lower compared to those in flexible ones. Furthermore, the penalty is more pronounced for mothers: it is only 0.65 percentage points for women without children and the penalty rises to 1.15 percentage points for those with two or more children.

3.3 Family Reconciliation Act and Work-Week Reduction

On November 5, 1999, the Spanish Congress passed the Law to Promote the Reconciliation of Work and Family Life (Law 39/1999). This law granted parents with children under age 6 the right to request a reduced workweek—between one-third and one-half of full-time hours—without risk of dismissal. The key innovation was the introduction of job protection in the period of work-week reduction (WWR). Prior to 1999, parents could reduce their hours but lacked protection from dis-

Table 2: Wage growth penalty of women in non-flexible jobs

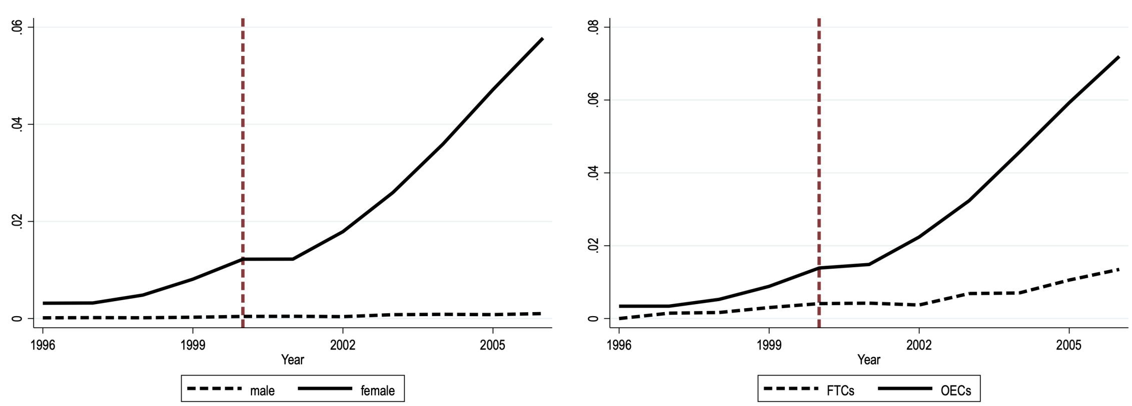
			With children	
	All women	Childless	1 child	≥2 children
	(1)	(2)	(3)	(4)
Non-flexible job	-0.0071***	-0.0065***	-0.0083**	-0.0115***
	(0.0012)	(0.002)	(0.003)	(0.004)
Constant	0.0198***	0.0234***	0.0153***	0.0158***
	(0.0006)	(0.001)	(0.002)	(0.002)
N.Obs.	2073522	1194413	522677	352641
R-squared	0.12	0.13	0.13	0.11

NOTES: The sample refers to native women with non-missing wages and sector, age 25-44 y.o.., continuously employed in the quarter of reference. The outcome variable is the daily wage growth rate between two consecutive quarters. The dependent variable is a dummy taking the value 1 if a woman is employed in a non-flexible job in the initial quarter, 0 otherwise. Standard errors are robust. For each column, estimates are obtained controlling for individual FEs, year and quarter FEs and dummies for age, experience in the labor market, occupational skill groups, having a full-time jobs, having multiple jobs, and having a spouse in the household. Within-firm refers to contract conversion within the same firm. *** $p<0.01$, ** $p<0.05$, * $p<0.1$. SOURCE: MCVL 2000-2006.

missal. The age limit for eligible children was later raised to 8 in 2007 and 12 in 2012. After the 2008 Great Recession, WWR participation increased sharply as many parents sought added job security. Our quantitative analysis focuses on data until 2006, which corresponds to the initial phase of the policy.

Figure 4: Work-Week Reduction Take-Up

(A) By gender **(B)** By contract type (women)



NOTES: This figure reports the share of workers in WWR over time, by gender (panel A) and by contract type (Panel B). The sample refers to native individuals (both men and women in Panel A, only women in Panel B) with non-missing wages and sector, age 25-44 y.o., continuously employed in the quarter of reference. SOURCE: MCVL 1996-2006.

Figure 4 shows the share of employed individuals opting for WWR by gender (left) and contract type (right), before and after the 1999 Family Reconciliation Act. Workers are classified as using WWR if they have a child under age 6, hold a full-time contract, but work fewer than 100% of full-time hours. Between 2000 and 2006, women on WWR worked, on average, 63% of full-time hours, as most chose a one-third reduction. Their average wages during WWR were 76% of those of full-time workers in the same period.

The share of men who took WWR was close to zero throughout this period. In contrast, the share of women in WWR increased significantly with the reform, from less than 1 percent in 1996 to about 6 percent in 2006 (Panel A). Job protection provided under WWR mainly affects permanent (or open-ended) contracts since protection for temporary (or fixed-term) contracts is limited by their duration, which is typically very short. As a result, the entire increase in the number of women in WWR during this period was driven by those employed under permanent contracts (Panel B).

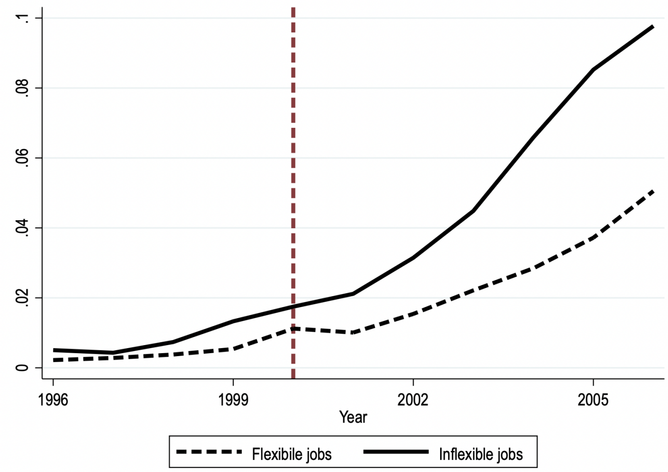
3.4 Work-Week Reduction and Women´s Careers

How does the availability of reduced working hours provided by the 1999 policy affect women's careers? In this section, we highlight two facts that later help us to discipline the quantitative analysis.

First, women who work in inflexible jobs are more likely to take WWR, as the flexibility offered by WWR is likely to be more valuable for them. Figure 5 reports the share of women employed with permanent contracts who were in WWR over time, separately for flexible and non-flexible jobs. By the end of our sample in 2006, the share of women who were on WWR about 6.6%. The share was much higher, about 10%, for women who work in inflexible jobs. As we have already indicated, the share of women in WWR was much lower, only about 0.5% before the 1999 Reform, and there was no significant difference in take-up by job flexibility.

Second, we ask whether the 1999 Reform affected the promotion of women from temporary to permanent contracts. If, as shown in Figure 4A, women in permanent contracts are more likely to be on WWR, which is costly for firms, the firms might react to the policy by lowering promotions. To this end, we follow Fernández-

Figure 5: WWR take-up, by job flexibility



NOTES: This figure reports the share of women employed with permanent contract who were in WWR over time, separately by job flexibility. The sample refers to native workers with non-missing wages and sector information, age 25-44 y.o., continuously employed in the quarter of reference. Flexible (non-flexible) jobs refer to jobs in sectors with a measure of inflexibility below (above) the median value.
SOURCE: MCVL 1996-2006.

Kranz and Rodríguez-Planas (2021) and estimate the following empirical specification:

$$y_{it} = \alpha_0 + \alpha_1 \text{post-1999}_t \times \text{female}_i + \alpha_2 X_{it} + \mu_i + \mu_t + \epsilon_{it} \quad (1)$$

where y_{it} is an indicator for contract conversion (from temporary to permanent) between quarter t and $t+1$, the variable post-1999_t is a dummy taking value 1 for every period starting 2000 and 0 otherwise, female_i is a gender dummy for women, the terms μ_i and μ_t denote individual and time-fixed effects, in the form of dummies for years and quarters, while X_{it} is a vector of controls, including dummies for age, experience in the labor market, occupational skill groups, having a full-time job, having multiple jobs, and having a spouse in the household.

Table 3 presents regression results for different specifications of equation (1). Columns 1 and 3 include all contract conversions in two consecutive quarters. Columns 2 and 4 restrict the focus on contract conversion within the same firm. The results show that, relative to men, women experienced a significant decline in the likeli-

Table 3: Contract conversion

	(1)	(2)	(3)	(4)
post-1999$_t$ × female$_i$	-0.0045***	-0.0122***	-0.0120***	-0.0141***
	(0.001)	(0.001)	(0.001)	(0.002)
N.Obs	2296771	1266785	1787809	983173
R-squared	0.18	0.21	0.20	0.23
Individual FE	✓	✓	✓	✓
Time FE	✓	✓	✓	✓
Controls			✓	✓
Within-firm		✓		✓

NOTES: The sample refers to native individuals (both men and women) with non-missing wages and sector, age 25-44 y.o., continuously employed in the quarter of reference. Each regression includes individual FEs and time FEs in the form of dummies for years and quarters. Controls include dummies for age, experience in the labor market, 3-digit sectors, occupational skill groups, having a full-time job, having multiple jobs, and having a spouse in the household. Standard errors are robust. *** p<0.01, ** p<0.05, * p<0.1. SOURCE: MCVL 1996-2006.

hood of being promoted from a fixed-term to an open-ended contract, following the 1999 reform. Using the estimates from column (3), the quarterly promotion rate for women is 1.2 percentage points lower in the post-reform period. This is a substantial drop, given that the average quarterly promotion rate for women from temporary to permanent contracts was approximately 5.7% between 2000 and 2006.

To summarize, work-week reduction take-up increased significantly following the 1999 Family Reconciliation Act, and it did almost entirely among women with permanent contracts employed in inflexible jobs. At the same time, the likelihood of promotions from temporary to permanent contracts declined for women relative to men. In the next section, we employ this empirical evidence to discipline our quantitative model.

4 Benchmark Economy

The model is estimated using the Simulated Method of Moments, targeting data from the Spanish economy for the 2000–2006 period. Each model period corresponds to one month. A subset of parameters is set externally based on data or literature, while the remaining are estimated to match selected moments.

Table 4 lists the externally calibrated parameters. The discount factor ρ implies an annual return of 4%. The survival probability ensures that workers remain in the economy for an average of 20 years, corresponding to ages 25 to 44. The monthly probability of a child becoming a teenager is set at 1.39%, so children remain in the household for about 6 years—the threshold for parental eligibility under WWR. Workers' bargaining power is fixed at 0.5, as in Pissarides (2009).

Net unemployment benefits for men and women are €122.68 and €107.88 per month, respectively, based on EU-SILC data. These values represent the monthly gross unemployment income for individuals aged 25–44.[6] The wage penalty from WWR is derived from MCVL and corresponds to the observed daily wage of women in WWR relative to the average full-time wage, about 76%. Lastly, following Spanish legislation, we assume women are entitled to four months of paid maternity leave at 90% of their contracted wage.[7]

4.1 Moments

We are left with 32 parameters to be estimated. These include: women's utility from children across labor market states (employed, non-employed, WWR); firing costs for permanent contracts; firm operating costs for employing temporary and permanent workers; parameters governing women's human capital accumulation; production penalty from WWR; initial fertility status at model entry (age 25); fertility opportunities by the number of existing children; and parameters related to labor market flows—such as the efficiency of the matching function, vacancy posting costs, and exogenous job destruction rates.

[6] EU Statistics on Income and Living Conditions (EU-SILC) provides harmonized cross-sectional and longitudinal data on income, poverty, social exclusion, and living conditions across EU countries. It allows us to estimate effective unemployment benefits, including those who receive no payments—unlike MCVL, which only includes recipients. The reported values are averages for 2004–2012.

