Estimating Gender Differences in the Probability of Unemployment: Evidence From Portugal

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Outline

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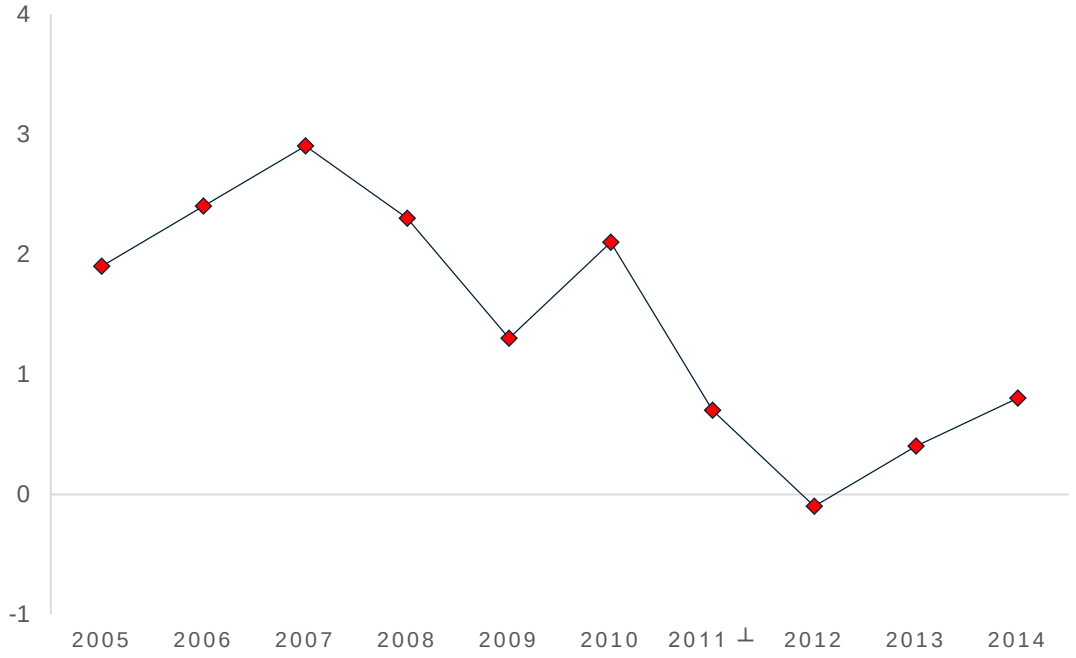
Statistics for Portugal in 2010-2013

- Over the period of 2010-2013 the GDP growth rate was negative
- The **unemployment rate reached 16.2%** in 2013
- The **differential** in unemployment rates between women and men **fell**, from 2.1 percentage points (p.p.) in 2010 to 0.4 p.p. in 2013

DIFFERENTIAL OF THE UNEMPLOYMENT RATE BETWEEN GENDERS



Notes: ⊥ identifies a series break.
Source: Statistics Portugal, Labour Force Survey.

Motivation and objectives of this study

- Analyse the **determinants of unemployment** in Portugal during the 2010-2013 period.
- Azmat et al. (2006) found that **gender gaps in unemployment rates had risen** in the past two decades, in some European countries, especially **when the overall unemployment rate was high**.
- Study the differences in the probability of unemployment between genders over a period of of high unemployment in Portugal.
- Study the negative effect of previous unemployment on current unemployment (**persistence in unemployment**).

Econometric Model

y_{it}^* latent variable

$$y_{it} = \mathbf{1}\left[\boldsymbol{z_{it}\gamma^1} + \boldsymbol{z_{it}\gamma^2 d^f}_{\boldsymbol{i}} + \rho^1 y_{it-1} + \rho^2 y_{it-1} d_i^f + \varphi_i + v_{it} > 0 \right]$$

$$i = 1, \dots, n; t = 1, \dots, T$$

- y_{it} takes on the value one if the individual i is unemployed at time t and zero otherwise;
- $\mathbf{1}[.]$ is the usual indicator function;
- $\boldsymbol{z_{it}}$ is a $1XK$ vector of contemporaneous explanatory variables;
- d_i^f is a dummy variable that equals one if the individual i is a woman;
- v_{it} is the idiosyncratic error term;
- φ_i is the unobserved heterogeneity term, constant in time.

