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Gender earning gaps around the world: a study of 64 countries

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Abstract

Purpose – The purpose of this paper is to analyze gender disparities in labor earnings for a comprehensive set of 64 countries.

Design/methodology/approach – Using the methodological approach proposed by Ñopo, socio-demographic characteristics are used to match males and females such that gender earnings disparities are computed only among individuals with the same observable characteristics.

Findings – Disparities are partially attributed to gender differences in observable socio-demographic and job characteristics. After matching males and females with the same characteristics, the authors found that the earnings gap falls within a range between 8 per cent and 48 per cent of average females' earnings, being more pronounced in South Asia and Sub-Saharan Africa. The unexplained earnings gaps are more pronounced among part-time workers and those with low education levels.

Originality/value – This paper presents a comprehensive view of gender earnings gaps in the world, simultaneously exploring many of the issues highlighted in the related literature. It adds value by exploring gender gaps in a comparative perspective, applying the same methods for several different countries.

Keywords Gender, Remuneration, Earnings, Pay, Wage gaps, Matching

Paper type Research paper

1. Introduction and literature review

The literature on gender disparities has been abundant. Several pieces have examined not only the magnitude but also the reasons behind earnings gaps between men and women, its persistence, evolution, and its impact on economic welfare and development. Among the aspects that have been usually attributed to explain the differences are the personal and job characteristics of women (age, education, experience, occupation, working time, job status, type of contract), the labor market structure (occupational segregation by gender, level of formality), and institutional, cultural and social norms, and traditions. The literature varies not only in terms of methodologies and results, but also in the policy recommendations aimed to improve the opportunities and economic participation of women. This paper pretends to contribute to this literature providing a comprehensive view of earnings disparities in

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the world, comparing different regions with the same methodological approach and attempting to identify commonalities across the globe.

We made a descriptive analysis of the data set by regions regarding gender socio-demographic and labor characteristics, then, we use Ñopo (2008) matching procedure to compute and analyze the wage gap, attributing disparities to these characteristics. But first, in this section, we briefly summarize the literature by world's regions highlighting only some relevant pieces for our endeavor. We also provide an appendix that contains a more comprehensive table (but by no means exhaustive) of the literature reviewed with summaries for each reviewed paper.

Globally, one of the first patterns that arise is that economic development or market liberalization does not mean narrower gender differences. Different studies have shown that there is no relationship between economic growth and the narrowing of earnings gaps against women (Hertz *et al.*, 2008; Blau and Kahn, 2003; Tzannatos, 1999). This result has been robust to different methodologies and data sets. Weichselbaumer *et al.* (2007) report that the unexplained component of the gender gap, estimated with Oaxaca-Blinder decompositions, has been negatively related with further liberalization of markets.

Other reasons that have been found to be linked to gender earnings disparities are: sectorial segregation to lower wage sectors against women (Tzannatos, 1999), lower female net supply and wage structure (Blau and Kahn, 2003), labor market liberalization and institutional frame in each country (Weichselbaumer *et al.*, 2007; Blau and Kahn, 2003; Cornish, 2007; Tzannatos, 1999), among others.

The magnitude and heterogeneity of the gender earnings gap notoriously varies across studies. Blau and Kahn (2003) report that the gap is as low as 14.4 percent for Slovenia and as high as 85 percent for Japan. Along with Japan, Switzerland, USA, Great Britain, and Russia also show high gender earnings disparities in this study. On the lowest extreme of gender gaps, along with Slovenia, many other eastern European countries can be found. Loutfi (2001) reports gender earnings disparities shows on a range that goes from 53.5 percent (Republic of Korea) to 106 percent (Swaziland), with all other countries varying in a range between 65 and 92 percent. The countries in the OECD did not have a significant narrower wage gap than other countries with similar development levels. Hausmann *et al.* (2010) report Oceania as the region with the lowest gender earnings gap and North America, the UK, and Asia on the other extreme with the highest gaps. Some brief accounts of the literature by region are summarized as follows:

- *Sub-Saharan Africa (SSA): different endowments, different opportunities*. Labor force education, work allocation with gender selection, and different unemployment rates by gender seem to be the key drivers of gender earnings disparities in this region. For instance, in Ethiopia, education accounts for around one-fifth of pay differences and it works as a passport to enter into the public sector, a sector that offers better wages and labor conditions (Kolev and Suarez, 2010; Suárez, 2010). For a more comprehensive set of countries, it has been found an important role for education on reducing wage differences (Kolev and Sirven, 2010). It has been also reported that women tend to work more hours than men but they tend to be found more often among unpaid family workers and domestic workers (Suárez, 2010; Wodon and Ying, 2010). Unemployment is more prevalent among women but the relationship between education and unemployment has not been conclusive (Nordman *et al.*, 2010). All in all, almost one-half of observed gender earnings disparities fail to be explained by observable characteristics.

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- *Europe and Central Asia (ECA): transition economies with segregation*. The economic and political transition of last decades has received special attention in the ECA region. Most studies agree on the relative improvement of females' wages in most countries of the region (Brainerd, 2000). Increased wage inequality in eastern Europe have worked toward depressing female relative wages, but these losses have been more than offset by gains in rewards to observed skills and by a decline in the unobservable component of the earnings gap. Still, female segregation into low-wage occupations emerges as the main contributor to the gender pay gap (Simon). Along similar lines, the public-private divide seems to play an important role as well. When controlling for observed characteristics and sample selection, public administration wages are higher than private sector wages in the case of men, except at the university level where the wages are equal. State-owned enterprises' wages are higher than those in the private sector. Further, while wages of men and women are at parity in the public administration sector, there is a large gender wage-gap in the private sector in favor of men (Tansel, 2004)
- *East Asia and the Pacific (EAP): the impact of the economic and political reforms*. It has been documented that the economic liberalization policies of 1986 did not have an important effect on reducing the gender wage gap. For the last decades there is no clear agreement on the tendency that the gender earnings gaps have followed. The overall difference shave narrowed but the unexplained component of the gap, overall, has not (Liu, 2001, 2003; Son, 2007). The results seem to show that it has reduced in some percentiles of the earnings distribution (Pham and Reilly, 2006). The reduction of the gap, when observed, has been mainly due to a reduction on observed gender differences in characteristics. However, the unexplained component of the earnings gap seems to be explaining most of the observed gaps. Education also plays an important role in explaining wage differentials in this region. In Indonesia it has been documented that earnings disparities by gender shows an inverted U profile with respect to education (Pirmana, 2006). The evidence for Mongolia shows that early career wages are not different between genders. Despite this, on later stages of their careers women earn less than males, but higher educated women partially overcome such gap (Pastore, 2010).
- *Western Europe: occupational and industry segregation*. Part of the literature shows that wage differentials are mainly explained by the female segregation into low-wage jobs (Daly *et al.*, 2006), but it has also been documented the existence of significant inter-industry wage differentials in all countries for both sexes (Ganon *et al.*, 2005). Other studies support the idea that gender pay gaps are typically bigger at the top of the wage distribution and that the gender pay gap differs significantly across the public and private sector wage distribution of each country (Arumpalam *et al.*, 2004).

This paper presents a comprehensive view of gender earnings gaps in the world, simultaneously exploring many of the issues highlighted in this brief literature review. This will be done, however, with the advantage of exploring them from a comparative perspective, applying the same methods for all data across the world. In order to perform such world comparison, the data from different sources (national household surveys) is harmonized first, making them comparable. This is shown in the next section. After that, the main section of this paper is devoted to the comparison of unexplained gender earnings gaps for different world regions. Next, an attempt

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of linking unexplained gender earnings gaps to some political and social world indicators is made and finally the paper closes with some brief concluding remarks.