[7] All female employees (and self-employed) with 180 days of contributions in the 7 years immediately preceding the birth of the child or 360 days of contributions across the whole working life are eligible for paid maternity leave. Eligible women in 2006 were entitled to 100% of earnings up to a ceiling of 3074 euros per month. This corresponds to a full-rate equivalent paid replacement of 90% (Source: OECD (2024))

Table 4: Parameters calibrated outside the model

Parameter	Description	Value	Targets/Notes
		Demographics parameters	
$\widetilde{\rho}$	Discount Factor	0.9967	4% yearly return
ρ^d	Survival Probability	0.0021	# of years in labor market (25-44)
ρ^c	Prob. child leaves home	0.0139	# of years for children (0-6)
		Wage parameters	
b_m	Net unemp. benefit, men (euros)	122.68	Data, EU-SILC
b_w	Net unemp. benefit, women (euros)	107.88	Data, EU-SILC
ω_r	WWR wage penalty	0.7576	Data, MCVL
		Labor market and policies	
β	Bargaining power	0.50	Pissarides (2009)
ϱ	Maternity leave, length	0.25	4 months duration
ι	Maternity leave, replacement	0.90	90% of contracted wage

NOTES: This table reports the list of parameters calibrated outside the model.

We estimate these parameters using 46 worker-level targets. The first set captures life-cycle patterns in employment, the gender wage gap, and fertility. We report them in Figure 6. Panel A shows that over 40% of women aged 25–29 have temporary contracts. This share declines gradually with age but remains above 20% at 40–44. Panel B shows the gender wage gap starting around 40%, narrowing steadily as women accumulate human capital, and nearly disappearing by 40–44. The model replicates these trends well. Panels C and D of Figure 6 illustrate fertility patterns. At 25–29, nearly 80% of women are childless. This declines over time, but over 20% remain childless by 40–44. Completed fertility rises slowly, reaching about 1.5 children by age 45, as most mothers have only one child.

Additional moments are listed in Table 5. The first group of moments covers male labor market outcomes. In the data, around 29% of men between ages 25 and 44 are non-employed, and each quarter, about 11% of them find a job and move from non-employment to employment. The quarterly log wages of men are around 7.6 euros (2000 euros).[8] The next group focuses on women: on average, 33% hold

[8] As the MCVL does not provide information on individuals who are out of the labor, non-employment rate is calculated using the 2000-2004 Spanish Labor Force Survey (LFS), which constitutes the Spanish part of Labor Force Statistics of the OECD. The LFS has a sample of about 60,000 households and provides detailed labor market information on all individuals older than 16

temporary contracts, and about 60% work in flexible jobs. Among those with permanent contracts, about 6% choose WWR (Figure 5). The WWR share is twice as high among those in non-flexible jobs.

The model also captures key labor market transitions for women. Each quarter, about 20% of women with temporary contracts become unemployed. The promotion rate from temporary to permanent contracts is low, around 6%, but once in a permanent job, women tend to remain employed with such contracts. We also target the 10% quarterly transition rate from WWR to non-employment. Finally, we match the effect of WWR on promotions: as Table 3 shows, WWR reduced women's promotion rates relative to men by over 1.2%. The model replicates this difference-in-differences effect in simulated data.

The next set of moments captures wage levels and growth. Women start at wages about 30% below average, but those who stay employed see quarterly wage growth of 1.6%, and the wage gap closes (Panel B in Figure 6). Wage growth is lower for women in non-flexible jobs ($j = 0$), especially for those with children (Table 2). The model replicates these wage dynamics.

The final set of moments describes fertility distributions at ages 25 and 45. The model matches the share of childless women at age 25 (about 80%) and age 45 (about 20%). By 45, around 30% of women have one child, and another 30% have two.

4.2 Estimated Parameters

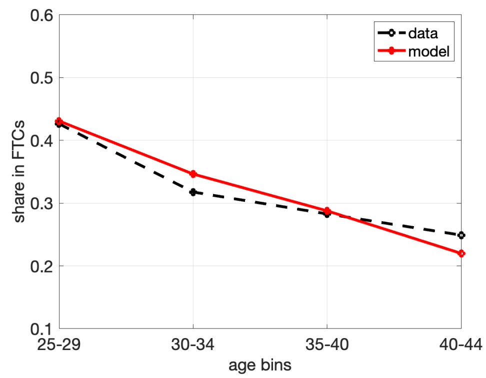
Table 6 reports the estimated parameters. While no exact mapping exists between parameters and moments, some moments play a relatively more important role in identifying some parameters. The aggregate shifter, A, is chosen to match the average quarterly (log) wage of employed men, while exogenous job separation for men, δ_m, and the aggregate matching efficiency, η, map into the non-employment rate of men and their quarterly non-employment to employment transition rate.

The exogenous gender wage penalty, ω_w, is identified using the average quarterly (log) wage of employed women. We estimate $\omega_w = 0.163$, meaning that approxi-

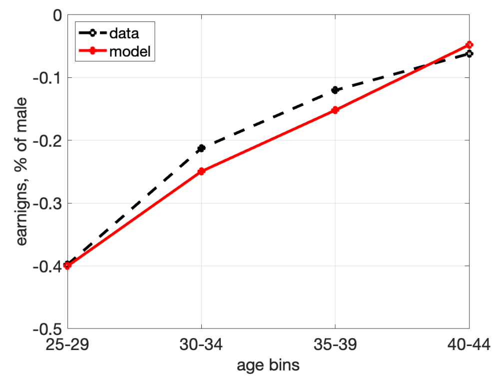
in each household.

Figure 6: Model vs Data

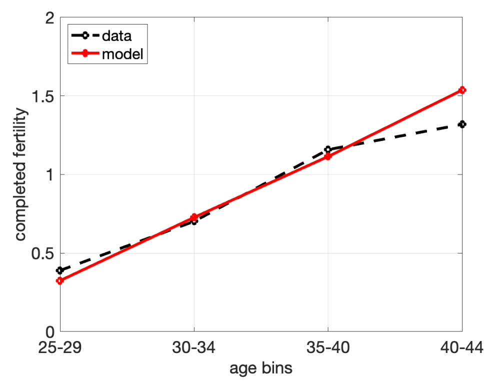
(A) Share of Temporary



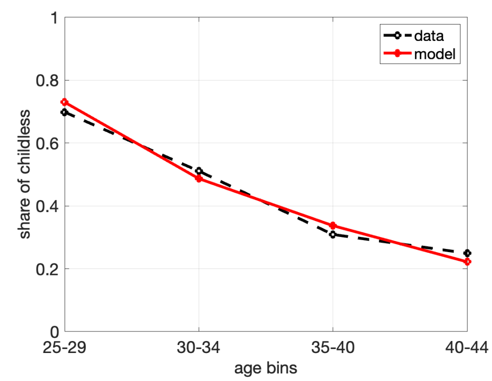
(B) Gender wage gap



(C) Completed fertility



(D) Share of childess



NOTES: This figure displays selected targeted life-cycle moments: the share of women employed with temporary contracts (panel A), the gender wage gap (panel B), completed fertility for working women (panel C), and the share of childless working (panel D). The black lines refer to data. The red lines refer to model counterparts.

mately two-thirds of the observed gender wage gap is attributed to an exogenous factor outside the model. The production penalty associated with WWR, ω_r, is estimated at 0.557, implying that women in WWR produce 55.7% of the output of a full-time worker. This penalty, which is larger than the 76% wage reduction tied to WWR, helps match the observed 1.2 percentage points decline in quarterly conversion rate from temporary to permanent contract after the introduction of the Family Reconciliation Act (column 3, Table 3).

Human capital parameters are identified from earnings dynamics. The parameter α_a governs the distribution of human capital at labor market entry and is cho-

Table 5: Model vs Data

Moment	Data	Model	Moment	Data	Model
Men			**Women**		
Non-employment rate	0.2872	0.2872	*Earnings*		
Non-employ. to employ., quarterly rate	0.1095	0.1095	Avg. wage (log), quarterly	7.3809	7.3099
Avg. wage (log), quarterly	7.6030	7.6030	Quarterly wage at 25 y.o., relative to average	-0.2719	-0.2922
			Avg. wage growth, quarterly	0.0164	0.0160
Women			Avg. wage growth flexible job, quarterly	0.0198	0.0189
Labor market			Wage growth penalty, average ($j = 0$)	-0.0071	-0.0070
Emp. in temporary	0.3300	0.3313	Wage growth penalty, childless ($j = 0, n = 0$)	-0.0065	-0.0062
Emp. in flexible jobs	0.6083	0.5834	Wage growth penalty, 1 child ($j = 0, n = 1$)	-0.0083	-0.0083
Emp. in WWR, within perm.	0.0660	0.0622	Wage growth penalty, ≥ 2 children ($j = 0, n \geq 2$)	-0.0115	-0.0113
Emp. in WWR and flexible, within perm.	0.0442	0.0464			
Emp. in WWR and non-flexible, within perm.	0.0918	0.0848	*Fertility*		
			Childless women at 25 y.o.	0.8327	0.7892
Transition rates, quarterly			Women with 1 child at 25 y.o.	0.1387	0.1900
Temp. to Non-employ.	0.2010	0.1915	Women with 2 children at 25 y.o.	0.0235	0.0185
Temp. to Perm.	0.0573	0.0696	Women with 3 children at 25 y.o.	0.0039	0.0023
Perm. to Non-employ.	0.0845	0.0884	Childless women at 45 y.o.	0.2164	0.2222
Perm. to Perm.	0.9116	0.9053	Women with 1 child at 45 y.o.	0.2755	0.3121
WWR to Non-employ.	0.1061	0.1004	Women with 2 children at 45 y.o.	0.3526	0.2606
Decline in promotion rates with WWR	-0.012	-0.012	Women with 3 children at 45 y.o.	0.1233	0.1388

NOTES: This table reports selected targeted moments and their model counterparts.

sen to match average quarterly earnings at age 25, relative to the overall average for women. Differences in earnings growth by job type and parental status are captured through job- and child-specific probabilities of human capital accumulation. For women in flexible jobs, the probability of a human capital jump is estimated at $\pi^e_w(j = 1) = 11.4\%$. In non-flexible jobs, the probabilities are lower: $\pi^e_w(j = 0, n = 0) = 6.7\%$ for childless women, $\pi^e_w(j = 0, n = 1) = 5.1\%$ for mothers with one child, and $\pi^e_w(j = 0, n >= 2) = 2.6\%$ for mothers with two or more children.

