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Austerity and Gender Inequalities in Europe in Times of Crisis

Cristiano Perugini

Jelena Žarković Rakić

Marko Vladisavljević

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Aim of the paper:

to assess the impact of austerity policies on the gender wage gap adjusted for the labour market characteristics of man and women in EU-28, distinguishing the effects on pure discrimination practices and on the patterns of gender horizontal segregation.

Outline

1. Introduction
2. Existing knowledge and working hypotheses
3. Data and descriptive evidence
4. Austerity and GWG: Methods
5. Austerity and GWG: Results
6. Summary and Final Remarks

2. Motivations, existing knowledge and working hypotheses

Existing knowledge and evidence (i)

(i) **he-recession** / she-austerity hypothesis (Rubery, 2015)

The crisis produced a downward convergence of male labour market performance that led to a (far from desirable) reduction of gender inequalities:

- male employment rates declined more
- female unemployment increased less
- the share of temporary and part-time male employment increased

This was mainly the result of existing sectorial gender segregation, with men disproportionately employed in the sectors more hit by the crisis (manufacturing, construction) and women sheltered by more protected sectors (public sector in particular)

(Bettio and Verashchagina, 2014; Perugini, 2016; Addabbo *et al.*, 2015; Ferreira 2014; Gonzales Gago and Segales Kirzner, 2014)

Existing knowledge and evidence (ii)

(ii) he-recession / **she-austerity** hypothesis (Rubery, 2015)

- the other side of the coin is that austerity is also expected to produce gendered effects, since fiscal consolidation measures are typically and primarily targeted to the public sector (EPSU, 2016)

- empirical evidence on the link between austerity and employment/unemployment gender gap is scanty (Perivier, 2016; 6 EU countries, mixed results, only descriptive aggregate evidence)

- almost inexistent is the quantitative evidence on the effects of austerity on wages and limited to the effects on raw GWG produced by measure affecting public wages (e.g., Stoiciu, 2012, for Romania; Fulton, 2011, for Latvia)

- the indirect impact of austerity on gender wage gap, driven by their effects on female labour supply, are left completely unexplored empirically

Existing knowledge and evidence (iii)

(iii) austerity, female labour supply and employers responses

- Many measures reduced the incentives to labour market participation of women (e.g. reduction of incentives for second earners); this is likely to challenge financial security and independence of women, therefore reinforcing the traditional male-centred family model (MacLeavy, 2011)
- Cutting budgets for care policies aimed at providing an alternative to women's unpaid labour (e.g., child and elderly care, social services), could negatively impact effort, flexibility and availability of female labour (Rubery and Raferty, 2014)

Working hypotheses

Austerity impacts on the “quality” of labour supplied by women

In the presence of gender asymmetries in the family workload, austerity may negatively impact on the effort/flexibility/availability of female labour, since women are likely to be forced to devote more time/effort to unpaid family tasks

This impacts:

- On their bargaining power vis-à-vis the employer
- On their capacity to attain high-paid jobs (in high-paid sectors/occupations) requiring flexibility/effort
- On the expected average and variability of productivity of women to which employers, in conditions of uncertainty and asymmetric information, rationally react by paying lower wages (statistical discrimination)

3. Data and Descriptive Evidence

(a) Data: Microdata

- **EU Silc** cross-section datasets, reference years from 2010 to 2013; longitudinal dataset (2010-2013)
- **28 EU countries**
- **Income measure:** hourly earnings from dependent employment (2015 Euro ppp)
- **Individual control variables:** gender, age, education, marital status, health status, localisation (urban/non-urban region), second job, part-time, employment status (permanent or temporary), occupation, sector and firm size

Sample: 1,304,520 individuals (16-65). Of them, 677,702 are employed as dependent workers (trimming: negative and zero incomes; 1% of lower/top hourly earnings). The remaining 626,818 (not in employment, in education, self-employed or retired) are used in the estimates to account and correct for sample selection bias.

