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# 9.<sup>a</sup> Conferência do Banco de Portugal

Desenvolvimento económico  
português no espaço europeu



BANCO DE  
PORTUGAL  
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## The Effects of the Increase in Parental Leave Benefits on Wages

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## **(1) About this dissertation**

- 1. The increase of benefits for a group of workers may have a negative effect on the target, through the increase of the relative costs (“mandated benefits”);**
- 2. The introduction of parental leave benefits in 2009 (“quasi-experiment”) is the setting to estimate the answer of the labor market.**

## (2) The setting

- The changes studied were introduced by **Decree-Law 91/2009** having had its start in May 2009, namely:
  - The new ‘sharing bonus’, increasing the length of parental leave when the leave is shared between both parents (condition: each parent has to take 30 days to qualify);
  - Increase of the mandatory initial leave exclusive for the father;
  - Increase of the extended parental leave, paid at 25%.

### (3) Empirical strategy – Difference-in-differences

A methodology of **difference-in-differences** is used, following:

$$\log(Y_{it}) = \alpha + \beta_1 treat_i + \beta_2 after_t + \beta_3 after_t \times treat_i + W_{it}\gamma + \varepsilon_{it}$$

for individual  $i$  in year  $t$ .  $Y_{it}$  is our variable of interest – the real hourly wage and  $W_{it}$  is the set of observable characteristics for both the employee and the firm.  $after_t$  is a dummy set to one for the period covered by the legislation and zero for the period before, 2007 and 2008.  $treat_i$  is a dummy variable that equals 1 for treatment group.  $after_t \times treat_i$  is the interaction term of interest.

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**Treatment group** – employees targeted by the legislation, that is, those that may have children and use the benefits.  
**Control group** – employees that are not targeted by the legislation.

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#### Three Period specifications

1. B: [2007, 2008] A: [2009, 2012]
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$\hat{\beta}_3$ , the coefficient, will measure the effects of the legislation change on the treated group.

•  $\hat{\beta}_3 < 0 \rightarrow$  mechanism of shifting of the costs to lower wages has happened

If there is no adjustment of wages, some of these may have happened:

- Barriers to adjustment;
- The worker does not value the increase in parental leave benefits.

## (4) Data

- Used *Quadros de Pessoal*, a data set collected every year in October by the Ministry of Labor, Solidarity, and Social Security
- Compulsory participation for all the firms within the Portuguese private sector
- The information is provided for the **employer-employee pairs** – age, wage, gender, education, qualification, type of employment contract, district, economic sector,...
- **Dependent variable is the real hourly wage** (in natural logarithm) generated from the existing variables.



## (5) Identification Strategy

The use of the *DiD* methodology assumes that:

- The treatment and control groups are following a common trend prior to the new legislation, suggesting that:
- The paths of the outcomes for both groups would not have been different in the absence of the new legislation.

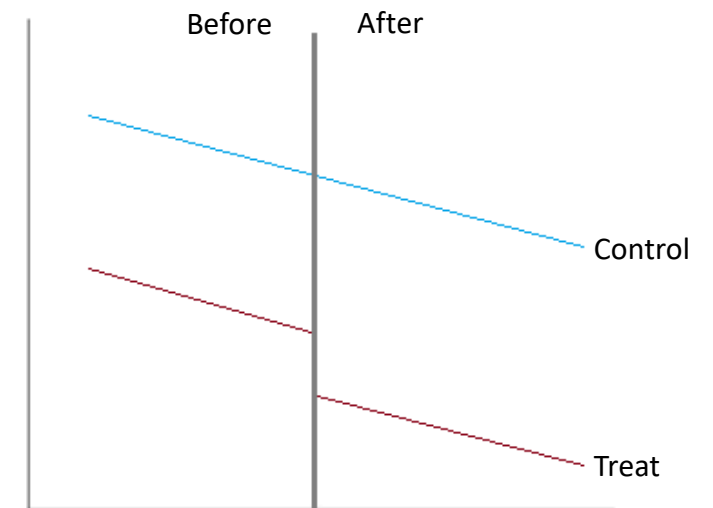


Figure I – Parallel trend

## (5) Identification Strategy

- Objective: identify the target group and a control to assess the impact of DL 91/2009
- A reasonable help: looking at the statistics on
  - Live births by age group of females and males;
  - The use of leave benefits by age group of females and males in 2009 (below)