Per-period operating costs are estimated at approximately €216 for temporary jobs and €600 for permanent ones. The higher cost for permanent jobs helps match the low observed quarterly promotion rate of about 6%. We also estimate a substantial firing cost exceeding €20,000. Because permanent positions are more expensive, firms tend to promote women with higher human capital. Once promoted, these jobs offer greater stability; the exogenous separation rate is higher for permanent than temporary contracts. When a new worker and a firm match, around 55% of matches have a flexible job. However, flexible jobs account for nearly 60% of total employment, as women are more likely to reject inflexible jobs due to lower wage growth. Roughly 42% of all matches have a temporary contract, closely aligning with the share of women aged 25–29 in temporary contracts (Panel A, Figure 6). This share declines with age, as women who remain in the workforce and build hu-

Table 6: Estimated parameters

Parameter	Description	Value	Parameter	Description	Value
	Aggregate			*Labor market*	
A	Aggregate shifter	3606.2	$\chi_{j=1}$	Share of flexible jobs posted	0.5528
δ_m	Exogenous separation, men	0.0365	χ_p	Share of perm. jobs posted	0.5809
η	Matching efficiency	0.0907	π^t	Forced conversion, temp. to perm.	0.0183
			δ_w^t	Exogenous separation, temp., women	0.0445
	Wage/production penalties		δ_w^p	Exogenous separation, perm., women	0.0234
ω_w	Gender wage penalty	0.1633	δ_w^r	Exogenous separation, WWR, women	0.0282
ω_r	WWR production penalty	0.5568			
	Human capital			*Preferences*	
α_w^h	Initial dist. human capital (HC)	0.6588	γ_u	Value of children if unemployed (euros)	811.87
$\pi_w^e(j=1)$	HC jump, flexible jobs	0.1137	γ_e	Value of children if employed (euros)	187.89
$\pi_w^e(j=0,n=0)$	HC jump, inflexible job & childless	0.0671	γ_r	Extra value of children, WWR (euros)	406.57
$\pi_w^e(j=0,n=1)$	HC jump, inflexible job with 1 child	0.0511		*Fertility*	
$\pi_w^e(j=0,n\geq 2)$	HC jump, inflexible job with $\geq$ 2 children	0.0256	$\Theta(n=0)$	Childless women at 25 y.o.	0.8327
			$\Theta(n=1)$	Women with 1 child at 25 y.o.	0.1387
	Productivity and costs		$\Theta(n=2)$	Women with 2 children at 25 y.o.	0.0235
φ_z	Productivity persistency	0.5818	$\Theta(n=3)$	Women with 3 children at 25 y.o.	0.0039
κ^t	Cost of operating, temp. (euros)	216.24	$\sigma(n=0)$	Fertility opportunity, childless	0.0140
κ^p	Cost of operating, perm. (euros)	599.96	$\sigma(n=1)$	Fertility opportunity, 1 child	0.0163
κ_v	Cost of posting vacancy (euros)	1419.5	$\sigma(n=2)$	Fertility opportunity, 2 children	0.0082
c^f	Firing costs, perm. (euros)	22065	$\sigma(n=3)$	Fertility opportunity, 3 children	0.0008
			κ_n	Fixed cost of newborns (euros)	33114

NOTES: This table reports the list of parameters estimated using SMM, their description, and estimates.

man capital become more selective, avoiding temporary jobs that lack stability and WWR benefits. In the model, firms either convert temporary contracts to permanent or terminate them after an average of 4.5 years—closely reflecting regulations at the time, which capped temporary contracts at 4 years.

The final set of parameters relates to fertility decisions. Mothers derive over four times more utility from children when not employed. A non-working mother receives a monthly utility of approximately $\gamma_u = 812$ euros, compared to $\gamma_e = 188$ euros for a working mother. WWR provides an additional utility gain of about $\gamma_r = 406$ euros, making it an appealing option despite the lower wages associated with WWR. The distribution of women by number of children at age 25, $\Theta(n)$, is calibrated to match observed parities at age 25 in the data. A childless woman has a 1.4% monthly probability of a fertility opportunity. This probability increases slightly for women with one child and then declines significantly thereafter. These values allow the model to match fertility patterns over the life cycle (Panels C and D in Figure 6). Finally, we estimate a one-time cost of having a child at around 33,000 euros.

4.3 Workweek Reductions as a Family-Friendly Policy

The calibration strategy exploits the decline in promotions associated with the introduction of WWR policies. In the data, the 1999 Law to Promote the Reconciliation of Work and Family, which introduced job protection for women who choose to work reduced hours, resulted in a significant decline in promotions from temporary to permanent contracts (Table 3). To replicate the effect of this policy in the model, we compare the benchmark economy with a counterfactual world that allows firms to dismiss women in WWR at a cost equal to the estimated firing costs for permanent contracts, f_p.

Table 7 compares a counterfactual scenario without WWR, i.e., the pre-1996 reform economy (column 1), with the benchmark (column 2). In the absence of WWR, the quarterly promotion rate is 1.2% higher, which was a targeted outcome. The introduction of WWR not only reduces promotion from temporary to permanent contracts but also decreases firms' willingness to hire women in the first place. The quarterly transition rate from non-employment to employment falls by about 2% with WWR, while the probability of moving from employment to non-employment increases. Due to lower hiring, higher separation, and fewer promotions, overall female employment declines. In the benchmark economy, about 51% of women are employed, compared to over 55% in the no-WWR scenario. This result mimics the findings of Fernández-Kranz and Rodríguez-Planas (2021), who document a similar increase in female non-employment (about 4 to 8 p.p.) following the introduction of WWR policies. The share of women in permanent positions is also lower with WWR.

In the benchmark economy with WWR, longer non-employment spells lead to slower wage growth for women over their life cycle. Between ages 25 and 44, wage growth is 6% lower, and lifetime earnings decline by about 7%. However, the policy boosts fertility by offering women greater flexibility: completed fertility at age 44 rises from 1.63 to 1.66 children. This increase occurs among both employed and non-employed women. However, women on temporary contracts experience lower fertility, as they are now more likely to delay childbirth in hopes of securing a permanent contract with WWR benefits. Thus, the policy creates a trade-off between higher fertility and lower lifetime earnings. What are the im-

Table 7: The Role of Workweek Reductions

	Counterfactual (pre-1999) (1)	Benchmark (post-1999) (2)	Change (3)=(2)-(1)	Benchmark (post-1999 & no firms) (4)	Change (5)=(4)-(1)
Cost of dismissal during WWR (euros)	22064.83	Not allowed	-	Not allowed	-
Labor Market Outcomes					
Emp. rate, of labor force	0.5537	0.5099	-4.37 p.p	0.5475	-0.62 p.p.
Emp. in OEC, of employment	0.7121	0.6687	-4.34 p.p	0.7074	-0.47 p.p.
Emp. in flexible, of employment	0.5768	0.5834	+0.66 p.p.	0.5768	+0.00 p.p.
Labor Market Flows (quarterly)					
Non-Emp. to Emp.	0.1725	0.1546	-1.79 p.p.	0.1695	-0.30 p.p.
Promotion, temp. to perm.	0.0816	0.0696	-1.20 p.p.	0.0818	+0.02 p.p.
Emp. to Non-Emp.	0.1152	0.1225	+0.73 p.p.	0.1167	+0.15 p.p.
Labor Earnings					
Avg. earnings, quarterly	1	1.0022	+0.22 %	0.9888	-1.12%
Avg. earnings growth, b/w 25 and 44 y.o.	0.4845	0.4223	-6.22 p.p.	0.4536	-3.09 p.p.
Fertility Outcomes					
Completed fertility, age 44 y.o.	1.6292	1.6654	+2.22%	1.7976	+10.34%
Yearly prob. of extra child	0.0828	0.0847	+0.19 p.p	0.0916	+0.87 p.p.
(non-employed)	0.0711	0.0750	+0.40 p.p.	0.0735	+0.24 p.p.
(employed)	0.0925	0.0942	+0.17 p.p.	0.1067	+1.42 p.p.
(with temporary contracts)	0.0444	0.0420	-0.24 p.p	0.0492	+0.48 p.p.
(with permanent contracts)	0.1125	0.1208	+0.83 p.p.	0.1312	+1.87 p.p.
Aggregate Outcomes					
Life-time earnings	1	0.9273	-7.27%	0.9738	-2.62%
Welfare	1	0.9711	-2.89%	1.0223	+2.23%

NOTES: This table reports selected labor market and fertility outcomes for i) a counterfactual economy without job protection during work-week reduction (column 1); ii) the baseline economy (column 2); and iii) a counterfactual economy with job protection during work-week reduction as in column (2) and firm policy functions kept fixed to those obtained in column (1). Columns (3) and (5) report changes between counterfactual economies.

plications of this trade-off for women´s welfare? In our simulations, the negative effects of lifetime earnings dominate, and women's welfare declines by about 3% with this policy.

Do firms matter for these outcomes? To answer this question, we compare the pre-1999 economy (column 1) with a version of the benchmark economy where we keep the firm's policy functions fixed at their pre-1999 values (column 4). Hence, in this economy, relative to the pre-1999 one, women change their decisions while firms do not react to the introduction of work-work reduction. Without firms reacting, a significantly larger share of women would use WWR: 10.92% of those with permanent contracts—nearly double the rate in the benchmark economy. The female employment rate would fall only slightly, by 0.62 percentage points, and the share of women in permanent contracts would decline by just 0.47 percentage points. Consequently, life-cycle wage growth (ages 25–44) and lifetime earnings would decline by only 3.09% and 2.62%, respectively. Fertility, however, would rise more sharply than in the benchmark: completed fertility at age 44 would increase to 1.80 (compared to 1.66), and the annual probability of having another child would rise for all women. Overall, women's welfare would improve by 2.23%. In contrast, when firms react by reducing promotions and female employment, the positive effects of WWR on fertility are significantly weakened, ultimately leading to lower welfare for women.

5 Family-Friendly Policies

We are now ready to evaluate the labor market and fertility consequences of a battery of alternative policy scenarios. In what follows, we focus on three major categories of policies, which are listed in Table 8.

Table 8: Policy Scenarios

N.	Policy	Description
1	Baseline	Benchmark economy (Section 4)
	Labor market duality	
2	Single-contract	no contract duality, and 50% lower firing costs
3	Shorter length of temp. contracts	average duration for temporary contracts of 1 year
4	Longer length of temp. contracts	average duration for temporary contracts of 8 year
5	Lower firing costs of perm. contracts	10% lower firing costs for permanent contracts
6	Higher firing costs, OECs	10% higher firing costs for permanent contracts
	Parental leave and flexible arrangements	
7	Longer maternity leave	a 1-year maternity leave
8	Higher maternity replacement	100% effective replacement rate during maternity leave
9	No WWR	no job protection under the work-week reduction (Section 4.3)
	Monetary subsidies	
10	Child subsidy	A lump-sum cash transfer of 50 euros per month to women upon childbirth
11	Hiring subsidy	Firm subsidy upon hiring a woman equal to the cost of posting a vacancy
12	Promotion subsidy	Firm subsidy upon promoting a woman equal to the cost of posting a vacancy

NOTES: This table lists and describe alternative counterfactual policy scenarios.

The first category of policy experiments addresses labor market duality. We examine the following scenarios: a) *Single-Contract Economy:* An economy with no contract duality, featuring only one type of contract. Key parameters—firing costs, operating costs per period, and exogenous job destruction rates—are set as the averages of those in the benchmark's temporary and permanent contracts. Specifically, the firing cost is set to half that of permanent contracts, since temporary contracts involve none. Women with children retain full access to WWR. b) *Varying Contract Duration of Temporary Contracts:* Economies with different maximum durations for temporary contracts. While the benchmark features an average duration of 4.5 years, we examine cases where the limit is shortened to 1 year (reducing duality) or extended to 8 years (increasing duality). All other parameters remain unchanged. c) *Adjusted Firing Costs of Permanent Contracts:* Economies in which firing costs for permanent contracts are either 10% lower or 10% higher than in the benchmark. These scenarios are designed to narrow or widen the gap between temporary and permanent contracts, holding all other variables constant.

The second category of policy experiments focuses on parental leave and flexible work arrangements for mothers. We consider the following scenarios: a) *Longer Maternity Leave:* Extending paid maternity leave from 4 months to 1 year while keeping all other features of the benchmark economy unchanged, including the 90% earnings replacement rate. b) *More Generous Maternity Leave Earnings Replacement:* Increasing the earnings replacement rate during maternity leave from 90% to 100%, with no other changes to the model. c) *No WWR:* Removing job protection under the work-week reduction (WWR) policy, which we analyzed in detail in Section 4.3

The final category includes monetary subsidies: a) *Child Subsidies:* A lump-sum cash transfer of 50 euros per month provided to women upon the birth of a child.[9] b) *Hiring Subsidies*: Firms receive a subsidy equal to the cost of posting a vacancy whenever they hire a woman, effectively reimbursing the hiring cost. c) *Promotion Subsidies*: Firms are subsidized for promoting women from temporary to permanent contracts, with each promotion yielding a transfer equivalent to the hiring cost. All subsidies are financed through lump-sum taxes on workers.