(a) Data: Data on austerity policies

Two main approaches exist in the literature:

- **Narrative Approach**
- **CAPB** (cyclically adjusted primary balance)

Due to our extensive country/time coverage, we opt for the CAPB approach, after having acknowledged (and partly addressed) its shortcomings, related to the fact that CAPB changes might reflect:

- one-offs (Koen and van den Noord, 2005)
- growth surprises (Larch and Salto, 2005)
- fluctuations on the revenues side due to the dynamics of asset prices (Girouard and Price, 2004)

Identification issues are less important here; we adjust the CAPB for the effects of one-off budget operations using the Ameco database, which provides information on the structural (i.e., net of one-offs and temporary measures) balance of general government (excluding interests), with cyclical adjustment based on potential GDP excessive deficit procedure (see Mourre *et al.*, 2003).

(b) Descriptive evidence: GWG and its components

To describe levels and components of the GWG in EU-28, we make use of a standard OB decomposition, which measures:

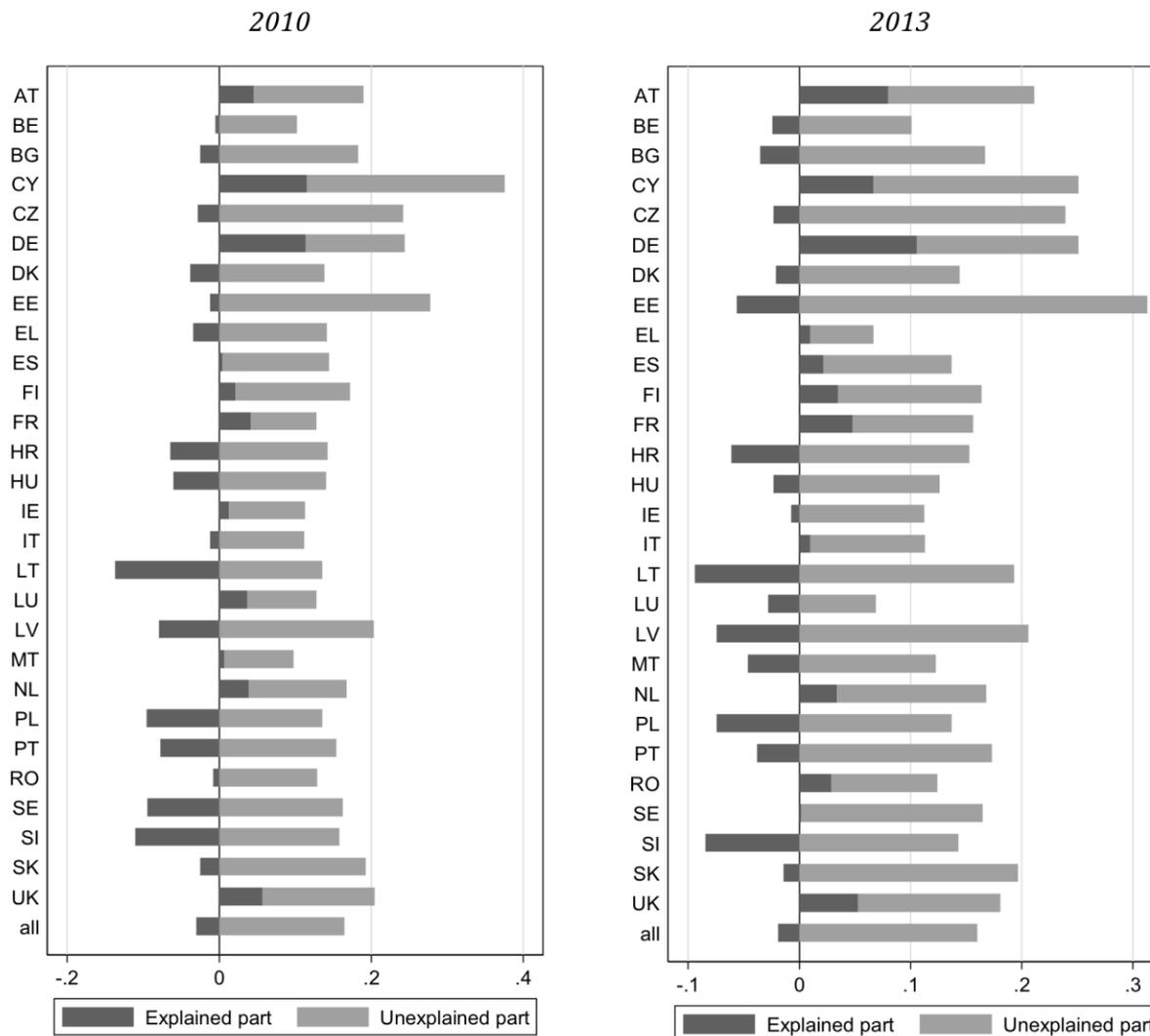
- The raw GWW
- The adjusted GWG (unexplained part of the gap)
- The part of the gap due to differences in the characteristics of the gender groups

