Labor Market Effects of Reducing the Gender Gap in Parental Leave Entitlements

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Abstract

We explore the effects of parental leave entitlements for mothers and fathers on wages and unemployment. To do so we include two types of workers, males and females, who compete for the same jobs, in a labour search and matching model with parental leave. We show that increases in leave duration have ambiguous effects on market tightness and wages. We identify, analytically and graphically, the mechanisms behind these ambiguous effects. Given the variety of theoretical cases we calibrate the model for selected countries (France, Italy, Norway and Portugal) and simulate policy changes. In all countries considered an increase in duration of either type-specific leave reduces both wages and increases unemployment, which is consistent with a relatively large negative effect of the leave on job creation. The simulated effects are however relatively small and suggest that the scope for leave duration policy to reduce gender wage and employment gaps is limited.

Keywords: parental leave, search and matching, labor market gaps

JEL Classification: E24, J13, J18

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1 Introduction

Despite convergence over time, substantial gender earnings and wage gaps persist in most countries. A large portion of the gender earnings and wage gaps has been attributed to the presence of children in the household, e.g.: Bertrand et al. (2010), Chung et al. (2017) and Kleven et al. (2018). We argue that, if the presence of children plays a key role in explaining gender earnings and wage gaps, family policies become potentially relevant tools to address them. In this paper we explore the role of parental leave regulations.

Parental leave regulations are indeed a central element of family policies in most OECD countries. They have expanded over time from narrow maternity leave entitlements to broader parental leave entitlements designed to support both working parents. Maternity and paternity leave is available to mothers and fathers, respectively, around the time of child-birth or adoption. Parental leave covers longer employment-protected periods. Parental leave can be either an individual right or a family entitlement. In an attempt to encourage the take-up of parental leave by fathers some countries reserve a portion of the leave to be taken exclusively by fathers. We refer to father-specific leave to encompass the paternity leave and the portion of the parental leave reserved for fathers. Similarly for mother-specific leave.

Mother-specific leave entitlements seek to encourage female labor supply by allowing mothers to remain attached to the labor market after birth. However, prolonged periods of absence from the workplace can lead to loss of human capital and weaker labor market outcomes. The empirical literature on the effect of parental leave programs on female labor market outcomes is as yet inconclusive. Olivetti and Petrongolo (2017) identify two main difficulties in the empirical analysis - the complexity of family legislation and the likely endogeneity of family policy interventions – and distinguish two main strands of the empirical literature - cross-country and micro-level studies. Ruhm (1998), a seminal cross-country contribution, finds that leave duration plays a critical role: short periods of leave entitlements of less than three months are associated with small increases in female employment and no discernible effect on wages, while longer leave entitlements are associated with significant negative effects on female wages.\footnote{Leave duration also seems to play a key role in the micro-level studies. For instance, Lalive and Zweimüller (2009) and Lalive et al. (2014) show that extended leave delays return to work with significant negative effects on female employment and earnings, particularly during the first three years after birth.} Olivetti and Petrongolo (2017) extend Ruhm’s approach. They exploit the
evolution of family policies over time in high-income countries, using data on 30 OECD countries over
45 years, and consider several aspects of parental leave entitlements, such as duration, percentage of
total leave that is paid and average payment rate, alongside other family policies, such as subsidized
childcare and workplace flexibility. They conclude that moderate job-protected leave entitlements,
up to about one year, are associated with higher female employment but longer and more generously
paid entitlements seem instead detrimental for female employment. In addition, for college-educated
women, longer entitlements seem to be associated with wider gender earnings and wage gaps. They
argue that returns to job-specific experience is possibly higher for skilled women, who accordingly
stand to lose more. Because the study reports effects on gender gaps, it takes into account the effects,
if any, of the mother-specific leave entitlements considered on male labor outcomes. Most high-income
countries have in place leave provisions for fathers but their recent introduction and their limited
take-up has not yet allowed proper evaluation of their effects.

Despite the public policy debate and the empirical interest on the effects of parental leave programs,
there are however surprisingly few theoretical contributions. Bastani et al. (2019) explore the efficiency
enhancing role of mandatory parental leaves when workers can be career oriented or family oriented
and firms are not allowed to offer differentiated contracts due to anti-discrimination legislation. They
show that, in this context, a mandatory parental leave can be part of the socially optimal policy. In
contrast, in a model where social norms concerning childcare activities arise endogenously from the
most frequent behavior in the previous generation, Barigozzi et al. (2017) show that parental leave
can reduce social welfare. Most fathers choose the career path and most mothers choose childcare,
which generates a social norm externality on the future generation. In this context, the presence of
parental leaves can intensify the externality and reduce social welfare.

Erosa et al. (2010) and Del Rey et al. (2017) explore the effects of parental leave provisions in
the presence of search and matching frictions. Erosa et al. (2010) include fertility and labor market
decisions within a relatively comprehensive model. They consider three channels for parental leave
effects - bargaining, redistribution and job creation-, and explore, using simulations, the effects of
leave policies on fertility, leave take-up and employment.

Del Rey et al. (2017) focus on the job creation channel and identify the mechanisms behind
the ambiguous effects of leave duration on wages and unemployment. Increasing the duration of the
leave has a negative direct effect on job creation because the benefit of opening a vacancy decreases.
This yields higher unemployment. This direct effect on unemployment can however be reduced, even reverted, if coupled with a fall in wages. Wages can fall if workers attach a high net value to the leave and have low bargaining power. The negative direct effect of leave duration on job creation can however be strengthened if wages increase, which can happen if the firm has low bargaining power and/or attaches a high net value to the leave, for example due to high replacement costs. The model considers however a single type of worker, which could correspond to a benchmark situation in which all workers are treated the same regardless of gender, or alternatively to a situation with segmented markets in which only women are entitled to take leave. In reality, men and women often compete for the same jobs and firms are likely to take this into consideration when assessing the value of posting a vacancy. Then, although leave entitlements are mainly enjoyed by women in OECD countries (from 54.4% in Iceland to 99.5% in Australia of total users of paid parental leave) they can also affect male outcomes, and hence the gender gaps.

In this paper we extend the labor search and matching model in Del Rey et al. (2017) to include two types of worker, males and females, who compete for the same jobs. Each individual can be unemployed, working or on parental leave. Similar to Del Rey et al. (2017), we show that an increase in the duration of type-specific parental leave can increase or decrease the wage of the targeted worker. In addition, we show that, although the type-specific parental leave does not directly affect the wage of the non-targeted worker, the new vacancy-to-unemployed ratio indirectly does. If the wage of the targeted type increases, the wage of the other type decreases. This case is associated with a decrease in market tightness, i.e. higher unemployment. If the wage of the targeted type decreases slightly, the wage of the other type also decreases. Interestingly, unemployment increases in this case in spite of the lower wages due to the direct negative effect of the leave on job creation. Finally, if the wage of the targeted type decreases significantly, market tightness increases and the wage of the other type increases.