[9] In Spain, since 2003, working mothers with a child less than three years old receive 100 euros per month as a refundable tax credit (**?** and Ghazala and Gonzalez (2010)). We assume this and other transfers are part of the estimated cost of having a child. Hence, the policy we introduce should be interpreted as on top of any existing policies.

5.1 Policy Trade-Off

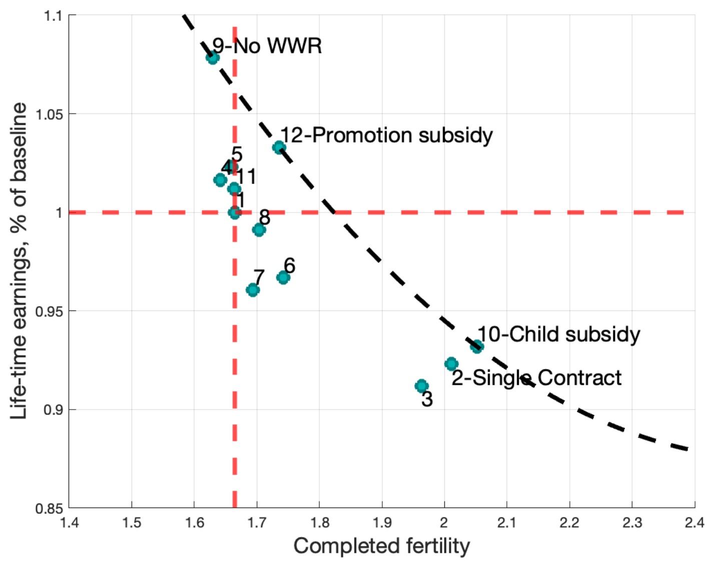
How do these policies affect fertility, women's employment, and earnings? Figure 7 shows changes in women's discounted lifetime earnings and completed fertility (the average number of children at age 44), where the vertical and horizontal dashed lines represent the benchmark values.

The results imply a trade-off: policies that increase lifetime earnings reduce fertility, while those that increase fertility result in lower lifetime earnings. For example, a single contract substantially increases fertility from 1.67 to 2.01. However, this policy also lowers the lifetime earnings by 7.69%. On the other extreme, eliminating the existing workweek reduction policy, which we study in detail in Section 4.3, increases women's lifetime earnings by 7.84%. Yet the fertility rate declines from 1.67 to 1.63. The other policies line up between these two, as in Figure 7. The only policy that achieves both higher fertility and higher lifetime earnings is the promotion subsidy, which transfers resources to firms when they promote a woman to a permanent job.

5.2 Few but Secure Jobs

Why do some policies result in higher fertility but lower women's lifetime earnings, while others have the opposite effect? The policies that result in higher fertility have two features: First, they lower women's employment. This is illustrated in the right-hand side panel of Figure 8. Consider an economy with a single contract. In this experiment, the employment rate of women is about 6 p.p. lower than the benchmark economy. Recall that the firing costs are zero for temporary contracts in the benchmark economy and relatively high for permanent contracts. In the single economy, firing costs are set to be half of the firing costs for permanent contracts in the benchmark. As a result, while in the benchmark economy firms could hire women at low cost and promote the ones with higher human capital to permanent jobs, they are less likely to do that in this single-contract economy. Moreover, all women now have access to work with WWR, which is also costly for the firms. The share of women in WWR increases from around 6% in the benchmark, more than triples with a single-contract economy. The larger share of non-employed women contributes to higher fertility, as the probability of a new birth for an unemployed

Figure 7: Lifetime earnings vs fertility



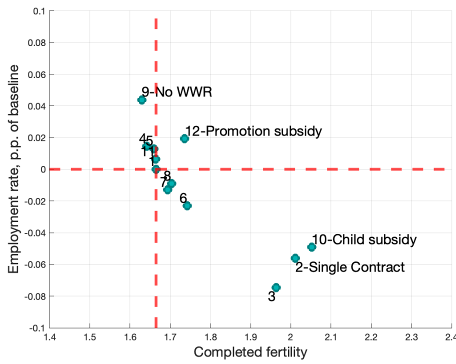
NOTES: This figure plots lifetime earnings (expressed as % of the value in the baseline economy) against completed fertility at 44 y.o. for different policy scenarios. The dashed black line is a fitted parabola describing the only indifference curve passing through the three policies that maximize either lifetime earnings or completed fertility.

woman increased by more than 3 p.p. A large share of women now expect to stay out of the labor force due to fewer hiring opportunities and choose to have more children. This is illustrated in Figure 9, where we report changes in the probability of a new birth for each policy for both employed and non-employed women, where policies are ranked by their overall impact on fertility.

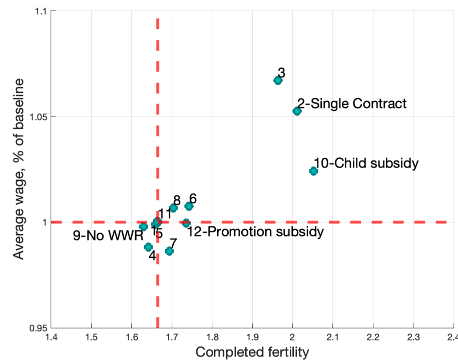
Second, in the single-contract economy, employed women have higher job security. As hiring a woman is now more costly, firms are more selective, and only women with relatively higher human capital levels get employment. As a result, the average earnings for those who work increases. The right-hand side panel Figure 8 shows changes in women's average wages in each policy. All the policies that result in higher fertility imply higher average wages for women. The increase is about 5% in a single-contract economy and close to 7% when temporary contracts last much shorter (policy 3), another policy providing higher job security at the cost of lower employment. With low levels of employment, job turnover is also lower

Figure 8: Policy trade-off

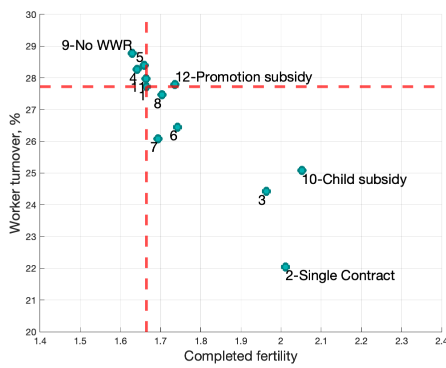
(A) Employment vs fertility



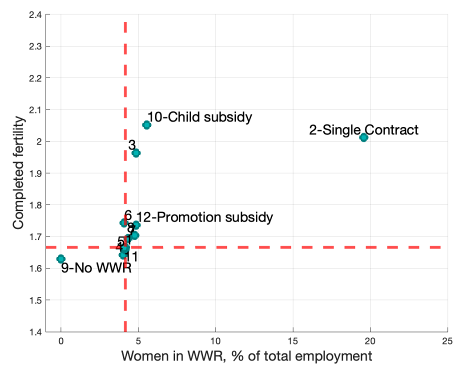
(B) Average wage vs fertility



(C) Job security vs fertility



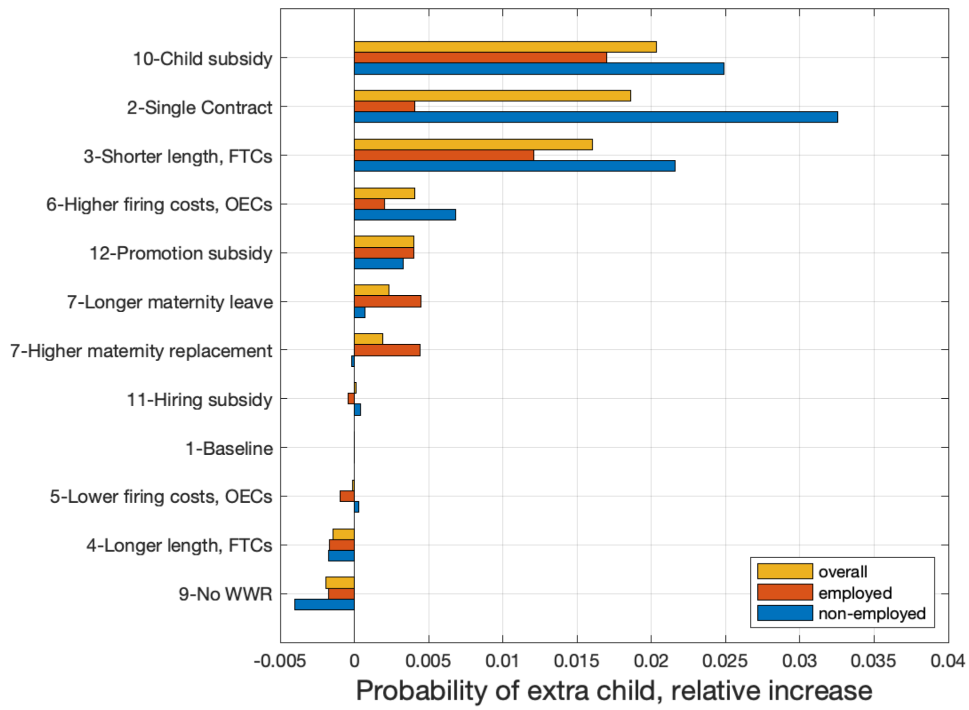
(D) Work-week reduction vs fertility



NOTES: Panel (A) shows women's employment rate (expressed in p.p. deviation of the value in the baseline economy) against completed fertility at 44 y.o. for different policy scenarios. Panel (B) scatters women's daily wage (expressed as % of the value in the baseline economy) against completed fertility at 44 y.o. for different policy scenarios. Panel (C) shows women's turnover rate (in %) against completed fertility at 44 y.o. for different policy scenarios. Panel (D) scatters completed fertility at 44 y.o. against the share of employed women in WWR (in % of total employment) for different policy scenarios.

since, due to selection, once a firm hires a woman, they are less likely to fire them. And, as jobs are scarce, women are also less likely to quit. The job turnover rate (sum of hiring and firing as a fraction of employed women) declines by more than 20 p.p. in the single contract economy. Job stability makes fertility more attractive for employed women, as they worry less about job loss and reemployment. The probability that an employed woman has a birth is in the single-contract economy compared to the benchmark (Figure 9).

Figure 9: Probability of extra child



NOTES: This figure shows the yearly probability of having an extra child for all women (yellow bars), employed women (red bars) and non-employed women (blue bars) across different counterfactual scenarios. Scenarios are ranked based on the probability for all women.

The other policies that increase fertility in Figure 7 are child subsidies, shorter duration of temporary contracts, higher firing costs for permanent contracts, and parental leave programs that last longer or have a higher replacement rate. All of these policies make hiring more costly for firms. The effect can be direct, such as in the case of higher firing costs for permanent contracts or more generous parental leave programs, or indirect, such as in child subsidies that increase the share of women with children. Hence, these policies result in lower employment and job turnover, and the fertility of both non-employed and employed women increases. With child subsidies, for example, employment of women declines by 4 p.p., resulting in 7 p.p lower lifetime earnings. Yet, the fertility of both employed and non-employed women increases significantly (Figure 9)., and the completed fertility is 2.05 children.

In contrast, policies that make hiring a woman less costly result in higher employment and higher job turnover. These policies include eliminating WWR policy (analyzed in Section 4.3), shorter duration of temporary contracts, and lower firing costs for permanent contracts. For example, if temporary contracts last 8 years instead of 4.5 years, as they do in the benchmark, the employment rate of women increases by 2 p.p., but job turnover rises slightly (policy 4 in Figure 8). The average earnings decline as more women enter the labor force in these experiments.