$$\underbrace{\bar{y}^M - \bar{y}^F}_{\text{Unadjusted pay gap}} = \underbrace{(\bar{X}_k^M - \bar{X}_k^F)' \theta_k^*}_{\text{Explained part of the gap}} + \underbrace{(\bar{X}_k^{M'} (\theta_k^M - \theta_k^*) + \bar{X}_k^{F'} (\theta_k^* - \theta_k^F))}_{\text{Unexplained part of the gap (adjusted pay gap)}}, \quad k=1, 2, \dots, K. \quad [1]$$

In the OB decomposition exercise, as in all estimates, we control for selection effects, as the selection of employees from the sample of working age individuals could be non-random and therefore produce biases in the estimation of the coefficients from the wage equations

(b) Descriptive evidence: GWG and its components

Figure 1: Explained and unexplained gender wage gap in EU-28 countries (2010 and 2013)



Note: Our elaborations on EU-SILC data

(b) Descriptive evidence: GWG and its components

Table 1: Blinder-Oaxaca decomposition of the gender wage gap (Pooled sample EU-28 countries)

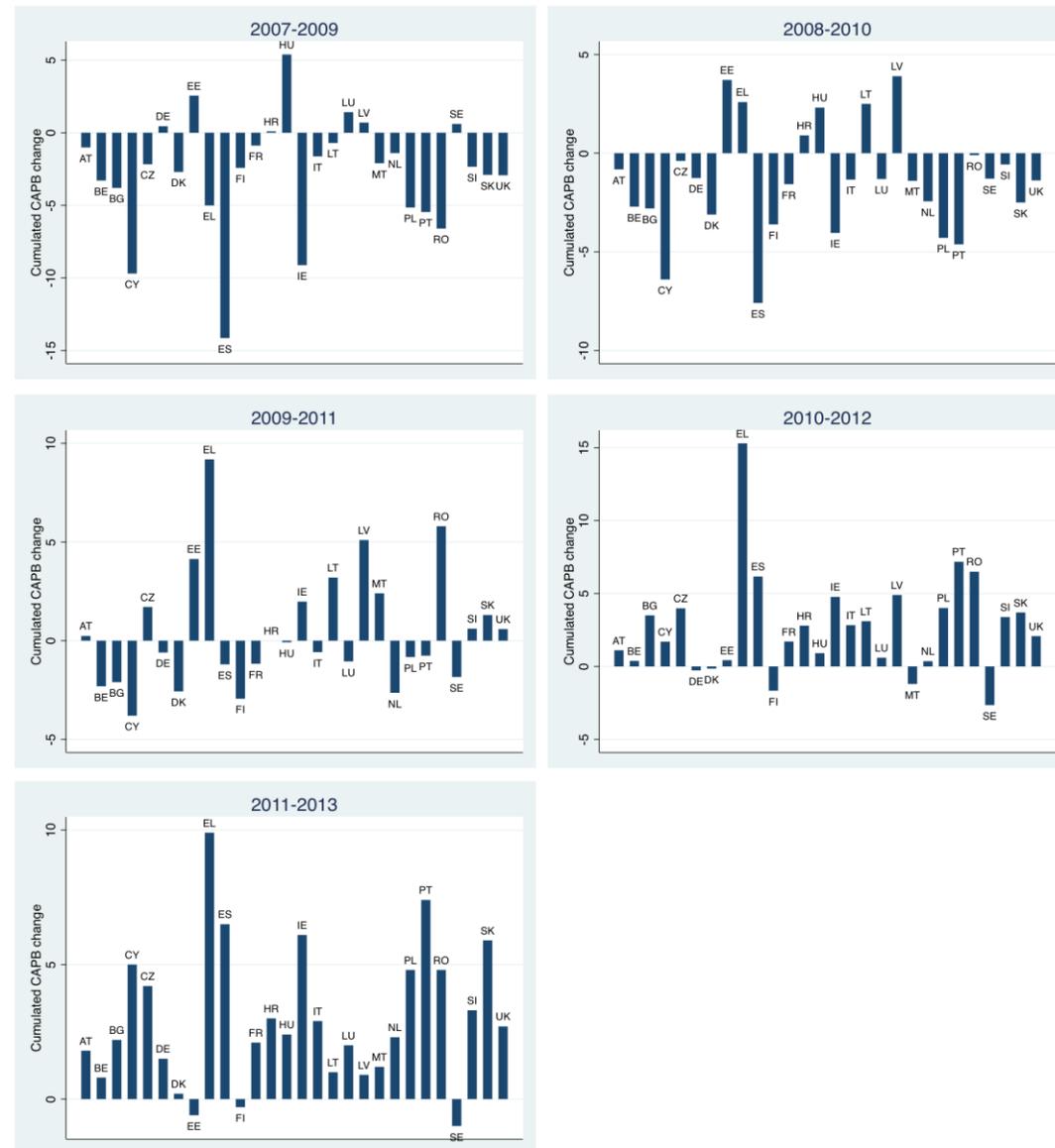
	Overall		2010		2011		2012		2013	
Male log wages	2.435***	(0.001)	2.434***	(0.002)	2.436***	(0.002)	2.435***	(0.002)	2.436***	(0.002)
Female log wages	2.299***	(0.001)	2.298***	(0.002)	2.300***	(0.002)	2.299***	(0.002)	2.300***	(0.002)
Difference	0.136***	(0.002)	0.136***	(0.003)	0.137***	(0.003)	0.136***	(0.003)	0.137***	(0.003)
Explained	-0.027***	(0.002)	-0.029***	(0.003)	-0.029***	(0.003)	-0.026***	(0.003)	-0.024***	(0.003)