2. The data

This exercise of gender earnings gaps decompositions has been performed for 64 countries. The data sources have been any sort of nationally representative household survey available with information on labor earnings and observable characteristics of the individuals and their jobs[1]. The countries have been grouped into regions: EAP, ECA, Middle East and North Africa (MENA), South Asia (SA), western Europe and SSA. Note that this paper does not include the Latin America and the Caribbean (LAC) regions[2]. The data from all countries was pooled restricting the analysis to working individuals between 18 and 65 years old, reporting positive earnings at their main activity and with no missing information on their demographic characteristics.

The demographic characteristics considered for the analysis are: age, region (urban/rural), education (measured in levels), marital status, and presence of children (younger than 12 years old) at the household, presence of elderly (older) than 65 years old at the household, and presence of other household members who generate labor income. On top of these demographics, information on job characteristics has also been used: hours of work per week, employment status, occupation, economic sector, and formality (social security coverage). Labor hourly earnings have been expressed in constant 2008 dollars using PPP-corrected exchange rates and GDP deflators. All labor characteristics considered in the analysis, including earnings, have been considered only for the main occupation. The expansion factors from each survey have been used such that when pooling all data the number of expanded observations per country is proportional to their corresponding population sizes.

Not all the surveys have the same individuals' information. Hence, the estimations have been carried out for two groups of countries based on data availability. The first group, the full set of countries, uses formality as control variable. This comprises 21 countries from SSA, MENA, ECA, and EAP regions. The second group allows controlling for economic sector; this group comprises 14 countries from SA and western Europe regions[3]. The whole countries in the analyses allow the inclusion of the hours of work per week and type of employment and occupation, variables.

Table I displays the list of available countries on each group classified by region, including the number of available observations (i.e. those that remain after dropping observations with missing values, zero labor income, or those out of the range 18-65 years old) after sequentially adding hours of work per week, type of employment, occupations, economics sector, and formality into the analysis.

Table II show descriptive statistics by region. Table II presents the descriptive statistics regarding the demographic set of variables; Table II presents the job-related variables. In most cases the descriptive statistics are shown for the full set of variables. The descriptive statistics obtained for the more restricted sets of variables (i.e. those including more comprehensive sets of countries) depict similar results[4].

Regarding the gender composition of the labor force it is possible to distinguish three groups of regions. First, MENA and SA show more than 70 percent of males on their active labor force; second, SSA have around 60 percent of males; third, ECA and western Europe have only slightly more males than females; and fourth EAP show slightly less males than females on their labor force. Regarding the urban/rural split and gender composition MENA highlights. While almost half of working males in this region are located in urban areas, it is nine out of ten females who do so. In all other

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Region	Country	Year	Set					Observations[a]	Weighted observations
			+ hours of work	+ type of employment	+ occupation	+ economic sector	Full set		
SSA	Cote D'ivoire	2002	X	X				8,835	1,848,307
	Cameroon	2007	X	X				9,942	3,542,248
	Comoros	2004	X	X	X	X	X	1,939	63,388
	Congo	2005	X	X	X	X	X	7,442	6,180,549
	Ethiopia	2005	X	X				20,663	2,014,380
	Gabon	2005	X	X				7,918	300,853
	Ghana	2005	X	X	X	X	X	8,653	4,518,128
	Kenya	2005	X	X	X	X		7,284	3,966,704
	Madagascar	2001	X	X	X	X	X	2,731	1,227,875
	Mozambique	1996	X	X	X	X		1,877	526,543
	Mauritania	2000	X	X				3,602	178,802
	Mauritius	2003	X	X	X	X		9,069	9,069
	Malawi	2005	X	X				3,056	718,149
	Niger	2002	X	X				1,515	60,348
	Nigeria	2003	X	X	X	X	X	1,745	3,217,024
	Rwanda	2005	X	X	X	X		3,569	887,725
	Chad	2002	X	X				4,943	918,357
	Tanzania	2006	X	X	X	X	X	11,707	5,524,172
	Uganda	2005	X	X	X	X		3,271	2,301,786
	No. of countries		19	19	11	11	6		
	Total							119,761	38,004,407
MENA	Egypt	1998	X	X	X	X		2,873	6,622,328
	Morocco	1991	X	X	X			1,900	2,607,931
	Tunisia	2001	X	X	X	X	X	25,520	1,249,731
	Yemen	2005	X	X	X	X	X	7,158	1,241,521
	No. of countries		4	4	4	3	2		
	Total							37,451	11,721,511
ECA	Albania	2002	X	X	X	X	X	2,155	416,072

(*continued*)

Table I.
Available countries by set and region

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Table I.