Econometric Model

- Problem: No way to know the stochastic process which originated the observed state of unemployment;
- Problem: Necessity of allowing for correlation between φ_i and z_i;

Solution: Assume that y_{i0} (the state of employment of each individual in 2010), is the initial condition of y_{it} - Wooldridge (2005);

Solution: Mundlack Device - Wooldridge (2010) $\varphi_i = \overline{\boldsymbol{z_i}}\boldsymbol{\alpha_2} + a_i$;

- Using the **Dynamic Random Effects Probit** (Wooldridge (2005)) results in the following model where $\overline{z_i}$ is a vector that contains the average value, for each individual, for all covariates that vary over time

$$P\left(y_{it} = 1 \middle| y_{it-1}, \dots, y_{i0}, \boldsymbol{z_{it}}, \varphi_{it}, d_i^f\right) = \Phi\left[\boldsymbol{z_{it}\gamma^1} + \boldsymbol{z_{it}\gamma^2 d_i^f} + \rho^1 y_{it-1} + \rho^2 y_{it-1} d_i^f + \theta d_i^f + \alpha_1 y_{i0} + \overline{\boldsymbol{z_i}}\boldsymbol{\alpha_2} + a_i\right]$$

where $a_i | y_{i0}, \boldsymbol{z_i} \sim N(0, \sigma_a^2)$

Dataset

- Four waves (**2010 - 2013**) of the Survey on Income and Living Conditions (**ICOR**) Statistics Portugal (Instituto Nacional de Estatística – **INE**).

Relevant descriptive statistics

- Higher share of women in the higher levels of education (**63%** for all waves)**.**
- Higher increases in unemployment rates for men (**2010: 12% - 2013: 18%**) than for women (**2010: 15% - 2013: 16%**).

Data

Table 1 – Variable definitions and expected effects

Variable	Description	Expected effect
Unemp	Unemployed at time of the interview (ILO definition)	-
Age	Age of the individual	Positive
Unemp Spouse	Equals 1 if the spouse is unemployed	Ambiguous
Female	Equals 1 if the individual is a woman	Positive
Number Kids	Number of kids of the individual who were also in the original database	Positive
Experience	Number of years in paid work	Negative
Higher Educ	Equals 1 if the individuals has a degree equivalent to high school or higher	Negative

Notes:

1. Pooled data for 4 waves of the ICOR from 2010 to 2013. Source: INE.
2. Sample size = 3096

Results

- Our results provide favorable evidence that past unemployment raises the probability of current unemployment, with the persistence term having an average partial effect of **0.055 p.p.**.
- Higher education and experience appear to have the expected effects on the probability of unemployment, by reducing it (average partial effects of **-0,030 p.p.** and **-0.004 p.p.**, respectively).
- The fixed effect of being a woman has the highest impact on the probability of unemployment with an average partial effect of **0.112 p.p.**
- The number of kids raises the probability of unemployment for women, while reducing it for men.

Importance of the persistence in unemployment

- Labor policies should focus on offering **higher assistance in job-search** and training programs to individuals who have been unemployed for some time.

Importance of the fixed effect of being a women

- Going forward, there should be a focus on trying to reduce discrimination by, e.g. promoting gender parity in occupations/ fields of study, as it may change society's perception on gender roles by not socially restricting particular jobs to one specific gender.

Importance of negative effect of having kids for women

- As childbearing is especially important for Portugal, the negative effect of having kids for women should be accounted for by **reducing the non-wage cost of labor** (e.g. by offering day care benefits to newly parents).

References

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