Unexplained	0.163***	(0.001)	0.165***	(0.002)	0.166***	(0.002)	0.162***	(0.002)	0.160***	(0.002)
Explained part										
age	-0.006***	(0.000)	-0.006***	(0.000)	-0.006***	(0.000)	-0.006***	(0.000)	-0.006***	(0.000)
health	0.001***	(0.000)	0.001***	(0.000)	0.000***	(0.000)	0.000***	(0.000)	0.001***	(0.000)
urban	-0.001***	(0.000)	-0.001***	(0.000)	-0.001***	(0.000)	-0.001***	(0.000)	-0.001***	(0.000)
married	0.001***	(0.000)	0.000***	(0.000)	0.001***	(0.000)	0.001***	(0.000)	0.001***	(0.000)
edu	-0.016***	(0.000)	-0.016***	(0.000)	-0.016***	(0.000)	-0.015***	(0.000)	-0.015***	(0.000)
occupation	-0.026***	(0.001)	-0.024***	(0.001)	-0.028***	(0.001)	-0.026***	(0.001)	-0.026***	(0.001)
sector	0.018***	(0.000)	0.014***	(0.001)	0.019***	(0.001)	0.021***	(0.001)	0.021***	(0.001)
temp1	0.003***	(0.000)	0.003***	(0.000)	0.002***	(0.000)	0.002***	(0.000)	0.003***	(0.000)
partime	-0.007***	(0.000)	-0.010***	(0.001)	-0.006***	(0.001)	-0.005***	(0.001)	-0.006***	(0.001)
secjob	-0.000***	(0.000)	-0.000	(0.000)	-0.000	(0.000)	-0.000**	(0.000)	-0.000	(0.000)
size	0.006***	(0.000)	0.006***	(0.000)	0.006***	(0.000)	0.005***	(0.000)	0.006***	(0.000)
IMR	0.001***	(0.000)	0.001***	(0.000)	0.001***	(0.000)	0.001***	(0.000)	0.001***	(0.000)
country	-0.000	(0.001)	0.004	(0.002)	-0.001	(0.002)	-0.003	(0.002)	-0.002	(0.002)
time	0.000***	(0.000)	-		-		-		-	
Observations	677,902		171,455		173,125		166,362		166,960	