Region	Country	Year	Set: +hours of work	Set: +type of employment	Set: +occupation	Set: +economic sector	Set: Full set	Observations[a]	Weighted observations
	Bulgaria	2008	X	X	X	X	X	3,689	2,539,627
	Bosnia and Herzegovina	2001	X	X	X	X	X	3,482	669,402
	Czech Republic	2008	X	X	X	X	X	7,990	3,074,162
	Estonia	2008	X	X	X	X	X	4,978	552,748
	Croatia	2004	X	X	X	X	X	4,831	1,083,146
	Hungary	2008	X	X	X	X	X	7,142	3,241,095
	Kyrgyzstan	1997	X	X				2,238	915,574
	Lithuania	2008	X	X	X	X		4,826	1,425,343
	Latvia	2008	X	X	X	X	X	4,478	844,832
	Moldova	2002	X	X	X	X	X	3,541	843,473
	Montenegro	2006	X	X				555	112,875
	Poland	2008	X	X	X	X	X	7,754	8,747,305
	Romania	2008	X	X	X	X		6,242	7,408,127
	Russia	2003	X	X	X	X		28,219	36,900,000
	Slovakia	2008	X	X	X	X	X	6,480	2,120,510
	Tajikistan	2003	X	X	X	X	X	4,664	1,202,027
	Turkey	2005	X	X				70,785	70,785
	No. of countries		18	18	15	15	12		
	Total							174,049	72,167,103
SA	Maldives	2004	X					1,427	25,808
	Nepal	2003	X	X	X	X		442	537,722
	No. of countries		2	1	1	1			
	Total							1,869	563,530
EAP	Micronesia	2000	X	X				12,330	12,330
	Indonesia	2002	X	X				104,811	28,200,000
	Cambodia	2004	X	X	X	X		7,466	1,238,972

(*continued*)

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Region	Country	Year	Set + hours of work	+ type of employment	+ occupation	+ economic sector	Full set	Observations[a]	Weighted observations
	Mongolia	2002	X	X	X	X	X	2,631	403,883
	Vietnam	2002	X	X	X	X		24,502	14,800,000
	No. of countries		5	5	3	3	1		
	Total							151,740	44,655,185
Western Europe	Austria	2008	X	X	X	X		5,243	3,289,700
	Belgium	2008	X	X	X	X		5,732	4,031,928
	Cyprus	2008	X	X	X	X		4,091	350,609
	Germany	2008	X	X	X	X		11,324	33,800,000
	Denmark	2008	X	X	X			11,324	33,800,000
	Spain	2008	X	X	X	X		13,025	18,000,000
	Finland	2008	X	X	X	X		11,913	2,240,843
	Greece	2008	X	X	X	X		5,820	4,113,921
	Ireland	2008	X	X	X	X		4,124	1,671,177
	Iceland	2008	X	X	X	X		4,079	143,664
	Italy	2008	X	X	X	X		18,605	21,700,000
	Luxembourg	2008	X	X	X	X		4,310	198,882
	Norway	2008	X	X	X			6,350	2,077,142
	Portugal	2008	X	X	X	X		3,966	4,012,968
	Sweden	2008	X	X	X			8,443	4,074,758
	UK	2008	X	X	X	X		7,585	23,100,000
	No. of countries		16	16	16	13			
	Total							125,934	156,605,592

Note: [a]The number of available observations (i.e. those that remain after dropping observations with missing values, zero labor income, or those out of the range 18-65 years old)

Source: Authors' calculations using Household Surveys (World Bank). See Montenegro and Hirn (2008)for a complete list of sources and the description of the data harmonization process

Table I.