We identify the theoretical effects, both analytically and graphically. Given the variety of possible cases, and to provide more concrete results, we calibrate the model for four different countries (France, Italy, Norway and Portugal) and simulate specific leave policy changes. Despite significant differences in parental leave policies, the four countries display similar patterns. An increase in the duration of either type-specific leave shifts the job creation and the targeted worker wage curves downwards, both wages decrease and unemployment increases. These outcomes are consistent with a relatively
large negative effect of the leave on job creation: the targeted worker wage does not fall enough to compensate for the negative effect of a longer leave on job creation. As a result, market tightness decreases and the non-targeted worker wage also falls, although less. The effects are however relatively small. Gender employment gaps remain relatively constant when either father-specific or mother-specific leave duration changes. Increasing father-specific leave duration tends to reduce gender wage gaps but the effect is relatively small: our simulated results show that a 10-week increase in father-specific leave hardly affects the wage gap in France and Italy while slightly reduces the wage gap in Norway and Portugal from 12.9% and 12.7%, respectively, to 12.5% in both countries. Decreasing mother-specific leave duration reduces the gender wage gap in all countries but the effects, although larger, remain small: a 10-week decrease in mother-specific leave reduces the wage gap in France and Italy from 10.8% to 10.2% and 5.3% to 4.9%, respectively, while the wage gap goes down to 12.4% in Portugal and Norway. The relatively larger impact of the mother-specific leave duration changes with respect to the father-specific leave duration changes observed in France and Italy is largely due to the fact that, in these two countries, the male share of recipients of parental leave benefits is very low (lower than 10%). Intuitively, since firms internalize that most fathers do not take the leave, changes in father-specific leave duration have almost no effect in labor market outcomes.

The rest of the paper is organized as follows. Section 2 presents the model. Section 3 derives the equilibrium wages and unemployment levels. Section 4 presents the theoretical effects of increasing the duration of the parental leave reserved to fathers and mothers respectively. Section 5 includes the calibration and simulation results for four economies: France, Italy, Norway and Portugal. Section 6 concludes.

2 The model

The economy consists of a measure 1 of risk-neutral, infinitely-lived firms and risk-neutral, infinitely-lived workers of two types $i = \{m, f\}$ where $m$ stands for male and $f$ for female. The number of male and female workers $N_m$ and $N_f$ is given, with $N_m + N_f = 1$. Workers can be either unemployed or employed. If employed, they can either be working or on parental leave. Workers and firms discount future payoffs at a common rate $r$ and capital markets are perfect. Time is continuous.

There is a time-consuming and costly process of matching unemployed workers and job vacancies, which is captured by a standard constant-return-to-scale matching function that is common for male
and female workers (all compete for same jobs):

\[ g(u, v) = g_0 u^\alpha v^{(1-\alpha)}, \]  

(1)

where \( u = u_f + u_m \) denotes the number of unemployed workers, \( v \) is the number of vacancies, and \( \alpha \) and \( g_0 \) are the matching function parameters. Because the firm does not differentiate between both type of workers, all unemployed workers find jobs at the same rate \( p[\theta] = g(u, v)/u \), and vacancies are filled, \( q(\theta) = g(u, v)/v \), depend on the vacancy-to-unemployed ratio \( \theta \), also known as market tightness, where \( p(\theta) = \theta q(\theta) \) and \( p'(\theta) > 0, q'(\theta) < 0 \).

A job can be either filled or vacant. Before a position is filled, the firm has to open a job vacancy, incurring a flow cost \( c \). A vacancy position is filled by each type of worker at the endogenous rate \( q(\theta) \Omega_i \), where \( \Omega_i = u_i/u \), yielding a positive net value \( J_i - V \) from the job creation process, where \( J_i \) and \( V \) stand for the value that the firm attributes to a filled and a vacant position, respectively.

Each firm has a constant-returns-to-scale production technology with labor as a unique production factor, generating an instantaneous profit equal to the difference between the constant labor productivity \( A_i \) and the labor cost \( w_i \). Filled positions can be either destroyed at the constant job separation rate \( s_i \) or interrupted at the on leave separation rate \( \sigma_i \) if the worker moves to the status of parental leave. The capital loss is represented by \( J_i - V \) when the position is destroyed and \( J_i - X_i \) when the worker is on parental leave, where \( X_i \) stands for the value that the firm attributes to the parental leave. While the worker is on leave the firm incurs a net productivity loss \( \psi_i \) per period until the individual returns to the job at rate \( \gamma_i \).

The values of the vacant \( V \), type-\( i \) filled position \( J_i \) and type-\( i \) worker on parental leave \( X_i \) are given by the following three expressions:

\[ rV = -c + q(\theta) (\Omega_f (J_f - V) + \Omega_m (J_m - V)), \]  

(2)

\[ rJ_i = A_i - w_i - \sigma_i (J_i - X_i) - s_i (J_i - V). \]  

(3)

\[ rX_i = -\psi_i + \gamma_i (J_i - X_i). \]  

(4)

An unemployed individual benefits from the current value of leisure \( b_i \), which may include unemployment benefits, and finds a job at rate \( p(\theta) \), which yields the net value gain \( W_i - U \), where \( W_i \) and \( U \) stand for the value that the worker attributes to employment and unemployment, respectively.
Employed workers earn the endogenous wage $w_i$, and can either lose their jobs at the constant rate $s_i$ or move to the status of parental leave at the constant rate $\sigma_i$. A worker on parental leave enjoys benefit $z_i$, which may include leave payments, and returns to the same job position at the constant rate $\gamma_i$, which yields a net value gain $W_i - L_i$ associated with the termination of the parental leave, where $L_i$ stands for the value that the worker attributes to being on parental leave. The inverse of $\gamma_i$, $\delta_i = 1/\gamma_i$, represents the average period the individual is on parental leave, or duration of the leave, and is hence a policy parameter. For this reason, we henceforth write $\gamma_i(\delta_i)$, with

$$\frac{d\gamma_i(\delta_i)}{d\delta_i} < 0 \quad (5)$$

The values associated with the different type-$i$ worker status - unemployed ($U_i$), employed ($W_i$) and on parental leave ($L_i$) - are given by the following expressions:

$$rU_i = b_i + p(\theta) (W_i - U_i), \quad (6)$$

$$rW_i = w_i - s_i(W_i - U_i) - \sigma_i(W_i - L_i), \quad (7)$$

$$rL_i = z_i + \gamma_i(\delta_i) (W_i - L_i). \quad (8)$$

To close the model, we invoke two standard assumptions: free entry condition for vacancies and bilateral Nash bargaining over wages. The free entry condition for vacancies, whereby firms open vacancies until the expected value of doing so becomes zero, implies

$$V = 0. \quad (9)$$

Since neither type-$i$ workers nor employers can instantaneously find an alternative match partner in the labor market, and since hiring decisions are costly, a match surplus exists: $S_i = J_i + W_i - U_i$. To divide this surplus between the firm and the type-$i$ worker, we assume wages are the result of bilateral Nash bargaining. The Nash solution is the wage that maximizes the weighted product of the type-$i$ worker’s and the firm’s net return from the job match. The first-order condition yields the following equation:

$$(1 - \beta_i)(W_i - U_i) = \beta_iJ_i \quad (10)$$

where $\beta_i$ and $1 - \beta_i$ represent the bargaining power of the type-$i$ worker and the firm, respectively.
3 Solving the model