*Note: Robust standard errors in parentheses. Unexplained part of the gap detailed analysis available upon request. ***, ** and*

** denote significance at the 1, 5 and 10 per cent level, respectively.*

Figure 2: Austerity plans in Euro-28 countries, 2007-2013 (three years cumulative CAPB changes)

(b)
Descriptive evidence:
Austerity in EU-28 in
times of crisis



Note: Our elaborations on AMECO and OECD (2016) data

4. Austerity and GWG: Methods

(b) Empirical model and methods: Austerity and GWG

The raw (unadjusted) gender pay gap does not account for many characteristics relevant in shaping male and female earnings.

The adjusted gender pay gap (discrimination) is then estimated by the size of the coefficient of a gender dummy (once all other drivers of wage levels are controlled for):

$$lhwage_{ik} = cons_{ik} + a_n X_{ik} + b_1 female_{ik} + b_2 female_{ik} \times AUS_k + u_k + l_t + u_k \times l_t + u_{ik}$$

- OLS with country, year and country*year fixed effects (Bryant and Jenkins, 2013)
- The adjusted GWG (discrimination) is measured by the size of the coefficient β_1
- The effect of Austerity (lagged) on the GWG is estimated by means of the interaction variable and measured by β_2 : if negative, austerity exacerbates the GWG (and vice versa)
- Robustness check: difference-in-difference model on a subset of countries, using longitudinal sample

$$lhwage_{ikt} = cons + a X_{ikt} + b_1 female_{ikt} + b_2 female_{ikt} \times T_{2013} + b_3 female_{ikt} \times TG_k + b_4 female_{iky} \times T_{2013} \times TG_k + u_k + l_t + u_k \times l_t + u_{ikt}$$

$$\beta_4 = [(AGWG_{13} - AGWG_{10})_{TG} - (AGWG_{13} - AGWG_{10})_{CG}]$$

(b) Empirical model and methods: Austerity and horizontal segregation

Since the unbalanced distribution into sectors of male/female employment accounts for a notable part of the (unadjusted) GWG, we investigate whether austerity also impacts on the probability of being employed in high/low pay sectors.

$$\text{sector}(v)_{ik} = a_n X_{ik} + b_1 \text{female}_{ik} + b_2 \text{female}_{ik} \times \text{AUS}_k + u_k + I_t + u_k \times I_t + U_{ik}$$

- Ordered logit model: Dependent variable (sector) is a ordered variable ranging from 1 (lowest pay sectors) to 5 (highest pay sectors)
- β_1 indicates whether being a woman increases (if +) or decreases (if -) the probability of being employed in high-pay sectors
- β_2 indicates whether austerity measures impact on this main (gender) effect. if negative, austerity decreases the probability of women to be employed in high-pay sectors (and vice versa)

All estimations correct for sample selection bias.