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	SSA		MENA		ECA		SA[b]		EAP		Western Europe[a]	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Demographic characteristics[a]												
All	62	38	83	17	54	46	77	23	47	53	56	45
Age												
15-24	11.0	16.2	19.8	25.2	10.9	9.1	18.6	14.0	12.5	10.3	8.3	8.4
25-34	29.3	30.7	32.4	40.0	30.5	27.1	31.0	30.4	26.9	29.7	23.1	24.0
35-44	28.0	26.5	25.9	23.7	25.0	28.3	23.4	26.9	33.7	35.7	30.5	30.8
45-54	21.1	18.6	17.0	9.6	23.2	28.3	16.8	19.0	18.7	21.1	25.5	25.6
55-65	10.6	8.1	4.8	1.4	10.4	7.2	10.2	9.7	8.3	3.2	12.7	11.3
Urban												
No	58.4	55.3	44.4	11.1	45.8	41.4	84.6	92.1	26.8	24.4	18.7	15.8
Yes	41.6	44.7	55.6	88.9	54.2	58.6	15.4	7.9	73.2	75.6	81.3	84.2
Education												
None or primary incomplete	21.8	33.4	18.2	9.2	2.7	2.0	71.1	92.8	5.5	2.5	7.1	5.0
Primary complete or secondary incomplete	51.6	43.1	49.4	34.3	68.8	58.8	27.9	7.2	18.3	11.6	62.9	59.8
Secondary complete	11.3	5.7	18.6	36.8	7.6	9.4	0.9	0.0	26.9	24.0	5.0	7.0
Post secondary	15.4	17.8	13.8	19.8	20.8	29.9	0.1	0.0	49.2	61.9	25.0	28.1
Marital status												
Married or live together	78.9	65.8	68.9	44.4	66.4	63.9	88.8	82.7	77.5	68.5	60.1	56.9
Divorced/separated	3.4	10.7	0.6	2.9	4.3	10.1	1.5	0.7	2.3	7.5	6.1	10.6
Widow/er	1.4	9.2	0.4	3.0	0.9	4.4	1.7	11.1	2.3	7.7	0.7	2.3
Single	16.3	14.2	30.1	49.7	28.4	21.5	8.0	5.5	18.0	16.3	33.1	30.1
Presence of children in the household												
No	21.2	19.8	28.0	50.0	85.1	88.7	13.2	15.7	36.0	35.5	–	–
Yes	78.8	80.2	72.0	50.0	14.9	11.3	86.8	84.3	64.0	64.5	–	–
Presence of elderly in the household												
No	79.5	85.5	98.9	99.5	91.8	93.3	98.3	99.6	99.4	99.2	99.6	99.5
Yes	20.5	14.5	1.1	0.5	8.2	6.7	1.7	0.4	0.6	0.8	0.4	0.5

(*continued*)

Table II.
Descriptive statistics by region

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Table II.