3.1 Dynamics of unemployment

Given the state-contingent ratio of vacancies to unemployment $\theta$, unemployment ($u_{i}$) and employment ($e_{i}$) evolve according to the following backward-looking differential equations:

$$\dot{u}_{i} = s_{i}e_{i} - p(\theta)\Omega_{i}u,$$

(11)

$$\dot{e}_{i} = -s_{i}e_{i} + p(\theta)\Omega_{i}u.$$

(12)

where $u = u_{m} + u_{f}$ and $\Omega_{i} = u_{i}/u$.

At equilibrium, $\dot{u}_{i} = 0$. Then, using (11) and the fact that individuals are either employed or unemployed:

$$N_{i} = e_{i} + u_{i},$$

(13)

we get the equilibrium unemployment level for $i = m, f$:

$$u_{i} = \frac{N_{i}s_{i}}{s_{f} + p(\theta)}.$$  

(14)

Let the unemployment rate be $\hat{u}_{i} = u_{i}/N_{i}$. Then, the unemployment rate gap $\hat{u}_{f} - \hat{u}_{m}$ is given by

$$\hat{u}_{f} - \hat{u}_{m} = \frac{s_{f}}{s_{f} + p(\theta)} - \frac{s_{m}}{s_{m} + p(\theta)}.$$  

(15)

3.2 Job creation by firms

The free entry condition (2) and (9) imply that, the equilibrium job creation condition is:

$$\Omega_{f}J_{f} + \Omega_{m}J_{m} = \frac{c}{q(\theta)}.$$  

(16)

To obtain the value of a job filled with a type-$i$ worker, $J_{i}$, use (3) and (4):

$$J_{i} = \frac{(r + \gamma_{i}(\delta_{i}))(A_{i} - w_{i}) - \sigma_{i}\psi_{i}}{r(r + \sigma_{i} + s_{i}) + \gamma_{i}(\delta_{i})(s_{i} + r)}.$$  

(17)

Note that the value of a job filled by a type-$i$ worker is decreasing in her wage and increasing in $\gamma_{i}$ since

$$\frac{dJ_{i}}{d\gamma_{i}} = \frac{(A_{i} - w_{i})r + (s_{i} + r)\psi_{i}}{(r(r + \sigma_{i} + s_{i}) + \gamma_{i}(\delta_{i})(s_{i} + r))^{2}} > 0.$$  

(18)

Therefore, the value of a job filled by a type-$i$ worker is decreasing in the duration of the leave $\delta_{i}$ by (5).

2Recall that individuals on leave are employed.
3.3 Equilibrium wages

Each type of worker independently negotiates her wage with the employer. At equilibrium (10) is satisfied. To obtain \( W_i - U_i \) first subtract \( rU_i \) from both sides of (7):

\[
(r + s_i) (W_i - U_i) = w_i - \sigma_i (W_i - L_i) - rU_i. \tag{19}
\]

Then calculate \( W_i - L_i \) using (7) and (8):

\[
W_i - L_i = \frac{w_i - z_i - s_i(W_i - U_i)}{r + \sigma_i + \gamma_i (\delta_i)}. \tag{20}
\]

Finally, plug (6) and (20) into (19):

\[
W_i - U_i = \frac{(r + \gamma_i (\delta_i)) (w_i - b_i) + \sigma_i (z_i - b_i)}{(r + p(\theta)) (r + \sigma_i + \gamma_i (\delta_i)) + (r + \gamma_i (\delta_i)) s_i}. \tag{21}
\]

If we then plug (17) and (21) into (10) and simplify we obtain a condition that implicitly determines the equilibrium wage for \( i = \{m, f\} \) as a function of \( \theta \) as well as the parameters of the model:

\[
w_i = (1 - \beta_i) b_i + \beta_i A_i + \beta_i p(\theta) J_i (w_i) + \frac{\sigma_i}{r + \gamma_i (\delta_i)} [\beta_i (p(\theta) J_i (w_i) - \psi_i) - (1 - \beta_i) (z_i - b_i)]. \tag{22}
\]

When \( \sigma_i \), and therefore \( \gamma_i \), equal zero and there are no differences between males and females, it is straightforward to obtain the standard wage equation under search and matching frictions.\(^3\)

3.4 Equilibrium

In the model with only one type of worker, the equilibrium can be represented graphically as the point where the job creation condition and the wage equation cross. In our framework with two types of worker, an equilibrium is a set of male and female wages \( w_m \) and \( w_f \) and a ratio of vacancies to unemployment \( \theta \) that simultaneously satisfy the job creation condition and the two wage equations:

\[
\Omega_m (\theta) J_m (w_m) + \Omega_f (\theta) J_f (w_f) = \frac{c}{q(\theta)}, \tag{23}
\]

\[
w_f - (1 - \beta_f) b_f - \beta_f A_f - \beta_f p(\theta) J_f (w_f) = \frac{\sigma_f}{r + \gamma_f (\delta_f)} \left[ \beta_f (p(\theta) J_f (w_f) - \psi_f) - (1 - \beta_f) (z_f - b_f) \right], \tag{24}
\]

\[
w_m - (1 - \beta_m) b_m - \beta_m A_m - \beta_m p(\theta) J_m (w_m) = \frac{\sigma_m}{r + \gamma_m (\delta_m)} \left[ \beta_m (p(\theta) J_m (w_m) - \psi_m) - (1 - \beta_m) (z_m - b_m) \right]. \tag{25}
\]

\(^3\)See e.g. section 1.4 in Pissarides (2000).
where $J_i (w_i), i = \{m, f\}$ is given by (17).