5. Results

Table 1. The effects of austerity measures on the gender wage gap (yearly and cumulative CAPB changes)

	(1)	(2)	(3)	(4)	(5)	(6)
Female	-0.163 *** (0.001)	-0.162 *** (0.001)	-0.164 *** (0.001)	-0.166 *** (0.001)	-0.163 *** (0.001)	-0.164 *** (0.001)
Female*AUS_L1		-0.001 *** (0.001)				
Female*AUS_L2			-0.003 *** (0.001)			
Female*AUS_L3				-0.004 *** (0.001)		
Female* AUS_p_2_L1					-0.001 *** (0.000)	
Female*AUS_p_3_L1						-0.001 *** (0.000)
Married	0.030 *** (0.001)					
Age	0.224 *** (0.006)	0.219 *** (0.006)	0.224 *** (0.006)	0.223 *** (0.006)	0.223 *** (0.006)	0.223 *** (0.006)
Age2	-0.018 *** (0.001)	-0.017 *** (0.001)	-0.018 *** (0.001)	-0.018 *** (0.001)	-0.018 *** (0.001)	-0.018 *** (0.001)
Health status	-0.015 *** (0.001)					
Secondary Ed.	0.083 *** (0.002)	0.082 *** (0.002)	0.083 *** (0.002)	0.082 *** (0.002)	0.083 *** (0.002)	0.083 *** (0.002)
Tertiary Ed.	0.216 *** (0.002)	0.214 *** (0.002)	0.216 *** (0.002)	0.215 *** (0.002)	0.216 *** (0.002)	0.216 *** (0.002)
Full-time	-0.037 *** (0.002)	-0.036 *** (0.002)	-0.036 *** (0.002)	-0.037 *** (0.002)	-0.036 *** (0.002)	-0.036 *** (0.002)
Second Job	-0.028 *** (0.010)	-0.029 *** (0.010)	-0.028 *** (0.010)	-0.028 *** (0.010)	-0.028 *** (0.010)	-0.028 *** (0.010)
Permanent	0.115 *** (0.002)					
Firm size (11-49)	0.064 *** (0.001)	0.063 *** (0.001)	0.064 *** (0.001)	0.064 *** (0.001)	0.064 *** (0.001)	0.064 *** (0.001)
Firm size (over 50)	0.151 *** (0.001)					
Urban	0.037 *** (0.001)	0.036 *** (0.001)	0.037 *** (0.001)	0.037 *** (0.001)	0.036 *** (0.001)	0.036 *** (0.001)
Constant	1.925 *** (0.017)	1.937 *** (0.017)	1.491 *** (0.017)	1.918 *** (0.017)	1.924 *** (0.017)	1.921 *** (0.017)
Obs	677,702	677,702	677,702	677,702	677,702	677,702
Adj. R-Squared	0.696	0.695	0.696	0.696	0.696	0.696

(a) Wage Equation

- Average adjusted GWG is 16.3%
- The drivers of wages all have the expected signs

(b) Austerity and GWG (i) - AUS as continuous var**Table 2. The effects of austerity measures on the gender wage gap (yearly and cumulative CAPB changes)**

	(1)	(2)	(3)	(4)	(5)	(6)
Female	-0.163 *** (0.001)	-0.162 *** (0.001)	-0.164 *** (0.001)	-0.166 *** (0.001)	-0.163 *** (0.001)	-0.164 *** (0.001)
Female*AUS_L1		-0.001 *** (0.001)				
Female*AUS_L2			-0.003 *** (0.001)			
Female*AUS_L3				-0.004 *** (0.001)		
Female* AUS_p_2_L1					-0.001 *** (0.000)	
Female*AUS_p_3_L1						-0.001 *** (0.000)
.....						
.....						
Obs	677702	677702	677702	677702	677702	677702
Adj. R-Squ	0.696	0.695	0.696	0.696	0.696	0.696

Note: All estimations include: sector, occupation, country, year and country*year dummies; sample selection correction.

Robust standard errors in parentheses. ***, ** and * denote significance at the 1, 5 and 10 per cent level, respectively.