	SSA		MENA		ECA		SA[b]		EAP		Western Europe[a]	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Presence of other member with labor income												
No	46.6	33.0	57.3	33.5	28.1	23.4	63.1	41.5	25.8	24.4	39.3	31.5
Yes	53.4	67.0	42.7	66.5	71.9	76.6	36.9	58.5	74.2	75.6	60.7	68.5
Observations (Weighted)	12,799,673	7,931,462	2,057,650	433,602	13,578,354	11,756,044	412,112	125,610	191,539	212,344	64,750,428	51,948,315
Observations (unweighted)	20,304	13,913	24,446	8,232	32,490	28,694	344	98	1,249	1,382	21,101	13,498
Number of countries		6		2		12		1		1		13
Job-related characteristics												
All	62	38	83	17	54	46	77	23	47	53	56	45
Hours of work per week												
0-20 hours	12.6	15.9	4.3	7.0	2.1	4.3	14.6	18.7	1.3	1.3	2.5	17.9
21-40 hours	34.1	38.9	26.5	27.8	65.9	77.1	32.9	45.4	58.9	67.6	53.2	62.9
More than 40 hours	53.3	45.2	69.2	65.2	32.1	18.6	52.4	36.0	39.8	31.1	44.4	19.3
Type of employment												
Employee	44.1	27.0	100.0	100.0	97.6	98.1	100.0	100.0	98.4	98.5	84.4	91.7
Employer	3.6	2.8	–	–	0.3	0.2	–	–	0.4	0.9	5.0	2.0
Self-employed	52.2	70.3	0.0	0.0	2.0	1.7	–	–	1.2	0.6	10.6	6.3
Occupation												
Professionals and technicians	12.2	8.3	14.6	26.7	22.5	38.5	0.6	2.4	30.4	46.3	28.7	36.0
Directors and upper management	6.5	4.8	10.6	2.4	6.3	4.0	–	–	9.5	4.5	10.0	5.5
Administrative personal and intermediary level	14.8	12.0	19.4	26.8	30.8	19.8	33.0	5.5	20.7	20.9	31.2	24.2
Service workers	12.9	23.8	16.4	7.0	8.8	16.8	1.5	0.0	11.9	15.8	7.7	20.5
Skilled agriculture	21.3	21.9	4.8	0.5	1.5	1.1	0.6	0.5	1.7	1.3	2.7	1.1
Machine operators	4.6	0.6	8.2	17.4	18.1	6.1	2.7	0.0	17.7	3.1	11.3	2.3
Armed forces	0.5	0.1	0.0	0.0	0.0	0.0	–	–	0.0	0.0	–	–
Elementary occupations	27.2	28.5	25.8	19.2	12.0	13.6	61.6	91.6	8.2	8.0	8.4	10.4

(*continued*)

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	SSA		MENA		ECA		SA[b]		EAP		Western Europe[a]	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Economic sector												
Agriculture, hunting, forestry, and fishing	45.0	44.4	14.1	2.0	7.6	5.5	57.0	27.5	3.5	2.3	3.6	1.7
Mining and quarrying	9.7	4.5	2.5	0.4	–	–	12.0	12.2	6.9	3.6	–	–
Manufacturing	14.6	13.1	9.4	41.4	33.8	21.2	5.6	15.5	5.5	9.1	25.1	11.4
Electricity, gas, and water supply	0.9	0.2	17.0	0.8	–	–	5.6	9.5	5.5	2.2	–	–
Construction	2.7	0.2	10.4	2.3	11.9	1.5	2.9	9.7	7.1	2.7	12.8	1.9
Wholesale and retail, trade, and hotels and restaurants	11.9	27.2	7.8	7.6	12.2	19.6	5.8	9.9	5.2	9.9	16.3	20.7
Transport, storage	4.7	0.2	19.4	4.9	9.8	4.4	2.0	5.7	11.6	4.0	8.1	3.6
Finance and business services	2.0	1.2	2.1	4.6	1.7	3.8	2.7	6.0	3.7	4.2	3.8	4.7
Communal services	6.4	5.3	17.2	35.8	20.5	40.8	3.6	3.0	47.0	58.6	25.3	47.0
Others not well specified	2.1	3.6	0.1	0.1	2.5	3.2	2.9	1.2	4.0	3.5	5.0	9.1
Formality												
No	78.0	86.8	52.5	10.6	8.1	6.9	–	–	12.0	10.4	–	–
Yes	22.0	13.2	47.5	89.4	91.9	93.1	–	–	88.0	89.6	–	–
Observations (weighted)	12,799,673	7,931,462	2,057,650	433,602	13,578,354	11,756,044	412,112	125,610	191,539	212,344	64,750,428	51,948,315
Observations (unweighted)	20,304	13,913	24,446	8,232	32,490	28,694	344	98	1,249	1,382	21,101	13,498
Number of countries		6		2		12		1		1		13

Notes: [a]For SA and western Europe regions results are reported using the economic sector set, given the fact that social security is not a proper control for informality. [b]Income distribution of SA region might be affected by problems of representing in some demographic and labor categories

Source: Authors' calculations using Household Surveys (World Bank)

Table II.