In Figure 1 we represent the equilibrium graphically as in the one type of worker case (see Del Rey, Racionero, Silva, 2017). To do this, let $w_f = \omega_f [\theta]$ be the female wage that satisfies (25) for each $\theta$ and plug this function into (23). We thus obtain a job creation condition $JC$ that is a function of $w_m$ and $\theta$ only:

$$
\Omega_m (\theta) J_m (w_m) + \Omega_f (\theta) J_f (w_f (\theta)) - \frac{c}{q (\theta)} = 0.
$$

(26)

The intersection of the male wage equation (24) and the new job creation condition (26) yields the equilibrium levels of $w_m$ and $\theta$ ($w^*_m$ and $\theta^*$ in the upper part of Figure 1). The equilibrium vacancy-to-unemployed ratio $\theta^*$ can be then plugged into the female wage equation (25) to yield the equilibrium female wage ($w^*_f$ in the lower part of Figure 1). We next show that the signs of the slopes of the job creation condition (26) and both wage equations (24) and (25) are as depicted in Figure 1.

In the model with one type of worker, either with parental leave or without, the job creation condition is downward sloping: firms are less willing to open vacancies the higher the wage. Also, the
wage equation is upward sloping: the higher the number of vacancies relative to unemployment, the higher the wage paid is. We now study the sign of the slope of (24) and (26). Totally differentiating, first, (26) with respect to \( \theta \) and \( w_m \) we obtain:

\[
\frac{dw_m}{d\theta} \bigg|_{JCC} = \frac{d\Omega_m(\theta)}{d\theta} \frac{(J_m - J_f)}{\Omega_m(\theta)} + \frac{\Omega_f(\theta) dJ_f}{d\theta} + \frac{cq' (\theta)}{q(\theta)^2}.
\]  

(27)

To determine the sign of (27) note, on the one hand, that

\[
\frac{d\Omega_m(\theta)}{d\theta} = \frac{(s_m - s_f) N_f s_f N_m s_m p' (\theta)}{((s_m + p(\theta)) N_f s_f + (s_f + p(\theta)) N_m s_m)^2}
\]

so, accordingly,

\[\text{sign} \frac{d\Omega_m(\theta)}{d\theta} = \text{sign}(s_m - s_f).
\]

On the other hand, the other terms in the numerator of (27) are negative. Therefore, the slope of the job creation condition (27) is unambiguously negative when either

\[
\begin{align*}
& s_m > s_f \text{ and } J_m < J_f, \text{ or } \\
& s_m < s_f \text{ and } J_m > J_f.
\end{align*}
\]

It seems reasonable to assume that, indeed, the job separation rate is higher the lower the value of the job position.\(^4\)

To obtain the sign of \( dw_f/d\theta \) in the numerator of (27) we totally differentiate, in turn, (25):

\[
\frac{dw_f}{d\theta} \bigg|_{\omega_f} = \frac{\left(1 + \frac{\sigma_f}{r + \gamma_f(\delta_f)}\right) \beta_f p' (\theta) J_f}{1 - \left(1 + \frac{\sigma_f}{r + \gamma_f(\delta_f)}\right) \beta_f p (\theta) \frac{dJ_f}{dw_f}} > 0.
\]  

(28)

To obtain the slope of the male wage equation, totally differentiate (24) with respect to \( \theta \) and \( w_m \). As in the case of the female wage, this slope is unambiguously positive.

It is worth noting that we can calculate first the joint determination of \( \theta^* \) and \( w_f^* \) and, then, the optimal wage for the male worker. The results are the same.

\(^4\)This is actually the case in three out of the four economies that we calibrate below. Norway is the exception. As we will see, the slope of the job creation condition is much lower in this country but still negative.
4 Theoretical effects of increasing the duration of parental leave

In this section we investigate the effect of increasing the duration of father-specific leave. The effect of the duration of the mother-specific leave can be simply derived by changing all subindices.

Note that $\gamma_m (\delta_m)$ affects directly the male wage equation (24) and the job creation condition (26) but not the female wage equation (25). We start with the job creation condition, $JC(\theta,w_m)$ on the upper part of Figure 1. Totally differentiating (26) with respect to $w_m$ and $\delta_m$ for a given $\theta$ we obtain:

$$\frac{dw_m}{d\delta_m} \bigg|_{JCC} = - \left( \frac{dJ_m}{d\gamma_m} \cdot \frac{dJ_m}{dw_m} \right) \frac{d\gamma_m}{d\delta_m} < 0.$$  

(29)

The job creation condition curve always shifts downwards when $\delta_m$ increases: for any given vacancy-to-unemployed ratio, a longer duration of the father-specific leave is associated with a lower wage in the job creation equilibrium condition. The reason is that, by (18) and $d\gamma_i/d\delta_i < 0$, a male worker is less valuable to the firm when the duration of the father-specific leave increases.

The effect of the increase in father-specific leave duration on the male wage equation (24) is
ambiguous:

$$\frac{dw_m}{d\delta_m} \bigg|_{\omega_m} = \left[ \left( 1 + \frac{\sigma_m}{r + \gamma_m} \right) \beta_m p(\theta) \frac{dJ_m}{d\gamma_m} - \frac{\sigma_m}{(r + \gamma_m)^2} \left[ \beta_m (p(\theta) J_m - \psi_m) - (1 - \beta_m) (z_m - b_m) \right] \right] \frac{d\gamma_m}{d\delta_m}$$

(30)

There are two different terms in (30). The first term captures the direct effect of the duration of the leave on the value to the firm of the job position filled by a male worker. This effect is negative and therefore tends to shift down the male wage curve: the lower the value of the job position filled by a male worker, the lower his wage. The second term captures the effect of the duration of the leave on the wage bargaining position of the worker. The sign of this term depends on the relative bargaining power of the worker, $\beta_m$, and the firm, $1 - \beta_m$, as well as the net benefit of the leave to the worker and the firm. The net benefit of the leave to the firm is given by $p(\theta) J_m - \psi_m$ in (30). The firm incurs a productivity loss, represented by $\psi_m$, when the worker is on leave but, because the worker returns to the same job when the parental leave expires, the firm saves the costs of replacing a type-$m$ worker, represented by $p(\theta) J_m$. The net benefit of the leave to the worker is given by $z_m - b_m$ in (30). If the net benefit of the leave to the firm and the bargaining power of the worker are large the bargaining position of the worker improves and a longer duration has a positive effect on the wage. Conversely, if the net benefit to the worker and the bargaining power of the firm are large the bargaining position of the worker worsens and a longer duration has a negative effect on the wage.

Summing up, an increase in father-specific leave duration can shift the male wage equation upwards or downwards. Figure 2, upper graphs, represents all possible cases depending on whether the male wage increases (panel (a)), decreases slightly (panel (b)) or decreases substantially (panel (c)). In the lower graphs of Figure 2, the female wage equation is unaffected by the duration of the father-specific leave but the new vacancy-to-unemployed ratio equilibrium yields a new equilibrium female wage.