- Austerity exacerbates the adjusted GWG

(b) Austerity and GWG (ii) – AUS as dummy var**Table 3. The effects of austerity measures on the gender wage gap (yearly and cumulative CAPB changes as a dummy variable)**

	(1)	(2)	(3)	(4)	(5)
Female	-0.159 *** (0.001)	-0.158 *** (0.001)	-0.162 *** (0.001)	-0.159 *** (0.001)	-0.156 *** (0.001)
Female*AUS_d_L1	-0.008 *** (0.002)				
Female*AUS_d_L2		-0.018 *** (0.002)			
Female*AUS_d_L3			-0.008 *** (0.002)		
Female* AUS_p_2_d_L1				-0.014 *** (0.002)	
Female*AUS_p_3_d_L1					-0.027 *** (0.002)
.....					
.....					
Obs	677702	677702	677702	677702	677702
Adj. R-Squ	0.696	0.696	0.696	0.696	0.696

Note: All estimations include: sector, occupation, country, year and country*year dummies; sample selection correction.

Robust standard errors in parentheses. ***, ** and * denote significance at the 1, 5 and 10 per cent level, respectively.

- AUS_d = 1 if CAPB change > 0.5%; AUS_p_d = 1 if CAPB change > 1%
- The effect of austerity is larger

(b) Austerity and GWG (iii) – TAX based and EXP based austerity separately**Table A3. The effects of tax based and expenditure based austerity measures on the gender wage gap (yearly and cumulative CAPB changes as a dummy variable)**

	(1)	(2)	(3)	(4)	(5)
Female	-0.159 *** (0.001)	-0.158 *** (0.001)	-0.162 *** (0.001)	-0.159 *** (0.001)	-0.156 *** (0.001)
Female*EB_AUS_d_L1	-0.007 *** (0.003)				
Female*TB_AUS_d_L1	-0.009 *** (0.002)				
Female*EB_AUS_d_L2		-0.021 *** (0.003)			
Female*TB_AUS_d_L2		-0.017 *** (0.003)			
Female*EB_AUS_d_L3			-0.022 *** (0.003)		
Female*TB_AUS_d_L3			0.003 (0.003)		
Female*EB_AUS_p_2_d_L1				-0.016 *** (0.003)	
Female*TB_AUS_p_2_d_L1				-0.012 *** (0.002)	
Female*EB_AUS_p_3_d_L1					-0.026 *** (0.004)
Female*TB_AUS_p_3_d_L1					-0.027 *** (0.002)
Test (F) EB_AUS=TB_AUS	0.59	1.11	31.55 ***	1.39	0.03
Obs	677702	677702	677702	677702	677702
Adj. R-Squ	0.696	0.696	0.696	0.696	0.696

Note: All estimations include: sector, occupation, country, year and country*year dummies; sample selection correction. Robust standard errors in parentheses. ***, ** and * denote significance at the 1, 5 and 10 per cent level, respectively.

- Both EXP and REV-based austerity worsens the GWG; EXP tends to be stronger

(c) Austerity and GWG (iii) – Differences in Differences

	(1)	(2)	(3)
Female	-0.181 *** (0.018)	-0.166 *** (0.019)	-0.173 *** (0.019)
Female*year 2013	0.039 * (0.022)	0.028 (0.024)	0.028 (0.024)
Female* TG	0.024 (0.025)	0.020 (0.026)	0.016 (0.025)
Female* TG*year 2013	-0.081 ** (0.034)	-0.071 ** (0.035)	-0.066 ** (0.032)
Married	-0.012 (0.009)	-0.010 (0.010)	-0.017 * (0.009)
Age	0.123 ** (0.048)	0.011 (0.050)	0.066 (0.048)
Age2	-0.001 (0.005)	0.011 * (0.006)	0.005 (0.005)
Health Status	-0.013 ** (0.006)	-0.001 (0.006)	-0.017 *** (0.006)
Secondary Ed.	0.046 ** (0.022)	0.041 * (0.023)	0.076 *** (0.020)
Tertiary Ed.	0.056 ** (0.023)	0.040 (0.025)	0.078 *** (0.022)
Permanent	0.458 *** (0.017)	0.450 *** (0.017)	0.441 *** (0.016)
Urban	0.048 *** (0.009)	0.039 *** (0.009)	0.043 *** (0.009)
_cons	1.391 *** (0.108)	1.593 *** (0.112)	1.534 *** (0.108)
Obs	18,527	17,435	19,206
Adj. R-Squared	0.422	0.412	0.418