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regions of the world the urban/rural split does not differ much between males and females.

Educational differences are also interesting to highlight. SSA, MENA, and SA show a high fraction of females with no education or primary incomplete, although in MENA the corresponding percentage of males is even higher. On the other extreme of the educational distribution, in all regions but SA the percentage of females achieving post secondary education surpasses that of males.

The gender differences in marital status and household composition are also salient. In all regions the proportion of married males surpasses that of females. In SSA and SA the proportion of widowed females is around 10 percent. In SSA, ECA and western Europe it is interesting to highlight that also around 10 percent of females are divorced. The proportion of never married among working women in MENA is interestingly higher than the corresponding proportion for males. ECA highlights as the region of the world with the lowest presence of children in the workers' households (such indicator cannot be computed for western Europe). SSA in turn highlights as the region of the world with the highest presence on elderly in the workers' households, slightly higher for males than for females. In all regions of the world the proportion of females living with another labor-income-generator at home is higher than that of males.

The job-related differences by gender, depicted in Table II for all regions under analysis, are also salient. Part-time work (defined in this paper as working 20 hours or less per week) is more prevalent among females than males across the globe, but this is especially the case in western Europe. Also, SSA and SA highlight as having a high proportion of males doing part-time work.

Self-employment is prevalent in SSA both for males and females, but especially for the latter (although it is important to note that this is not possible to identify in MENA and SA). Regarding occupations and economic sectors, all regions show some degree of segregation by gender but it is ECA the region that shows it the highest occupational segregation. In this region "professionals and technicians" and "service workers" are clearly segments with higher female prevalence; contrasting "administrative personnel and intermediary level" and "machine operators" which are male-dominated occupations. EAP and western Europe show the lowest fraction of the labor force working on elementary occupations. Regarding formality, SSA show a higher fraction of formal working males than formal working females but in MENA, ECA, and EAP the situation is reversed (in SA and western Europe it is not possible to measure formality).

Table III show additional descriptive statistics. In this case these statistics are earnings averages for different segments of the labor markets. As before, the first table uses the demographic set of variables and the second the job-related characteristics. Both tables correspond to measures of hourly labor earnings, normalized such that the average of females' earnings in each region is set equal to 100.

SA highlights as the region with the highest earnings disparities as males earn on average 48 percent more than females. On the other extreme are EAP and MENA with gender earnings gaps of 10 and 8 percent of average females' earnings, respectively. Note that these are simple comparison of average earnings for all working males and females. These gaps are not taking into account the gender differences in observable characteristics yet. That will be analyzed in the next section.

The earnings pattern over the life cycle shows no surprise. Younger workers (15-24) tend to earn less than prime-agers. When getting close to retirement age (55-65), females' earnings decrease more than those of males. The earnings patterns with respect to education show no surprises as well. Higher educated workers earn more