First, if the male wage curve shifts up substantially, the male wage increases, the vacancy-to-unemployed ratio decreases (unemployment increases) and the female wage decreases (panel (a) Figure 2). Second, if the male wage curve shifts up or down slightly, the male wage decreases, the vacancy-to-unemployed ratio decreases (unemployment increases) and the female wage decreases (panel (b) Figure 2).\footnote{To see this, note first that $p(\theta) = \theta q(\theta)$. Also, by (23), $q(\theta) = c/(\Omega_m J_m + \Omega_f J_f)$. Then, $p(\theta) J_m$ equals market tightness times the cost of opening a vacancy times the value of a job position filled by a male worker relative to the average value of a filled position: $\theta c J_m/(\Omega_m J_m + \Omega_f J_f)$.} Interestingly, unemployment increases in this case in spite of the lower wages, due to the\footnote{If the male wage curve shifts up or down slightly, the male wage decreases less or more depending on whether the}
direct negative effect of the leave on job creation. Finally, if the male wage curve shifts down substan-
tially, the male wage decreases significantly, the vacancy-to-unemployed ratio increases (unemployment
decreases) and the female wage increases (panel (c) Figure 2).

It is however important to emphasize the role played by the on leave separation rate $\sigma_m$ on the
intensity of the aforementioned shifts. This term tends to be very small for men in most countries
for two reasons: the rate at which men move to the status of paternity leave $\sigma_m$ is very low, and the
duration of this leave is also typically small making $\gamma_m (\delta_m)$ larger. Note that (18), (29) and (30)
are equal to zero when $\sigma_m$ is zero, implying that neither the job creation curve nor the male wage
curve shifts when the male parental leave duration $\delta_m$ changes. As a result, since firms internalize
that males do not take the leave, the policy will not affect the labor market.

Given the wide range of possible effects of the leave policies, we now proceed to calibrate and
simulate some useful examples.

5 Calibration and simulated results

This section undertakes a quantitative assessment of the role of type-specific parental leave duration
$\delta_i$ on explaining differences in the gender gaps of four countries (France, Italy, Portugal and Norway).\(^7\)
First, we set the levels of $\delta_i$, as well as other parameters and variables, to the ones observed in the data
and calibrate the rest of the model’s parameters to reproduce the gender unemployment and wage
gaps in each country among other targets (see Table 1). Then, we evaluate the gender labor market
effects of changing the duration of parental leave available to mothers and fathers, respectively. Our
goal is to identify which of the possible theoretical scenarios described in the previous section applies
to each country, and to assess the scope of parental leave duration policies in reducing gender labor
market gaps. We do not intend to introduce parental leave policies in different countries as natural
experiments.

\(^7\)We choose these four economies because, according to Kountentakis (2014), they have similar job finding rates for
men and women as we have assumed in the model. Additionally, they also have all the relevant information necessary
to calibrate the parameters.
5.1 Calibration

We calibrate the model in section 3 at yearly frequency in order to match several empirical facts in the
four economies. We consider individuals aged between 25 and 44 years old when the data is available
because mothers in this age group are responsible for 99% of total births.8

Table 1 summarizes all the calibrated parameters and presents the steady state values of the
dependent variables. We first include in Block 1 the group of variables or parameters that we set
using data or own assumptions. In Block 2 we include the model’s targets consistent with empirical
evidence while Block 3 includes the variables and parameters that have been calibrated by solving
different expressions.

The annual interest rate \( r \) is set to be consistent with the annual long-term interest rate in each
matching function with constant returns to scale, and a plausible range for the empirical elasticity on
unemployment between 0.5 and 0.7. Thus, we assume that \( m(u, v) = \kappa u^\alpha v^{1-\alpha} \) and set \( \alpha = 0.6 \) in all
countries. We normalize the labor force \( N \) and both the female and male labor productivity to one,
\( A_f = A_m = 1 \).

The annual job finding rate is calculated following Shimer (2005) and using unemployment duration
data from the Eurostat Database in 2015. In more detail, we consider two labor market states
(employment and unemployment) and calculate the job finding rates for individuals aged between
25 and 49 years old by using Equation (1) in Shimer (2005).9 Thus, the 2015 job finding rate is
\[
p(\theta) = 1 - \frac{u_{t+1} - u^s_{t+1}}{u_t},
\]
where \( u_{t+1} \) and \( u_t \) are the total age-group unemployment in 2016 and 2015, respectively, and \( u^s_{t+1} \) is the number of workers who have been unemployed for less than 12 months in
2016. We use the OECD Database in 2015 to set the male labor force \( N_m \) and unemployment rates
\( \hat{u}_i \) for those aged between 25 and 44 in each country. From these we calculate the female labor force
\( N_f = N - N_m \) and unemployment of each type of worker in each country in Block 3 of Table 1.

The duration of the paid leave available to mothers and fathers \( \delta_i = 1/\gamma_i \) is obtained from the
OECD Family Database (see Tables PF2.1.A and PF2.1.B). To calculate the on leave separation rate
for fathers and mothers \( \sigma_m \) and \( \sigma_f \) in Block 3 of Table 1 we use the following information. First, \( \varphi \) is

---

8 Considering all working age population would reduce the quantitative impact of the leave duration policy due to
the very low birth rate. The on leave separation rate for individuals who are outside the 25-44 years old group is almost
zero.

9 Data for our target group (25-44 years old) is not available.
the number of births by mother aged 25 to 44. We take this information from the Eurostat Database in 2015, and multiply it by the male share of recipients of parental leave benefits \( \vartheta_m \) to obtain the male on leave separation rate \( \sigma_m \) (See Chart PF2.2.B in the OECD Family Database). This share, \( \vartheta_m \), measures the number of male parental leave users for 100 live births, divided by the sum of male and female users for 100 live births. It ranges from 0, when no fathers use parental leave rights, to 50\%, when mothers and fathers use parental leave rights on an equal basis. Thus, the male and the female on leave separation rates are equal to \( \sigma_m = \varphi \vartheta_m \) and \( \sigma_f = \varphi(1 - \vartheta_m) \), respectively. The exogeneity of the parental leave take-up rates is in line with the relatively constant number of male and female recipients of publicly-administered parental leave benefits observed, for example, in France and Norway between 2012 and 2016 (see Table A.1 in the appendix). For example, although total paid leave reserved for fathers increased from 0.5 to 7 months in France in 2014, the number of male paid leave users remained constant at 2.5 per each 100 births in 2015 and 2016. Similarly, and in spite of several changes in the paid leave duration for mothers and fathers in Norway, the number of female and male recipients of parental leave benefits has also remained relatively constant during that period (around 147 and 99 for each 100 live births, respectively).\(^{10}\) The take-up leave rates do not appear to respond significantly to changes in paid leave duration.