The coefficient of 'Female* TG*year 2013' measures: $[(AGWG_{13}-AGWG_{10})_{TG} - (AGWG_{13}-AGWG_{10})_{CG}]$

Columns: (i) Treatment Group: CZ, IE, ES, EL; Control Group: BE, DK, FI, SE, PL. (ii) Treatment Group CZ, IE, ES, EL; Control Group: DK, FI, SE, PL. (iii) Treatment Group CZ, IE, ES, EL, PT; Control Group: BE, DK, FI, SE, PL.

- Diff—in diff estimates confirm the detrimental effect of austerity on the GWG

(d) Austerity and Horizontal Segregation (i)**Table 4. Austerity plans and sectoral gender segregation**

Dep. Var: sectors ordered by increasing average wage	(1)	(2)	(3)	(4)
Female	-0.015 ** (0.006)	-0.013 ** (0.006)	-0.015 ** (0.006)	-0.013 ** (0.006)
Female*p_AUS_2_d_L1	-0.114 *** (0.009)			
Female*p_AUS_3_d_L1		-0.144 *** (0.010)		
Female*EB_AUS_p_2_d_L1			-0.177 *** (0.014)	
Female*TB_AUS_p_2_d_L1			-0.076 *** (0.011)	
Female*EB_AUS_p_3_d_L1				-0.162 *** (0.018)
Female*TB_AUS_p_3_d_L1				-0.137 *** (0.011)
.....				
.....				
Test (Chi2) EB_AUS=TB_AUS			41.41 ***	1.59
Obs	677702	677702	677702	677702
Pseudo R-Squ	0.0719	0.0719	0.0719	0.0719

- Women have lower probability to be employed in high-pay sectors
- Austerity further decreases this probability

(e) Austerity and Horizontal Segregation (ii) – Robustness check (no job expl. variables)**Table A4. Austerity plans and sectorial gender segregation (no job variables)**

Dep. Var: sectors ordered by increasing average wage	(1)	(2)	(3)	(4)
Female	-0.050 *** (0.005)	-0.043 *** (0.005)	-0.050 *** (0.005)	-0.043 *** (0.005)
Female*AUS_p_2_d_L1	-0.067 *** (0.009)			
Female*AUS_p_3_d_L1		-0.103 *** (0.010)		
Female*EB_AUS_p_2_d_L1			-0.104 *** (0.014)	
Female*TB_AUS_p_2_d_L1			-0.045 *** (0.011)	
Female*EB_AUS_p_3_d_L1				-0.080 *** (0.018)
Female*TB_AUS_p_3_d_L1				-0.110 *** (0.011)
Test (Chi2) EB_AUS=TB_AUS			14.03 ***	2.36
Obs	677702	677702	677702	677702
Pseudo R-Squ	0.0352	0.0352	0.0352	0.0352

- Results are confirmed: austerity exacerbates horizontal segregation

6. Discussion and Final Remarks

6. Summary and Final Remarks

- Austerity measures, by imposing heavier family loads on women, probably decreased their ability to provide the expected level of effort, continuity and flexibility
- This is likely to have impacted on their bargaining power, on their expected productivity and on their ability to reach high-pay jobs
- In the long run, this is likely to lead to reinforcement of male breadwinner model, by driving a gendered division of labour within the family
- To do: due to the lagged effect of austerity on the gender gap, extension of the time dimension; effects of specific austerity measures