What about hiring and promotion subsidies? A hiring subsidy, which pays a firm the cost of posting a vacancy when they hire a woman, results in higher lifetime earnings for women but has a negligible effect on fertility. On the other hand, a promotion subsidy emerges as a policy that increases both fertility and the average lifetime earnings of women. With the promotion subsidy (policy 12 in figures), women's employment and lifetime earnings increase by about 3 p.p, and the total fertility rises from 1.67 to 1.74. In the model, firms are not willing to promote women, as they expect they might have children and take WWR or quit. Of course, some women do this, and some do not, but firms can't predict the fertility behavior of women perfectly. A promotion subsidy addresses this efficiency directly.[10]

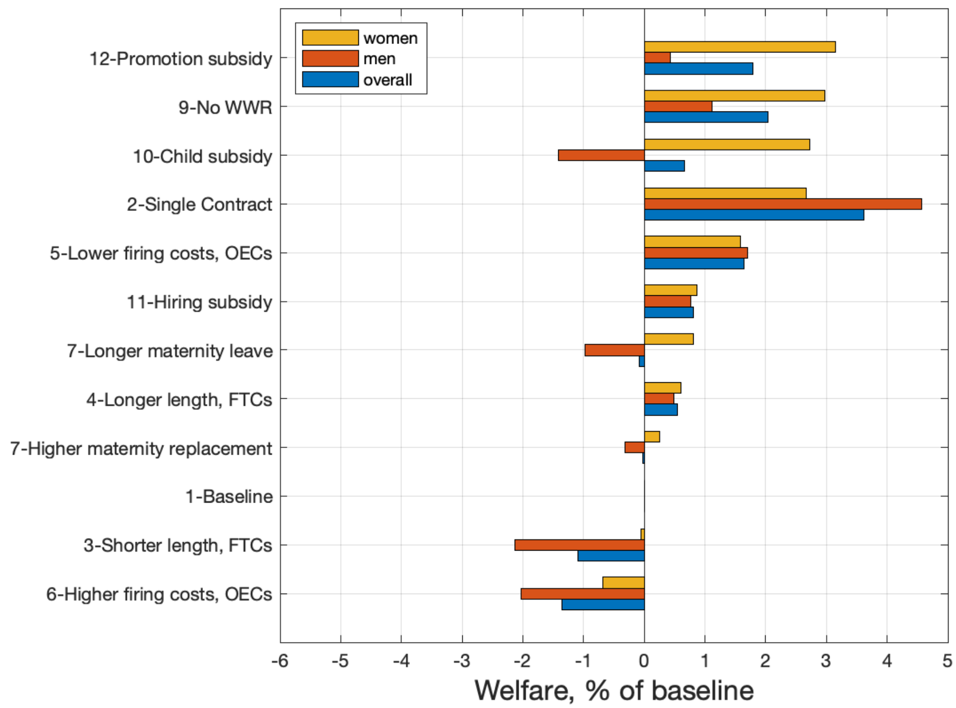
5.3 Welfare

How does fertility-income trade-off affect women's welfare? We find that both policies that lead to higher fertility and lower lifetime earnings, as well as the ones with lower fertility and higher lifetime earnings, can result in higher welfare compared to the benchmark economy. Figure 10 shows each policy's welfare gains and losses, where policies are ranked by welfare gains for women. The best policy is promotion subsidies (policy 12), since it both increases women's fertility and their lifetime earnings.

However, policies that significantly lower lifetime earnings and result in higher fertility (such as child subsidies or the single contract economy) or that lower fertility but result in higher lifetime earnings (such as eliminating WWR) also rank

[10] We also consider doubling the promotion subsidy, i.e., when a firm promotes workers, they receive twice the vacancy posting cost. This experiment increased women's employment and lifetime earnings even more, by 6 and 7 p.p., respectively, but the incremental effect on fertility was minor.

Figure 10: Welfare gains and losses

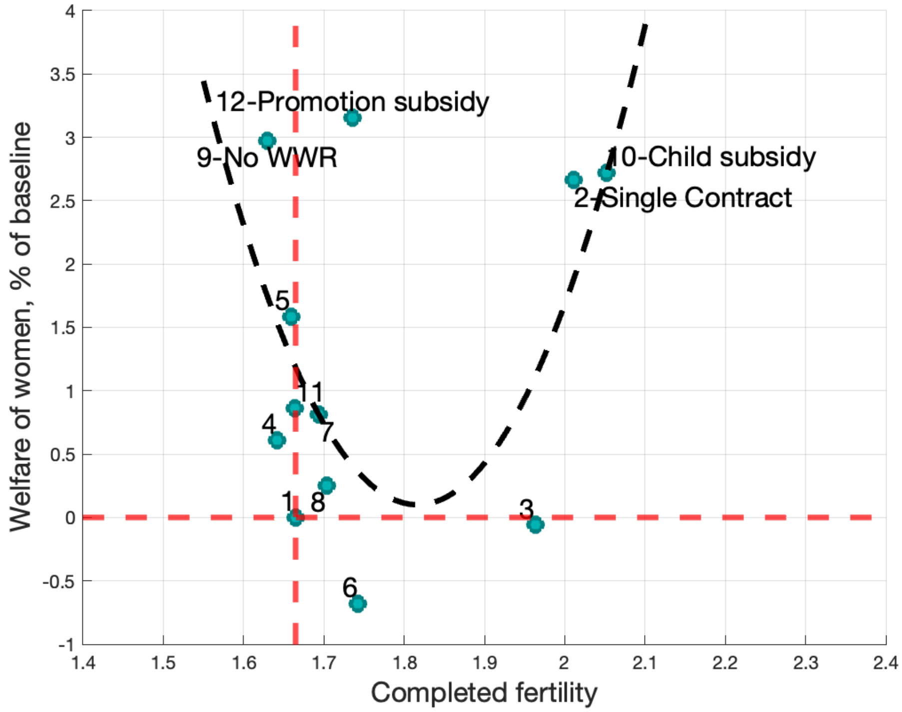


NOTES: This figure reports a model-based measure of welfare for women, men, and in the aggregate across policy experiments as a percentage of baseline value. Model-based welfare is measured as the average value function in the population of reference. Scenarios are ranked based on women's welfare.

high in welfare gains. On the other hand, policies that make hiring more costly and lower women's lifetime earnings but do not result in a significant increase in fertility, such as shorter duration of temporary contracts (policy 3) or higher firing costs for permanent contracts (policy 6), result in lower welfare. Figure 11 illustrates welfare gains as a function of completed fertility, where positive welfare gains are possible with policies that lower fertility slightly but result in higher incomes or with policies that increase fertility significantly but lower lifetime earnings.

What about the welfare of men? As Figure 10 shows, for most policies, whenever women have welfare gains, so do men. The exceptions are policies directly targeting women, such as child subsidies and more generous parental leave policies. Men do not benefit from these policies but must pay taxes that finance them. In contrast, any policy that makes hiring a woman more attractive also benefits men,

Figure 11: Welfare and fertility



NOTES: This figure scatter a model-based measure welfare for women against completed fertility at 44 y.o, across different counterfactual scenarios. The black dashed line is a fitted polynomial. Model-based welfare is measure as the average value function in the population of reference.

as firms can't direct their search. An exception is the single-contract economy, where both men and women gain but for different reasons. Hiring is more costly in this economy, so women's employment is reduced. The welfare of women is higher due to higher fertility. The utility of men, on the other hand, is higher, as firms now have a strong incentive to hire them.

6 Conclusion

This paper shows that firms' behavior is central to understanding the effects of family-friendly policies on fertility and women's labor market outcomes. By modeling a search-and-matching framework with endogenous fertility and occupational choices, we demonstrate how firms' hiring, promotion, and firing decisions shape the incentives faced by women. Policies that improve job security—such as access to reduced work hours or longer-duration contracts—can increase fertility, but they often reduce women's employment and lifetime earnings, as firms become more reluctant to hire and promote women. Conversely, policies that increase labor market fluidity tend to raise women's earnings and employment but discourage fertility. These trade-offs are not captured in models that treat firms as passive actors, highlighting the importance of incorporating firm responses into policy evaluation.

Among the wide range of policies we analyze, promotion subsidies stand out as uniquely effective. By reducing the cost to firms of promoting women to permanent contracts, these subsidies mitigate the adverse effects of fertility-related uncertainty and increase both female employment and fertility. Other policies, such as child subsidies or eliminating workweek reductions, can also improve welfare, but typically favor either earnings or fertility, not both.

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A Model Appendix

A.1 Decisions by Female Workers

Value of being employed with a temporary contract. Consider a woman with skill a and no children ($n = 0$), matched to a job in occupation j and productivity z. The value of being employed under a temporary contract is given by

$$\begin{aligned} V_w^{e,t}(z,a,0,j) &= w_w^t(z,a,0) \\ &\quad + \rho\sigma(0) \sum_{a' \in \mathcal{A}} \max\{\bar{V}_w^{e,t}(z,a',0,j), \bar{V}_w^{l,t}(z,a',1,j) - \kappa_n\} \Gamma_w^e(a'|a,j,0) \\ &\quad + \rho(1-\sigma(0)) \sum_{a' \in \mathcal{H}} \bar{V}_w^{e,t}(z,a',0,j) \Gamma_w^e(a'|h,j,0), \end{aligned}$$

where the first term is her current wage, and the next two lines indicate what can happen in the future. Next period, with probability $\sigma(0)$, she has the opportunity to have a child and compares the values of having 0 or 1 child next period, which is captured by the max operator. If she decides to have a child, she needs to pay the one-time cost, κ_n, and start the next period in maternity leave with a start-of-the-period value function $\bar{V}_w^{l,t}(z,a',n,j)$. If she does not have this fertility opportunity or decides not to have birth, then she starts her life as someone who is employed at the start of the next period with a temporary job, with an associated value function given by $\bar{V}_w^{e,t}(z,a',0,j)$. In both cases, she starts the next period with a human capital level a', given by $\Gamma_w^e(a'|a,j,0)$.

Consider now the case of a woman with $n > 0$ children, employed in a temporary contract. Her problem is given by

$$\begin{aligned} V_w^{e,t}(z,a,n,j) &= w_w^t(z,a,n) + \gamma_e n \\ &\quad + \rho\rho^c \sum_{a' \in \mathcal{A}} \bar{V}_w^{e,t}(z,a',0,j) \Gamma_w^e(a'|a,j,0) \\ &\quad + \rho(1-\rho^c)(1-\sigma(n)) \sum_{a' \in \mathcal{A}} \bar{V}_w^{e,t}(z,a',n,j) \Gamma_w^e(a'|a,j,n) \\ &\quad + \rho(1-\rho^c)\sigma(n) \sum_{a' \in \mathcal{A}} \max\{\bar{V}_w^{e,t}(z,a',n,j), \bar{V}_w^{l,t}(z,a',n+1,j) - \kappa_n\} \Gamma_w^e(a'|a,j,n). \end{aligned}$$

There are two differences between this value function and the previous one. First, a working woman with children enjoys the extra utility of $\gamma_e n$ from having children. Second, with probability ρ^c, her children can leave the house, and she can become childless. This is captured in the second line.