The cost incurred by the firm during the worker’s leave \( \psi \) is set using survey information related to the cost of employee absences presented in the Research Report of the Society for Human Resource Management (SHRM and Kronos, 2014). This study identified various costs associated with employee absences, including direct and indirect costs to organizations for unplanned, planned and extended paid time off. We use information from planned employee absences and consider both the direct costs (such as replacement and overtime costs) as well as the productivity loss (indirect cost) as a proxy of parental leave duration costs. According to this study, the direct costs and the productivity loss for a planed absence are equal to 29.4\% and 15.2\% of total payroll in Europe, respectively (see Tables 11 and 12 in the report). We sum up these two costs and set \( \psi = 0.446 \) in all countries, implying that the firm’s costs during worker’s leave represent around 44.6\% of the worker’s productivity.

Block 2 in Table 1 presents the targets set for the calibration. The net unemployment replacement rate \( b_i/w_i \) is taken from the OECD Benefits and Wage Statistics and corresponds to the replacement

\(^{10}\)Note that the number of women recipients of publicly-administered parental leave for each 100 live births in a year can be larger than 100 if the leave lasts longer than 1 year or is taken in several blocks over more than 1 year.
rate of unemployment benefits granted to a long-term (male or female) unemployed worker belonging to a two-earner households with two children. Also, we use the the OECD Family Database in 2015 to target the type-specific leave payment rates $z_f/w_f$ and $z_m/w_m$.

Blatter et al. (2016) document that hiring costs average between one and two quarters of wage payments. Thus, we target the hiring cost parameter $c$ to be consistent with one quarter of average wages, $w = \frac{w_f(N_f-U_f)+w_m(N_m-U_m)}{N-u}$. Hence, $c/w = 0.25$. We also target the total wage-adjusted labor

<table>
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<tr>
<th>Block 1: Set parameters and variables</th>
<th>Parameter/variable</th>
<th>France</th>
<th>Italy</th>
<th>Norway</th>
<th>Portugal</th>
<th>Source/Target</th>
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<td>0.60</td>
<td>0.60</td>
<td>Petrangelo and Pisarski (2001)</td>
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<td>Normalization</td>
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<td>Normalization</td>
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<td>0.9772</td>
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<td>0.6266</td>
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<tr>
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<td>0.5827</td>
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<td>0.2083</td>
<td>0.4655</td>
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<td>Male share of recipients of parental leave benefits, $\delta_m$</td>
<td>0.035</td>
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<td>0.430</td>
<td>OECD Family Database (Chart PF2.2.C)</td>
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<td>0.446</td>
<td>0.446</td>
<td>0.446</td>
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<td>0.25</td>
<td>0.25</td>
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<td>1.096</td>
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<td>1.053</td>
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<td>1.127</td>
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<td>0.0030</td>
<td>0.0086</td>
<td>0.0380</td>
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<td>0.0810</td>
<td>0.0480</td>
<td>0.0410</td>
<td>0.0300</td>
<td>$\sigma_f = \varphi(1-u_f)$</td>
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<td>0.4780</td>
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<td>0.5100</td>
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<tr>
<td>Female unemployment, $u_f$</td>
<td>0.0464</td>
<td>0.0631</td>
<td>0.0211</td>
<td>0.0602</td>
<td>$u_f = ⊂N_f/N_f$</td>
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<tr>
<td>Male unemployment, $u_m$</td>
<td>0.0527</td>
<td>0.0678</td>
<td>0.0285</td>
<td>0.0529</td>
<td>$u_m = \frac{u_m}{N_m}$</td>
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<td>0.0602</td>
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<td>0.0285</td>
<td>0.0602</td>
<td>$s_f$</td>
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<td>0.0629</td>
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<td>0.0643</td>
<td>$\xi$</td>
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<td>0.5181</td>
<td>0.5661</td>
<td>0.4725</td>
<td>$\Omega_f = \frac{\Omega_f}{N_f}$</td>
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<tr>
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<td>0.4489</td>
<td>0.5275</td>
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<td>0.4608</td>
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<td>0.4089</td>
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<tr>
<td>Male workers bargaining power, $J_m$</td>
<td>0.4144</td>
<td>0.5113</td>
<td>0.3667</td>
<td>0.4468</td>
<td>Equations (23) and (24)-(25), $\frac{z_f}{w_f}$, $\frac{z_m}{w_m}$ and $\frac{z_f}{w_f}$</td>
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<td>0.8312</td>
<td>0.8829</td>
<td>0.7382</td>
<td>0.8618</td>
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<td>Male wage, $w_m$</td>
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<td>0.9712</td>
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<td>0.2274</td>
<td>0.1971</td>
<td>0.2289</td>
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<tr>
<td>Male net replacement parameter, $b_m$</td>
<td>0.4144</td>
<td>0.5113</td>
<td>0.3667</td>
<td>0.4468</td>
<td>Equations (23) and (24)-(25), $\frac{z_f}{w_f}$, $\frac{z_m}{w_m}$ and $\frac{z_f}{w_f}$</td>
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<td>0.4856</td>
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<tr>
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<td>0.4653</td>
<td>0.3646</td>
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<td>Job filling rate, $q(\theta)$</td>
<td>0.1836</td>
<td>0.2880</td>
<td>0.0644</td>
<td>0.3569</td>
<td>Equations (23) and (24)-(25), $\frac{z_f}{w_f}$, $\frac{z_m}{w_m}$ and $\frac{z_f}{w_f}$</td>
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<td>1.4181</td>
<td>9.8028</td>
<td>1.4570</td>
<td>$\theta = \frac{c}{w}$</td>
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<td>3.3585</td>
<td>3.3053</td>
<td>0.2530</td>
<td>0.4473</td>
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<td>0.7789</td>
<td>2.5956</td>
<td>0.2026</td>
<td>Equation (17) for $m$</td>
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</table>
productivity ratio \( A/w \) and the unadjusted hourly gender pay ratio \( w_m/w_f \) in 2015 for individuals aged between 25 and 44 using the Eurostat Database in 2015.

Block 3 in Table 1 presents the rest of the parameters and variables and the last column indicates how they are obtained. Workers bargaining power \( \beta_i \), wages \( w_i \), the job filling rate \( q(\theta) \) and parameters \( c, z_i \) and \( b_i \) are obtained simultaneously by solving the job creation condition (JC), the two wage equations and the following targets: the gender wage ratio \( w_m/w_f \), the hiring costs \( c/w \), the type-specific leave payment rates, \( z_i/w_i \), the net replacement rate (common to both types of worker), \( b_i/w_i \), and the wage-adjusted labor productivity ratio \( A/w \).