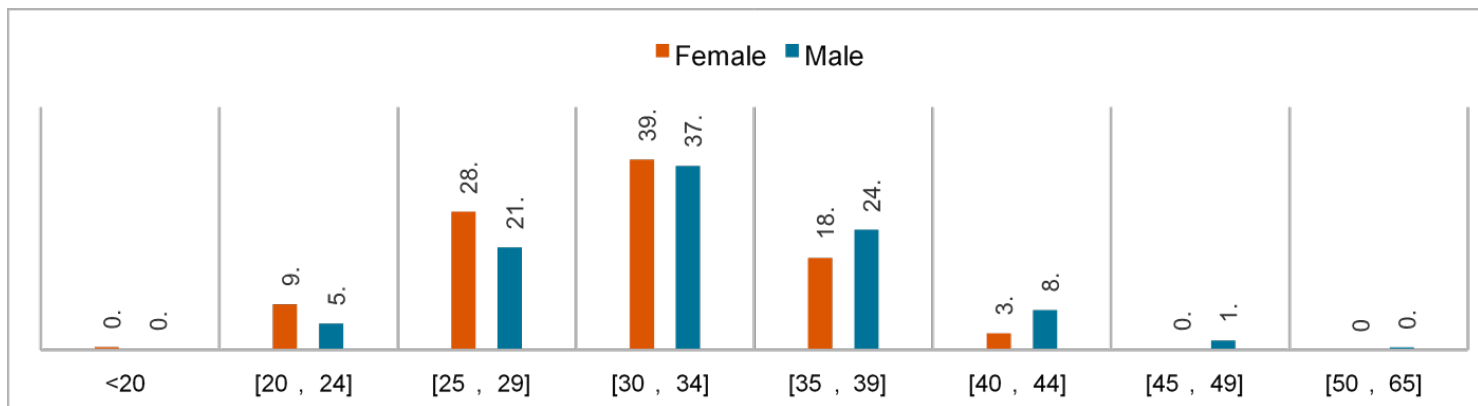


Figure II – Use of leave benefits by age group



## (5) Identification Strategy

- It is then possible to point to a set of possible treatment-control pairs, to use in the experiment, which are submitted to the parallel trend test.
- Following the results, a main pair is chosen:
  - Treatment group: individuals aged [25-40];
  - Control group: individuals aged [55-60]
- Alternative pairs that agree to the parallel trend requisite are also selected as for robustness purposes later on.

Pairs	Treatment	Control	(1) No Covariates	(2) With covariates
1	[25-40]	[55-60]	0.026 (0.000)	0.0003 (0.000)
2	[20-40]	[55-65]	0.022 (0.000)	-0.0009 (0.000)
3	[25-40]	[50-55]	0.020 (0.000)	0.0004 (0.000)
4	[20-40]	[50-60]	0.016 (0.000)	0.0004 (0.004)
5	[20-40]	[50-65]	0.018 (0.000)	-0.0006 (0.000)

Table I – Parallel trend test



## (6) Findings

Results show that:

- $\hat{\beta}_3 < 0$ , meaning the workers are bearing (part of the) costs of the legislation change, through lower wages.
- **Negative impact of the legislation of -3.6%** for the relative wages of treated individuals considering the full sample, that is statistically significant.
- The impact is **more expressive for the male group**.

	Period specification		
	[1]	[2]	[3]
<b>A. Full Sample</b>			
After	0.101 (0.000)	0.023 (0.000)	0.108 (0.000)
Treat	-0.389 (0.000)	0.126 (0.000)	-0.331 (0.000)
After X Treat	-0.037 (0.000)	-0.050 (0.000)	-0.061 (0.000)
Covariates	Yes	Yes	Yes
No. of observations	7 729 036	7 729 036	6 263 298
<b>B. Female</b>			
After	0.103 (0.000)	0.023 (0.000)	0.107 (0.000)
Treat	-0.316 (0.000)	0.208 (0.000)	-0.266 (0.000)
After X Treat	-0.035 (0.000)	-0.047 (0.000)	-0.055 (0.000)
Covariates	Yes	Yes	Yes
No. of observations	3 578 637	3 578 637	2 901 667
<b>C. Male</b>			
After	0.102 (0.000)	0.026 (0.000)	0.112 (0.000)
Treat	-0.410 (0.000)	0.108 (0.001)	-0.347 (0.000)
After X Treat	-0.040 (0.000)	-0.055 (0.000)	-0.070 (0.000)
Covariates	Yes	Yes	Yes
No. of observations	4 150 399	4 150 399	3 361 631

Table II – Estimates for the main pair

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## (6) Robustness

The four alternative pairs that **survived the parallel trend** are used.

Same pattern can be seen here:

1. Estimated **negative impact of the policy**;
2. More **expressive results for the male group**.

A **falsification exercise** is also conducted using placebo-treated groups and control pairs. Results display less expressive coefficients than the ones found in the experiment.

	Full	Female	Male
<b>A. Pair 2 - T: [20-40], C: [55-65]</b>			
After	0.102 (0.000)	0.103 (0.000)	0.102 (0.000)
Treat	-0.427 (0.000)	-0.344 (0.000)	-0.464 (0.000)
After X Treat	-0.038 (0.000)	-0.036 (0.000)	-0.042 (0.000)
Covariates	Yes	Yes	Yes
No. of observations	9 142 553	4 215 985	4 926 568
<b>B. Pair 3 - T: [25-40], C: [50-55]</b>			
After	0.090 (0.000)	0.091 (0.000)	0.090 (0.000)
Treat	-0.262 (0.000)	-0.232 (0.000)	-0.260 (0.000)
After X Treat	-0.026 (0.000)	-0.024 (0.000)	-0.028 (0.000)
Covariates	Yes	Yes	Yes
No. of observations	8 269 016	3 830 436	4 438 580
<b>C. Pair 4 - T: [20-40], C: [50-60]</b>			
After	0.089 (0.000)	0.090 (0.000)	0.089 (0.000)
Treat	-0.282 (0.000)	-0.244 (0.000)	-0.282 (0.000)
After X Treat	-0.026 (0.000)	-0.023 (0.000)	-0.029 (0.000)
Covariates	Yes	Yes	Yes
No. of observations	10 078 433	4 619 041	5 459 392
<b>D. Pair 5 - T: [20-40], C: [50-65]</b>			
After	0.087 (0.000)	0.089 (0.000)	0.086 (0.000)
Treat	-0.301 (0.000)	-0.252 (0.000)	-0.309 (0.000)
After X Treat	-0.023 (0.000)	-0.022 (0.000)	-0.026 (0.000)
Covariates	Yes	Yes	Yes
No. of observations	10 359 329	4 727 923	5 631 406

**Table III – Estimates for alternative pairs**

## (7) Conclusion

- ✓ There appears to be a **negative impact** of the increase in parental leave benefits on the relative wages of the individuals more likely to use the benefit.
- ✓ Findings are consisted with the theory of mandated benefits, as there is a **shift to wages** following an increase in the cost for the employer.

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Thank you