Next, we define the start-of-the-period value functions. $\bar{V}_w^{e,t}(z,a,n,j)$ is the continuation value of being employed under a temporary contract, given by,

$$\begin{aligned}\bar{V}_w^{e,t}(z,a,n,j) &= [\delta_w^t + (1-\delta_w^t)\mathbf{1}_w^{f,t}(z,a,n,j)]V_w^u(a,n) \\ &\quad + (1-\delta_w^t)(1-\mathbf{1}_w^{f,t}(z,a,n,j))\max\{\mathrm{E}V_w^{e,t}(z,a,n,j), V_w^u(a,n)\}.\end{aligned}$$

If her job is destroyed, which happens with probability δ_w^t, or if she is fired, indicated by her firm´s decision $\mathbf{1}_w^{f,t}(z,a,n,j)$, then the worker will be non-employed next period and enjoy $V_w^u(a,n)$. Otherwise, she keeps her job but can choose to quit, which is captured with the max operator in the second line. If she decides to keep her job, several things can happen which are represented by the $\mathrm{E}V_w^{e,t}(z,a,n,j)$ term,

$$\begin{aligned}\mathrm{E}V_w^{e,t}(z,a,n,j) &= \pi^t \mathbf{1}_w^{c,t}(z,a,n,j)\sum_{z'\in\mathcal{Z}} V_w^{e,p}(z',a,n,j)\Lambda(z'|z) \\ &\quad + \pi^t(1-\mathbf{1}_w^{c,t}(z,a,n,j))V_w^u(a,n) \\ &\quad + (1-\pi^t)\mathbf{1}_w^{p,t}(z,a,n,j)\sum_{z'\in\mathcal{Z}} V_w^{e,p}(z',a,n,j)\Lambda(z'|z) \\ &\quad + (1-\pi^t)(1-\mathbf{1}_w^{p,t}(z,a,n,j))\sum_{z'\in\mathcal{Z}} V_w^{e,t}(z',a,n,j)\Lambda(z'|z).\end{aligned}$$

With probability π^t, the firm is forced to convert her temporary contract to a permanent one or fire her. The indicator function $\mathbf{1}_w^{c,t}(z,a,n,j)$ represents the conversion decision of her firm. If her contract becomes permanent, she enjoys $V_w^{e,p}(z',a,n,j)$. Otherwise, she becomes non-employed. If the firm is not forced to make a conversion decision, it can still choose to promote her to a permanent job, indicated by $\mathbf{1}_w^{p,t}(z,a,n,j)$. Whenever she stays employed as a temporary or permanent worker, there is a new draw of math productivity, given by $\Lambda(z'|z)$.

Note that the value of starting the next period with a temporary contact in a given firm depends on what firms will decide about firings, conversions and promotions, captured by the indicators functions $\mathbf{1}_w^{f,t}(z,a,n,j)$, $\mathbf{1}_w^{c,t}(z,a,n,j)$ and $\mathbf{1}_w^{p,t}(z,a,n,j)$.

Hence, women take firms' decisions as given and decide on their actions. These indicators will result from firms' optimal decisions, which will, in turn, take the optimal decisions of women as given.

The start-of-the-period value of being on maternity leave for a woman in a temporary contract is given by

$$\bar{V}_w^{l,t}(z,a,n,j) = w_w^l(z,a,n) + \gamma_u n + \rho[(1-\varrho)\bar{V}_w^{l,t}(z,a,n,j) + \varrho \bar{V}_w^{e,t}(z,a,n,j)],$$

where the first term captures her current utility. She receive a wage $w_w^l(z,a,n)$ and enjoys having children at home captured by γ_u term. In the next period, with probability ϱ, her maternity leave continues. Otherwise, she starts the next period as someone with a temporary job at hand.

These value functions defined two indicator functions for women employed in a temporary contract. First, women decide to have a new baby whenever its value is higher, i.e.,

$$\mathbf{1}_w^{n,t}(z,a,n,j) = \begin{cases} 1 & \text{if} \quad \bar{V}_w^{l,t}(z,a,n+1,j) \geq \bar{V}_w^{e,t}(z,a,n,j) + \kappa_n, \\ 0 & \text{otherwise.} \end{cases}$$

Second, women have the option to quit their jobs if their value of being non-employed is higher, i.e.,

$$\mathbf{1}_w^{q,t}(z,a,n,j) = \begin{cases} 1 & \text{if} \quad V_w^u(a,n) \geq \mathrm{E}V_w^{e,t}(z,a,n,j), \\ 0 & \text{otherwise.} \end{cases}$$

Value of being employed with a permanent contract. Next, we turn to the problem of a woman employed with a permanent contract. The problem looks similar to the one faced by a woman with a temporary contract. One difference is that the firm has no promotion decision. The other difference is that a woman with a permanent contract has the option of being in WWR.

The values of being employed under permanent contracts in occupation j and productivity z for women with skill a and either 0 or $n > 0$ children, denoted by

$V_w^{e,p}(z,a,0,j)$ and $V_w^{e,p}(z,a,n,j)$, are equal to:

$$\begin{aligned} V_w^{e,p}(z,a,0,j) &= w_w^p(z,a,0) \\ &\quad + \rho(1-\sigma(0)) \sum_{a' \in \mathcal{A}} \bar{V}_w^{e,p}(z,a',0,j)\Gamma_w^e(a'|a,j,0) \\ &\quad + \rho\sigma(0) \sum_{a' \in \mathcal{A}} \max\{\bar{V}_w^{e,p}(z,a',0,j), \bar{V}_w^{l,p}(z,a',1,j) - \kappa_n\}\Gamma_w^e(a'|a,j,0), \end{aligned}$$

and

$$\begin{aligned} V_w^{e,p}(z,a,n,j) &= w_w^p(z,a,n) + \gamma_e n \\ &\quad + \rho\rho^c \sum_{a' \in \mathcal{A}} \bar{V}_w^{e,p}(z,a',0,j)\Gamma_w^e(a'|a,j,0) \\ &\quad + \rho(1-\rho^c)(1-\sigma(n)) \sum_{a' \in \mathcal{A}} \bar{V}_w^{e,o}(z,a',n,j)\Gamma_w^e(a'|a,j,n) \\ &\quad + \rho(1-\rho^c)\sigma(n) \sum_{a' \in \mathcal{A}} \max\{\bar{V}_w^{e,o}(z,a',n,j), \bar{V}_w^{l,p}(z,a',n+1,j) - \kappa_n\}\Gamma_w^e(a'|a,j,n). \end{aligned}$$

.

There are, again, several state-of-the-period values that characterize what happens next period, and the associated decisions on births, $\mathbf{1}_w^{n,p}(z,h,n,j)$, WWR take-up $\mathbf{1}_w^{e,r}(z,h,n,j)$, and quits $\mathbf{1}_w^{q,p}(z,h,n,j)$.

The value of being on maternity leave for a woman in a permanent contract is given by

$$\bar{V}_w^{l,p}(z,a,n,j) = w_w^l(z,a,n) + \gamma_u n + \rho[(1-\varrho)\bar{V}_w^{l,p}(z,a,n,j) + \varrho\bar{V}_w^{e,o}(z,a,n,j)].$$

When a woman with children is not on maternity leave, she has the option of choosing to work full-time or with reduced hours. This choice is determined by

$$\bar{V}_w^{e,o}(z,a,n,j) = \max\{\bar{V}_w^{e,p}(z,a,n,j), \bar{V}_w^{e,r}(z,a,n,j)\}.$$

The value of starting the next period with a permanent contract and working full-time is determined by

$$
\begin{aligned}
\bar{V}_w^{e,p}(z,a,n,j) = & [\delta_w^p + (1-\delta_w^p)\mathbf{1}_w^{f,p}(z,a,n,j)V_w^u(a,n)] \\
& + (1-\delta_w^p)(1-\mathbf{1}_w^{f,p}(z,a,n,j)) \max\{\mathrm{E}V_w^{e,p}(z,a,n,j), V_w^u(a,n)\},
\end{aligned}
$$

where, again, a woman can lose her job as a result of exogenous job destruction or firing (the first line), and if that does not happen, she can decide to quit (the second line). The expected value operator in the second line captures uncertainty with respect to z, i.e.,

$$
\mathrm{E}V_w^{e,p}(z,a,n,j) = \sum_{z' \in \mathcal{Z}} V_w^{e,p}(z',a,n,j)\Lambda(z'|z).
$$

On the other hand, if a woman starts the next period in WWR, she can't be fired. Hence, as long as she has a child at home and her job is not destroyed, she can be in WWR if she prefers to do so. Therefore, the function $\bar{V}_w^{e,r}(z,a,n,j)$ is given by

$$
\bar{V}_w^{e,r}(z,a,n,j) = \delta_w^r V_w^u(a,n) + (1-\delta_w^r)\max\{\mathrm{E}V_w^{e,r}(z,a,n,j), V_w^u(a,n)\}
$$

where

$$
\mathrm{E}V_w^{e,r}(z,a,n,j) = \sum_{z' \in \mathcal{Z}} V_w^{e,r}(z',a,n,j)\Lambda(z'|z).
$$

and

$$
\begin{aligned}
V_w^{e,r}(z,a,n,j) = & w_w^r(z,a,n,j) + (\gamma_e + \gamma_r)n \\
& + \rho\rho^c \sum_{a' \in \mathcal{A}} \bar{V}_w^{e,p}(z,a',0,j)\Gamma_w^e(a'|a,j,n) \\
& + \rho(1-\rho^c)(1-\sigma(n)) \sum_{a' \in \mathcal{A}} \bar{V}_w^{e,o}(z,a',n,j)\Gamma_w^e(a'|a,j,n) \\
& + \rho(1-\rho^c)\sigma(n) \sum_{a' \in \mathcal{A}} \max\{\bar{V}_w^{e,o}(z,a',n,j), \bar{V}_w^{e,o}(z,a',n+1,j)\}\Gamma_w^e(a'|a,j,n).
\end{aligned}
$$

In the last equation, a woman in WWR receives $w_w^r(z,a,n,j)$ as wage and enjoys $\gamma_e + \gamma_r)n$ from having children. Note that if her children become teenagers, which happens with a probability ρ^c, she will start the next period with a permanent contract. Otherwise, she decides whether to stay in WWR or go back to full-time work, which is captured by $\bar{V}_w^{e,o}(z,a,n,j)$

The solutions to these problems define a birth indicator for women employed in a permanent contract without and with children, i.e.,

$$\mathbf{1}_w^{n,p}(z,a,0,j) = \begin{cases} 1 & \text{if} \quad \bar{V}_w^{l,p}(z,a,1,j) \geq \bar{V}_w^{e,p}(z,a,0,j) \\ 0 & \text{otherwise} \end{cases}$$

and

$$\mathbf{1}_w^{n,p}(z,h,n,j) = \begin{cases} 1 & \text{if} \quad \bar{V}_w^{l,p}(z,a,n+1,j) \geq \bar{V}_w^{e,o}(z,a,n,j) \\ 0 & \text{otherwise} \end{cases}$$

They also define an indicator function for WWR take-up for women with children, given by,

$$\mathbf{1}_w^{e,r}(z,a,n,j) = \begin{cases} 1 & \text{if} \quad \bar{V}_w^{e,r}(z,a,n,j) \geq \bar{V}_w^{e,p}(z,a,n,j) \\ 0 & \text{otherwise} \end{cases}$$

and, finally, an indicator function for quitting under WWR and not, given by,

$$\mathbf{1}_w^{q,p}(z,a,n,j) = \begin{cases} 1 & \text{if} \quad V_w(a,n) \geq \mathrm{E}V_w^{e,p}(z,a,n,j) \\ 0 & \text{otherwise} \end{cases}$$

and

$$\mathbf{1}_w^{q,r}(z,a,n,j) = \begin{cases} 1 & \text{if} \quad V_w(a,n) \geq \mathrm{E}V_w^{e,r}(z,a,n,j) \\ 0 & \text{otherwise} \end{cases}$$

Value of being non-employed. The value of being non-employed for a woman with skill a and either 0 or n children, denoted by $V_w^u(a,0)$ and $V_w^u(a,n)$ respectively, are equal to:

$$\begin{aligned} V_w^u(a,0) = b_w &+ \rho(1-\sigma(0))\bar{V}_w^u(a,n) \\ &+ \rho\sigma(0)\max\{\bar{V}_w^u(a,0), \bar{V}_w^u(a,1) - \kappa_n\}], \end{aligned}$$

and

$$V_w^u(a,n) = b_w + \gamma_u n + \rho\rho^c \bar{V}_w^u(h,0) + \rho(1-\rho^c)(1-\sigma(n))\bar{V}_w^u(a,n) + \rho(1-\rho^c)\sigma(n)\max\{\bar{V}_w^u(a,n), \bar{V}_w^u(a,n+1) - \kappa_n\}],$$

where $\bar{V}_w^u(a,n)$ is the continuation value of non-employment for a women with n kids,given by,

$$\bar{V}_w^u(a,n) = V_w^u(a,n) + \phi_u(1-\chi_p)\sum_{z\in\mathcal{Z}}\sum_{j\in\{0,1\}}\chi_j \mathbf{1}_w^{h,t}(z,a,n,j)\max\{0, V_w^{e,t}(z,a,n,1) - V_w^u(a,n)\}\Lambda(z) + \phi_u\chi_p\sum_{z\in\mathcal{Z}}\sum_{j\in\{0,1\}}\chi_j \mathbf{1}_w^{h,p}(z,a,n,j)\max\{0, V_w^{e,p}(z,a,n,1) - V_w^u(a,n)\}\Lambda(z).$$

In the last expression, ϕ_u is the job-finding rate for workers. Upon matching a firm, the firm-worker pair draws a productivity z from $\Lambda(z)$. With probability χ_j , the job has flexibility j and with probability χ_p, it is with a permanent contract. The functions $\mathbf{1}_w^{h,t}(z,a,n,j)$ and $\mathbf{1}_w^{h,p}(z,a,n,j)$ indicate whether the match is acceptance to the firm. In each case, the worker decides whether to accept the job, represented by the max operators.