Note that, according to this calibration, the male wage bargaining power \( \beta_m \) is higher than the female one \( \beta_f \) in all the economies. These calibrated results are in line with recent literature arguing that women are less likely to initiate bargaining with their employers and are less effective negotiators than men (see, for example, Card et al. 2015 for a discussion). Also, note that the value of a job position occupied by a male worker \( J_m \) is always lower than the value of a job position occupied by a female employee \( J_f \). According to (17), the main difference in the value of the position to the firm stems from higher wages among males. This result holds even though parental leave take-up and duration, which are higher among women, reduce \( J_i \).

5.2 Simulations

As in Figure 1, Figures A2-A5 in the appendix show the effects in wages and labor market tightness of increasing the length of the paid leave available to mothers and fathers by ten weeks (0.192 years).

Despite the variety of theoretically possible alternatives shown in section 4 the four countries display similar patterns. First, the wage equations are upward sloping as expected. Second, the job creation condition is downward sloping in all cases. In the case of France, Italy and Portugal it could not be otherwise, because female workers have higher separation rates and lower job values of the job positions than male workers (\( s_f > s_m \) and \( J_m > J_f \)). In Norway, where the value of a job position occupied by a male worker is also higher but the separation rate of female workers is lower, the job creation condition is also negatively sloped.

With respect to the effect of increasing the duration of either the mother-specific or the father-specific leave we observe that, in all cases, the wage of the targeted worker falls. This is due to the

\[11\] In the model the leave granted to mothers and fathers can be paid or unpaid. In the simulations, we take the duration of paid leave because this information is easier to compare across countries.
fact that, first, increasing the duration of either leave reduces the value of a job position occupied by the targeted worker. This makes job creation more costly, shifting both the job creation condition and the wage equation downwards. If the bargaining position of the targeted worker were very large, the wage equation could end up shifting upwards. However, this is never the case in the economies considered: either the bargaining position of the worker is lower than that of the employer or, if the net bargaining position is positive, it is not large enough to counteract the negative effect on the value of the filled position. In all cases considered, labor market tightness also decreases and unemployment increases because the downward shift of the job creation curve is larger than the downward shift of the targeted worker wage curve. Thus, the wage of the targeted worker does not fall enough to compensate for the negative effect of a longer leave on job creation. As a result, the wage of the non-targeted worker also falls but only due to the reduction in the labor market tightness. These simulated results correspond to panel (b) in Figure 2 in which both wages fall and labor market tightness decreases, i.e. unemployment increases.

Note that the reduction in the wage of the targeted worker is more significant because the policy does not have a direct effect on the wage of the non-targeted worker. For example, in France and Italy a 10-week increase in mother-specific leave duration reduces female wages by 0.6 % and 0.5%, respectively, while male wages fall only by 0.04% and 0.03%. In turn, the effect of increasing father-specific leave duration on wages is smaller, as we have already pointed out, due to lower take-up of parental leave among men. Still, we continue to observe that the effect is larger on affected workers: male wages fall by 0.3 % for a 10-week increase in father-specific duration in Norway while female wages fall only by 0.02% following this change.

Table 2 evaluates the gender wage and unemployment gap effects of reducing the gender gap in parental leave entitlements (i.e. the difference in duration between the paid leave available to mothers $\delta_f$ and the paid leave reserved to fathers $\delta_m$). It contains three different blocks with different policies and scenarios. Block 1 reduces $\delta_f$ by 10 weeks while Block 2 increases $\delta_m$ by the same amount of time. Finally, in Block 3 we close the parental paid leave gap by adjusting the fathers parental leave until $\delta_f = \delta_m$.

It becomes clear, by comparing the results in Blocks 1 and 2, that reducing the duration of mother-specific paid leave by 10 weeks is more effective in reducing the gender wage gap than increasing the
Table 2: Gender wage and unemployment gap effects of reducing gender leave gap

<table>
<thead>
<tr>
<th>Block 1: ↓ ( \delta_f )</th>
<th>( \delta_f ) (years)</th>
<th>( \hat{u}_f - \hat{u}_m ) (%) points</th>
<th>( \left( \frac{w_m}{w_f} - 1 \right) \times 100% )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>benchmark</td>
<td>↓ ( \delta_f ) benchmark</td>
<td>↓ ( \delta_f ) benchmark</td>
</tr>
<tr>
<td>France</td>
<td>0.877</td>
<td>0.6849</td>
<td>-0.40</td>
</tr>
<tr>
<td>Italy</td>
<td>0.992</td>
<td>0.7998</td>
<td>2.50</td>
</tr>
<tr>
<td>Norway</td>
<td>1.894</td>
<td>1.7016</td>
<td>-0.50</td>
</tr>
<tr>
<td>Portugal</td>
<td>0.627</td>
<td>0.4343</td>
<td>0.80</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Block 2: ↑ ( \delta_m )</th>
<th>( \delta_m ) (years)</th>
<th>( \hat{u}_f - \hat{u}_m ) (%) points</th>
<th>( \left( \frac{w_m}{w_f} - 1 \right) \times 100% )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>benchmark</td>
<td>↑ ( \delta_m ) benchmark</td>
<td>↑ ( \delta_m ) benchmark</td>
</tr>
<tr>
<td>France</td>
<td>0.583</td>
<td>0.775</td>
<td>-0.40</td>
</tr>
<tr>
<td>Italy</td>
<td>0.008</td>
<td>0.201</td>
<td>2.50</td>
</tr>
<tr>
<td>Norway</td>
<td>0.208</td>
<td>0.401</td>
<td>-0.50</td>
</tr>
<tr>
<td>Portugal</td>
<td>0.466</td>
<td>0.658</td>
<td>0.80</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Block 3: ↑ ( \delta_m )</th>
<th>( \delta_m ) (years)</th>
<th>( \hat{u}_f - \hat{u}_m ) (%) points</th>
<th>( \left( \frac{w_m}{w_f} - 1 \right) \times 100% )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>benchmark</td>
<td>↑ ( \delta_m ) benchmark</td>
<td>↑ ( \delta_m ) benchmark</td>
</tr>
<tr>
<td>France</td>
<td>0.583</td>
<td>0.877</td>
<td>-0.40</td>
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<tr>
<td>Italy</td>
<td>0.008</td>
<td>0.992</td>
<td>2.50</td>
</tr>
<tr>
<td>Norway</td>
<td>0.208</td>
<td>1.894</td>
<td>-0.50</td>
</tr>
<tr>
<td>Portugal</td>
<td>0.466</td>
<td>0.627</td>
<td>0.80</td>
</tr>
</tbody>
</table>

duration of father-specific paid leave by the same amount. For example, in France and Italy the 10-week reduction in the mother-specific paid leave reduces the gender wage gap from 10.8% to 10.2% and 5.3 to 4.9%, respectively. In contrast, a 10-week increase in the father-specific paid leave does not affect the gender wage gap in France and only reduces it from 5.3% to 5.2% in Italy. As mentioned before, the differences in the magnitude of the effects is to a large extent due to differences in leave take-up rates between fathers and mothers.