A solution to these problems is a birth indicator for women who are non-employed, $\mathbf{1}_w^{n,u}(a,n)$, defined as follows:

$$\mathbf{1}_w^{n,u}(a,n) = \begin{cases} 1 & \text{if} \quad \bar{V}_w^u(a,n+1) > \bar{V}_w^u(a,n) + \kappa_n \\ 0 & \text{otherwise,} \end{cases}$$

and two indicators for job acceptance, one for temporary contract, $\mathbf{1}_w^{u,t}(z,a,n,j)$, and one for permanent contracts, $\mathbf{1}_w^{u,p}(z,a,n,j)$, defined by

$$\mathbf{1}_w^{u,t}(z,a,n,j) = \begin{cases} 1 & \text{if} \quad V_w^{e,t}(z,a,n,j) - V_w^u(a,n) \geq 0 \\ 0 & \text{otherwise,} \end{cases}$$

and

$$\mathbf{1}_w^{u,p}(z,a,n,j) = \begin{cases} 1 & \text{if} \quad V_w^{e,p}(z,a,n,j) - V_w^u(a,n) \geq 0. \\ 0 & \text{otherwise.} \end{cases}$$

A.2 Decisions by Male Workers

The value of employment for a man in occupation $j \in \mathcal{J}$ is equal to

$$V_m^e(j) = w_m + \rho\left[\delta_m V_m^u + (1-\delta_m)V_m^e(j)\right] = \frac{w_m + \rho\delta_m V_m^u}{1-\rho(1-\delta_m)} \quad \forall j$$

while the value of non-employment for a men is equal to

$$V_m^u = b_m + \rho\left[(1-\phi_u)V_m^u + \phi_u \sum_{j\in\mathcal{J}} \max\{0, V_m^e(j)\}\Upsilon(j)\right] =$$

$$\frac{b_m + \rho\phi_u \sum_{j\in\mathcal{J}} \max\{0, V_m^e(j)\}\Upsilon(j)}{1-\rho(1-\phi_u)}$$

$$\implies V_m^u = \frac{b_m}{1-\rho(1-\phi_u)} + \frac{\rho\phi_u}{1-\rho(1-\phi_u)} \max\{0, V_m^e\}$$

A solution to this problem is an indicator function for job acceptance

$$\mathbf{1}_m^u = \begin{cases} 1 & \text{if} \quad V_m^e \geq 0 \\ 0 & \text{otherwise} \end{cases}$$

A.3 Equilibrium

A stationary recursive competitive equilibrium for this economy is a set of value functions for men and women, a set of value functions for active and vacant jobs, policy functions for hiring into a temporary contract, promotion into a permanent contract, and separation from temporary and permanent contracts, policy functions for fertility decision, quit from temporary and permanent contracts and reduced work-time decisions, wage schedules for men and women under temporary and full-time permanent contracts, and women with children under reduced time-work arrangement, job finding probabilities, measures of aggregate non-employment and aggregate vacancies, and the distribution of non-employed women across states, such that:

- *optimality 1*: the policy functions for hiring into a temporary contract, promotion into a permanent contract, and separation from temporary and permanent contracts are the solution to the firms' value functions;
- *optimality 2*: the policy functions for fertility decisions, quits from temporary and permanent contracts, and reduced work-time decisions are determined are the solution to the workers' value functions;
- *free entry*: jobs are created until the value of posting vacancy is equal to its cost;
- *bargaining*: wages are determined as the solution of the Binmore et al. (2006) type of bargaining problem;
- *consistency*: distributions of workers replicate themselves over time through the policy functions and flows across states.

A.4 Solution Algorithm

To solve the model, we implement the following algorithm.

1. Use the solution to the bargaining problem to determine the wage for men w_m, the wage schedules for women under temporary contracts $w_w^t(z, a, n, j)$, for women under permanent contracts full-time contracts $w_w^p(z, a, n, j)$, and for women with kids under a permanent contract with a reduced working schedule, $w_w^r(z, a, n, j)$
2. Make or update the guess for labor market tightness, θ
3. Use the definition of matching functions and the guess for the for labor market tightness to compute the job contact probability for firms

$$\phi_v = \frac{\eta}{\sqrt{\theta}}$$

and for unemployed workers, i.e.

$$\phi_u = \phi_v \theta$$

4. Use ϕ_u and the wage solutions to jointly solve the problem of unemployed workers, the problem of employed workers, and the problem of active jobs. Store value functions and policy functions

5. Use the policy functions to simulate a large panel of individuals and construct the distribution of non-employed women across individual states, $\psi_u^w(a,n)$, and the measure of unemployed men and women, μ_m^u and μ_w^u

6. Use ϕ_v, the distribution of unemployed individuals, the value function for temporary job and the policy function for hiring to construct the value of a vacant job

7. Update guesses:

   - Use the free entry condition for firms to update θ. If the value of entry is larger than zero, increase θ, decrease it otherwise.

8. Go back to point (2) until *convergence*

B Data Appendix

Our main data source is the 2005–2010 Muestra Continua de Vidas Laborales con Datos Fiscales (MCVL), a 4% random sample of individuals registered with the Spanish Social Security in a given year. The MCVL excludes public sector employees covered by a separate social assistance system. Individuals appear in the MCVL if they are employed or receive unemployment benefits during the reference year. The data provide retrospective labor market histories up to 1980 or the individual's first job.

The unit of observation is a labor market spell—either a job (with contract type, industry, occupation, sector, hours, etc.) or an unemployment spell. Each includes start and end dates, firm identifier, and earnings. Additional individual characteristics (e.g., age and gender) are drawn from Social Security records. The MCVL is matched with municipal registries for education, nationality, and household composition, allowing us to infer marital and parental status based on cohabiting individuals. We identify a woman as married if a male household member is within -2 to +10 years of her age, and as a mother if children aged 0–16 are present. Women in households with multiple potential spouses or mothers are excluded.

We construct a quarterly panel of women's employment histories using labor market spells. Since contract type is key to our analysis and only reliably observed after 1996, we restrict job spells to 1996–2006. We define the main job in each quarter as follows: if a worker holds multiple jobs, we select the one with the most extended duration, or if tied, the longest cumulative duration, or—if still tied—the most recent or highest-earning job.

B.1 Main Variables in MCVL

Daily Wages. The MCVL contains social security contributions at the establishment level. Recorded contributions could be top- or bottom-coded. For each individual we calculate censored hourly wages by dividing CPI2010-adjusted monthly earnings on the main (longest) job in the quarter by the number of days worked in that quarter and by the contractual number of hours (real hours worked are not available in MCVL). Finally, we adjust the real daily earnings from the main job by part-time work and calculate the full-time equivalent real daily earnings in euros for each quarter.[11] After that we follow the procedure of top- and bottom-coding adjustment, described in section B.2.

Full-time Dummy. For each individual we observe at each point of time his contract type. We build a dummy variable of a full-time contract by looking at the name of the contract. Full-time is equal to 1 if contract type is 1, 8, 11, 20, 28, 30, 31, 35, 36, 37, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 53, 54, 55, 56, 57, 58, 60, 61, 62, 66, 67, 68, 69, 70, 71, 72, 75, 77, 78, 79, 80, 82, 85, 86, 87, 88, 91, 92, 96, 97, 100, 101, 109, 130, 131, 139, 141, 150, 151, 152, 153, 154, 155, 156, 157, 189, 401, 402, 403, 408, 410, 418, 420, 421, 430, 431, 441, 450, 451, 457. Full-time dummy is equal to zero if the contract type is 3, 4, 6, 18, 23, 24, 25, 26, 27, 34, 38, 63, 64, 65, 73, 76, 81, 83,

[11] In MCVL there is a variable ("part-time coefficient") that characterizes what fraction of full-time hours individuals work. This helps us to calculate full-time equivalent earnings.

84, 89, 93, 94, 95, 98, 102, 181, 182, 183, 184, 185, 186, 200, 209, 230, 231, 239, 241, 250, 251, 252, 253, 254, 255, 256, 257, 289, 300, 309, 330, 350, 351, 352, 353, 354, 355, 356, 357, 500, 501, 502, 503, 508, 510, 518, 520, 530, 531, 540, 541, 550, 551, 552, 557. Those contracts, that we cannot pin down whether they are part-time or full-time (contract types 5, 9, 14, 15, 16, 17, 22, 29, 32, 33,59) or we are not able to pin down their type at all (contract types 0, 7, 10, 12, 13, 19, 39, 51, 52, 74, 331, 389, 452, 990), we treat as a missing variable. Contract type 90 is also treated as a missing variable because it does not imply a working relationship since it corresponds to receivers of unemployment benefits.

Work-Week Reduction. By the new law all wage and salary workers with children under 6 years old could take a work-week reduction of one-third to one-half of their usual full-time schedule (The child's maximum age was raised to 8 in 2007 and to 12 in 2012. The minimum work-week reduction was lowered to one-eighth in 2007). We create a dummy for work-week reduction. It is equal to zero if a worker has a full-time contract and his/her youngest child is below 6 until 2007, below 8 between 2007 and 2012, and below 12 after 2012, and his part-time coefficient is between 875 and 999 or is equal to 0, that corresponds to 100% full-time work). It is equal to one if a worker has a full-time contract but his part-time coefficient is below 875.

Newborns. Dummy variable equal to one in the quarter in which we start to observe a child of age zero in the household. Otherwise, it is equal to zero.

Promotion / Contract conversion. We consider two consecutive periods. If a person is on the temporary contract in period t and stays with a temporary contract in period t+1 this dummy is equal to zero. If a temporary in period t contract converts into a permanent contract for period t+1 the dummy is equal to 1.

Industry. The sector of economic activity is provided in MCVL and it corresponds to the year when MCVL information is extracted. To update this information for each year we use different MCVL waves. For waves between 2005 and 2008 only CNAE93 is provided; in MCVL 2009 only CNAE09 is provided (no information on CNAE93). Since MCVL 2010, both sector classifications are recorded but CNAE93 reflects the value in 2009. We use MCVL 2010 and later to create a crosswalk between 2 classifications: CNAE93 and CNAE09, and to make classification consistent, we input CNAE09 for establishments in years before 2010. In the paper, we use the letter classification.