The gender unemployment gap is more stable, although it tends to increase as labor market tightness falls when female unemployment is larger. This is in line with the predictions of the model, since differentiating (15) with respect to \( \theta \):

\[
\frac{d(\hat{u}_f - \hat{u}_m)}{d\theta} = -\left( \frac{\hat{u}_f}{s_f + p(\theta)} - \frac{\hat{u}_m}{s_m + p(\theta)} \right) p'(\theta).
\]

Theoretically, the sensitivity of this gap to any policy change depends on the initial differences in the gender job finding and separation rates, as well as on the marginal effect of labor market tightness on the job finding rate. As mentioned before, in our model, the job finding rate is assumed to be the same for both genders. Our simulated results show that the unemployment gap in Norway is stable because its monthly separation rates are not too dissimilar across genders. In contrast, the stability
in the unemployment gaps of France, Italy and Portugal is mainly explained by presence of a small marginal effect of labor market tightness in the job finding rate.

6 Concluding remarks

We have explored the effects of mother-specific and father-specific leave entitlements on gender wage and unemployment gaps. To do so we extended the labor search and matching model in Del Rey et al. (2017) to include two types of workers, males and females, who compete for the same jobs. We have shown that an increase in type-specific leave duration has an ambiguous effect on market tightness and the wage of the targeted worker and we have identified the mechanisms behind these ambiguous effects. Although the type-specific leave does not directly affect the wage of the non-targeted worker, the new vacancy-to-unemployed ratio does indirectly affect it. If the wage of the targeted type increases, the market tightness decreases and the wage of the other type decreases. If the wage of the targeted type decreases slightly the wage of the other type also decreases. Interestingly, unemployment increases in this case in spite of the lower wages due to the direct negative effect of the leave on job creation. Finally, if the wage of the targeted type decreases significantly, market tightness increases and the wage of the other type of worker increases.

Given the variety of theoretical cases we next calibrated the model for four selected countries (France, Italy, Norway and Portugal) and simulated parental leave duration changes. Despite significant differences in parental leave policies, the four countries display similar patterns. An increase in the duration of either type-specific leave shifts the job creation and the targeted worker wage curves downwards, both wages decrease and unemployment increases. These outcomes are consistent with a relatively large negative effect of the leave on job creation: the targeted worker wage does not fall enough to compensate for the negative effect of a longer leave on job creation. As a result, market tightness decreases and the non-targeted worker wage also falls.

We also explored the labor market effects of reducing the gender gap in leave duration. We found that the gender wage gaps are reduced by more than the gender unemployment gaps. The simulated effects are however relatively small and suggest that the scope for leave duration policy to reduce wage and employment gaps is limited.

The assumption that the job finding rate is the same across genders plays a critical role in explaining the relative stability of the gender unemployment gaps, and it may be worth exploring the
implications of relaxing this assumption. We also found that, because fathers tend to take the leave less often, increasing the duration of the father-specific leave, without increasing the take-up rate, is less effective in closing existing wage and unemployment gaps. Making take-up and participation decisions endogenous in the context of a household-decision making framework, and analyzing other aspects of parental leave policies beyond leave duration, should enrich the analysis. The present search and matching model with parental leave and two types of workers can serve as a basis for these worthwhile extensions.

Acknowledgements

We would like to thank seminar participants at Deakin University and University of New South Wales, as well as Jan Kabátěk, Iga Magda and Luca Micheletto, for their helpful comments. We acknowledge financial support from the University of Girona, the ANU College of Business and Economics, the Spanish Ministry of Economy and Competitiveness [Research Grants ECO2016-76255-P and ECO2017-82350R], the Generalitat de Catalunya Grant 2017SGR558, and the Australian Research Council Project DP130103580.

References


## Appendix

### Table A1: Total paid leave and users

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>France</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women recipients/users per 100 live births</td>
<td>64.6</td>
<td>63.5</td>
<td>61.3</td>
<td>58.0</td>
<td>53.3</td>
</tr>
<tr>
<td>Men recipients/users per 100 live births</td>
<td>2.4</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
<td>2.4</td>
</tr>
<tr>
<td>Men’s share of recipients/users</td>
<td>3.6</td>
<td>3.7</td>
<td>3.9</td>
<td>4.2</td>
<td>4.4</td>
</tr>
<tr>
<td>Total paid leave available to mothers (months)</td>
<td>10.5</td>
<td>10.5</td>
<td>10.5</td>
<td>10.5</td>
<td>10.5</td>
</tr>
<tr>
<td>Total paid leave reserved for fathers (months)</td>
<td>0.5</td>
<td>0.5</td>
<td>7.0</td>
<td>7.0</td>
<td>7.0</td>
</tr>
<tr>
<td><strong>Norway</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women recipients/users per 100 live births</td>
<td>147.0</td>
<td>145.2</td>
<td>146.2</td>
<td>145.2</td>
<td>149.1</td>
</tr>
<tr>
<td>Men recipients/users per 100 live births</td>
<td>96.9</td>
<td>100.0</td>
<td>100.9</td>
<td>99.3</td>
<td>96.1</td>
</tr>
<tr>
<td>Men’s share of recipients/users</td>
<td>39.7</td>
<td>40.8</td>
<td>40.8</td>
<td>40.6</td>
<td>39.2</td>
</tr>
<tr>
<td>Total paid leave available to mothers (months)</td>
<td>33.7</td>
<td>21.8</td>
<td>21.8</td>
<td>22.8</td>
<td>22.8</td>
</tr>
<tr>
<td>Total paid leave reserved for fathers (months)</td>
<td>3.0</td>
<td>3.0</td>
<td>14.0</td>
<td>10.0</td>
<td>10.6</td>
</tr>
</tbody>
</table>

Source: OECD Family Database, tables PF2.2 and PF2.5.
Figure A2: Gender effects of increasing paid leave duration: France
Figure A3: Gender effects of increasing paid leave duration: Italy
Figure A4: Gender effects of increasing paid leave duration: Norway
Δ Mother-specific leave duration

Δ Father-specific leave duration

Figure A5: Gender effects of increasing paid leave duration: Portugal