College. We create a dummy that is equal to 1 if an individual finishes tertiary education (corresponds to the educational code bigger than 44 from the Municipal Registry of Inhabitants).

High Skills. We create a dummy for high skills. It is equal to one if a person is related to one of the following social security earnings groups (”grupo de cotización”): engineers, graduates, high mangagement, technical engineers, titled assistants, administrative and workshop heads (ingenieros, licenciados, alta dirección, ingenieros técnicos, ayudantes titulados, jefes administrativos y de taller). It is zero otherwise.

Public. Dummy for public sector is equal to 1 if the employer is considered an employee of a Ministry, Public Administration (all types), Social Security, Parliament, Foundation, Public Firm or Bank, Public Educational or Health Centres, Local Corporation, etc. Otherwise, it's equal to zero.

B.2 Top- and Bottom-Coding Adjustment

In MCVL there are two salary variables. One is coming from tax registers, but it is available only in the years of extraction of MCVL (i.e.2005-2015). Another, social security contribution base, ”base de cotización”, is available for the entire observation period (1990-2015). So for the beginning of our observation period, 1990-2004, we cannot use tax values as they are not available. Observed for this period social security contribution bases, however, are bottom-coded and top-coded (rather few individuals are bottom-coded, but about 6.5% are top-coded). The maximum and minimum caps vary over time (adjusted for the evolution of the minimum wage rate and inflation) and by occupation groups. To be able to make use of the entire period, 1990-2015, we are using the social security income data, and we adjust this data for top- and bottom-coding, following the procedure of Bonhomme and Hospido (2017).

In our analysis, we use daily wages, computed as the ratio between the quarterly contribution base and the number of days worked in that particular quarter.

First, we identify top- and bottom-coded observations by comparing daily salary to minimal and maximal daily contribution base, specific for different occupations groups, and assign an observation to bottom-coded (top-coded) if it is smaller (bigger) than bottom-coded threshold + 1% (top-coded threshold - 1%). Then we use a cell-specific Tobit model to impute earnings to individuals whose earnings are censored (10 imputations per censored observation). The cells are based on three sources of heterogeneity: skills, age, and time. Skill groups are defined using the variable *occupation ("grupo de cotización")* as "high-skilled" (occupation groups 1-3), "medium-skilled" (groups 4-7), "low-skilled" (groups 8-10). *Age* is based on 5-year age groups: 25-30, 31-35, 36-40, 41-45 years. *Time* dimension contains year and quarter (from 1990 to 2015). This yields in total 3*4*104=1248 cells. For each cell, we assume log-normal distribution of daily earnings with mean μ_c and variance σ_c and estimate these parameters using maximum likelihood estimator. Denoting as Φ the standard normal cumulative distribution function, the cell-specific likelihood function looks like this:

$$\sum_{cens_i=-1} log\Phi\left(\frac{log\underline{w}_c-\mu_c}{\sigma_c}\right)+\sum_{cens_i=0}\left(-\frac{1}{2}log\sigma_c^2-\frac{1}{2\sigma_c^2}(logw_i-\mu_c)^2\right)+ \sum_{cens_i=1}\left(log(1-\Phi(\frac{log\overline{w}_c-\mu_c}{\sigma_c}))\right),$$

where $cens_i=-1$ if observation i is bottom-coded, $cens_i=1$ if it is top-coded, and $cens_i=0$ otherwise.

Simulating observations is simply calculating the following expressions for the bottom and top-coded observations correspondingly:

$$w_{ij}=\hat{\mu_c}+\hat{\sigma_c}\Phi^{-1}\left[u_{ij}\Phi\left(\frac{log\underline{w}_c-\hat{\mu}_c}{\hat{\sigma}_c}\right)\right]$$

$$w_{ij}=\hat{\mu_c}+\hat{\sigma_c}\Phi^{-1}\left[\Phi\left(\frac{log\overline{w}_c-\hat{\mu}_c}{\hat{\sigma}_c}\right)+u_{ij}\left(1-\Phi\left(\frac{log\overline{w}_c-\hat{\mu}_c}{\hat{\sigma}_c}\right)\right)\right],$$

where j = 1, 2, ..., 10, and u_{ij} is drawn from a standard uniform distribution. After each observation is simulated $j=10$ times, we take the average value of this observation.

B.3 Job flexibility measure in ACS

List of sectors with the highest flexibility (lowest share of males working more than 50 hours a week). In brackets, we provide the share of men working more than 50 hours a week.

- Activities of households as employers of domestic personnel [13.54]
- Residential care activities [14.02]
- Social work activities without accommodation for the elderly and disabled [14.53]
- Hospital activities [14.96]
- Medical and dental practice activities [15.41]
- Other social work activities without accommodation [18.47]
- Education [19.24]

List of sectors with the lowest flexibility (highest share of males working more than 50 hours a week). In brackets, we provide the share of men working more than 50 hours a week.

- Hunting, trapping and related service activities [44.12]
- Food service activities [43.79]
- Retail sale in non-specialised stores [43.06]
- Retail sale of automotive fuel in specialised stores [41.40]
- Retail sale of food, beverages and tobacco in specialised stores [40.16]
- Fishing [40.08]
- Manufacture of furniture [37.15]

C Estimation Appendix

C.1 Estimation Algorithm and Fit

In the estimation algorithm, we exploit the free entry condition, i.e.

$$\phi_v = \frac{\kappa_v}{\mathrm{E}J^v}$$

and the definition of job filling rate,

$$\phi_v = \frac{\eta}{\sqrt{\theta}}$$

to treat the market tightness, θ, as a parameter to estimate and let the cost of posting vacancy be an equilibrium object, equal to $\kappa_v = \phi_v \mathbf{E}[J^v]$. Given the functional form, θ and η are not separately identifiable. Hence, without loss of generality, we impose $\theta = 1$ in the baseline equilibrium.

To estimate the model, we follow this algorithm:

1. Guess the following parameters:

$$\vartheta = [\vartheta_0, \vartheta_1]$$

   where

$$\begin{aligned}\vartheta_0 = \{&\chi_{j=1}, \chi_p, \pi^t, \delta^t_w, \delta^p_w, \delta^r_w, \omega_w \omega_r, \alpha^h_w, \gamma_u, \gamma_e, \gamma_r,\\ &\pi^e_w(j=1), \pi^e_w(j=0, n=0), \pi^e_w(j=0, n=1), \pi^e_w(j=0, n \geq 2),\\ &\Theta(n=0), \Theta(n=1), \Theta(n=2), \Theta(n=3),\\ &\varphi_z, \kappa^t, \kappa^p, \kappa_v, \kappa_n, c^f,\\ &\sigma(n=0), \sigma(n=1), \sigma(n=2), \sigma(n=3)\}\end{aligned}$$

   and

$$\vartheta_1 = \{A, \eta, \delta_m\}$$

2. Estimate parameters in ϑ_1, to match the average wage, the E-to-NE transition

rate and the employment share for men. To do so:

(a) Compute average wage for men, w_m using solution of bargaining problem

(b) Simulate large panel of men (no need to solve the value functions for men)

(c) Compute employment share of population and E-to-NE transition rate using simulated data and check convergence.

(d) Update guesses as follows:

    i. increase A if simulated average wage is lower than targeted, decrease it otherwise

    ii. increase η if simulated employment share if lower than targeted, increase it otherwise

    iii. increase δ_m if simulated E-to-NE transition rate is lower than targeted, decrease it otherwise

(e) Iterate till convergence

3. Given the estimates for A, η and δ_m, compute wage schedule for women, solve the value functions and obtain policy functions

4. Use policy functions to simulate large panel of women

5. Compute relevant moments using simulated data and evaluate the distance function:

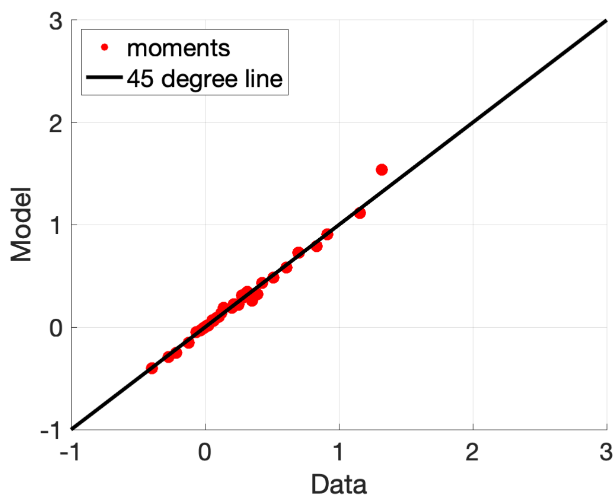
$$D(\vartheta) = m(\vartheta)'\Sigma m(\vartheta)$$

   where Σ is positive definite matrix.

6. Update guesses in ϑ_0 and iterate to minimize the distance function

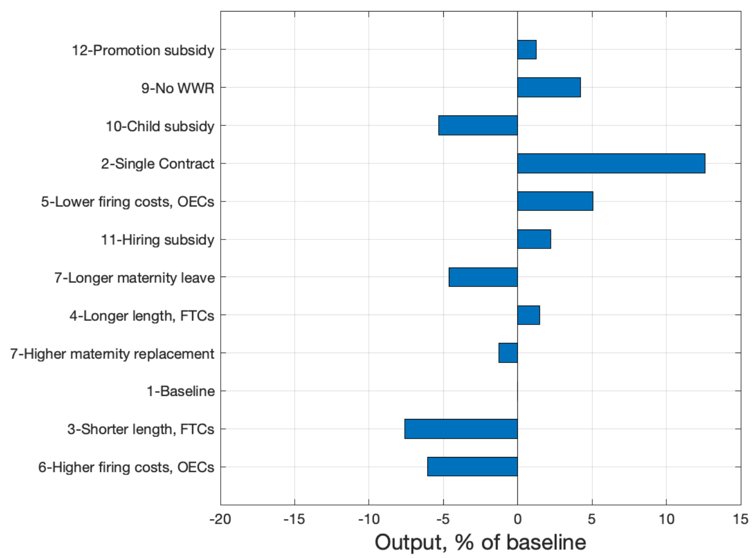
Figure C.1 shows the estimation fit.

Figure C.1: Model Fit



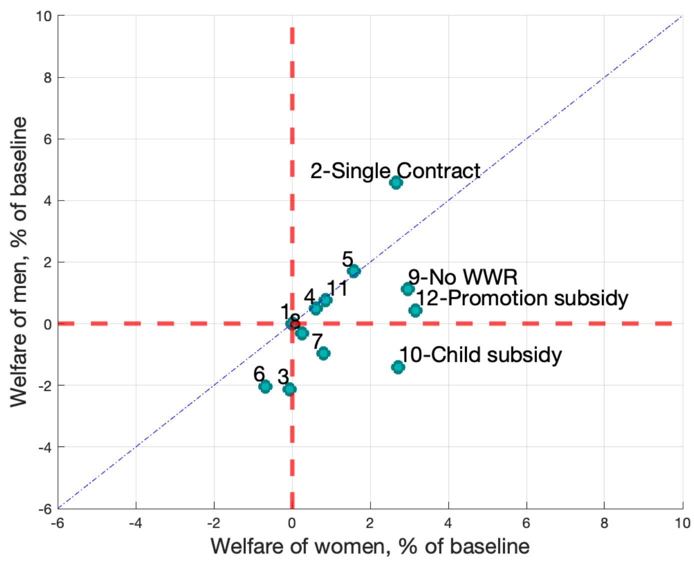
D Counterfactual Appendix

Figure D.1: Output gains and losses



NOTES: This figure reports a model-based aggregate output across policy experiments as a percentage of baseline value. Scenarios are ranked based on women's welfare.

Figure D.2: Welfare trade-offs: men vs women



NOTES: This figure compares model-based welfare of women against men, across policy experiments.