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	SSA		MENA		ECA		SA		EAP		Western Europe	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Demographic characteristics												
All	135	100	108	100	118	100	148	100	110	100	123	100
Age												
15-24	99.0	70.5	88	48	80.4	67.5	164.1	245.3	101.6	90.6	62.9	57.9
25-34	136.1	104.9	102	106	114.5	96.1	143.6	89.2	105.6	103.8	105.4	90.8
35-44	135.2	109.9	116	130	132.1	107.1	141.1	72.7	113.9	100.0	130.3	104.9
45-54	139.9	103.9	128	134	120.7	105.6	148.0	67.8	117.9	99.6	140.2	112.2
55-65	154.3	98.9	126	117	125.8	105.4	142.9	63.4	98.5	97.7	140.6	110.1
Urban												
No	120.5	89.6	101	67	101.2	84.5	137.3	98.5	84.7	80.6	103.4	89.9
Yes	154.1	112.9	114	104	131.8	111.0	203.3	117.6	118.8	106.2	127.3	101.9
Education												
None or primary incomplete	106.8	79.6	99	48	73.3	55.5	139.8	83.1	92.4	96.8	86.4	67.5
Primary complete or secondary incomplete	119.4	102.2	91	55	101.6	80.8	159.6	317.5	91.9	72.1	105.8	85.9
Secondary complete	192.5	129.0	100	87	107.2	88.9	311.1	0.0	88.5	78.9	121.6	103.6
Post secondary	181.8	123.7	195	226	181.2	144.3	623.3	0.0	129.7	113.5	176.1	134.8
Marital status												
Married or live together	144.3	108.8	119	138	127.3	100.5	147.5	99.2	112.4	99.6	135.8	103.9
Divorced/separated	89.6	90.6	88	101	113.9	114.3	102.5	59.9	88.2	105.5	133.0	102.4
Widow/er	110.9	88.4	86	78	101.4	94.2	126.8	71.6	75.8	96.7	119.4	99.5
Single	98.3	73.8	84	67	96.7	92.9	160.6	174.5	104.7	100.9	97.3	91.8
Presence of children in the household												
No	127.8	122.2	101	90	118.6	101.5	142.9	122.5	117.5	109.1	–	–
Yes	136.3	94.5	111	110	113.3	88.5	148.2	95.8	105.2	95.0	–	–

(*continued*)

Table III.
Earnings distribution by region

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Table III.

	SSA		MENA		ECA		SA		EAP		Western Europe	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Presence of elderly in the household												
No	141.7	97.6	108	100	118.7	100.3	148.0	100.0	109.7	100.2	122.8	100.0
Yes	106.6	114.1	153	78	107.2	96.4	119.0	106.5	89.1	79.2	123.2	92.1
Presence of other member with labor income												
No	128.6	107.1	110	92	121.9	106.7	154.5	141.1	97.7	94.8	126.7	105.1
Yes	106.6	114.1	153	78	107.2	96.4	119.0	106.5	89.1	79.2	123.2	92.1
Job-related characteristics												
All	135	100	108	100	118	100	148	100	110	100	123	100
Hours of work per week												
0-20 hours	339.4	233.4	372	369	275.2	188.9	329.3	266.8	280.8	242.1	228.1	103.2
21-40 hours	123.3	85.0	123	137	118.6	100.1	144.0	75.7	117.0	106.9	118.4	100.2
More than 40 hours	93.3	66.1	86	55	105.9	79.2	98.9	44.0	93.1	79.3	122.2	96.5
Type of employment												
Employee	108.2	98.4	108	100	117.6	100.2	147.5	100.0	109.6	99.5	121.9	99.9
Employer	475.7	171.7	–	–	125.9	97.2	–	–	156.9	142.8	170.0	130.8
Self-employed	133.0	97.8	0	0	127.6	88.7	–	–	93.4	122.3	107.7	90.9
Occupation												
Professionals and technicians	210.9	128.7	183	212	158.5	128.0	234.9	719.4	130.2	111.6	161.9	128.7
Directors and upper management	158.8	149.5	117	162	199.5	170.2	–	–	144.0	129.6	168.5	120.4
Administrative personal and intermediary level	139.7	117.8	102	68	102.5	89.2	171.6	208.9	101.1	96.5	103.5	94.9
Service workers	150.6	114.7	103	53	97.4	73.5	291.2	0.0	88.3	83.1	96.7	72.1
Skilled agricultural	97.1	72.0	54	36	68.9	55.7	188.1	59.9	99.1	82.5	69.9	56.4
Machine operators	109.8	92.3	99	49	102.7	77.8	165.8	0.0	100.7	98.1	97.4	74.3
Armed forces	96.4	233.9	–	–	0.0	0.0	–	–	0.0	0.0	–	–
Elementary occupations	118.1	84.6	84	47	81.0	62.0	129.0	77.3	66.9	62.7	82.0	67.3
Economic sector												
Agriculture, hunting, forestry, and fishing	123.9	91.9	65	50	84.3	62.2	130.1	66.3	93.5	81.0	69.7	60.3

(*continued*)

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	SSA		MENA		ECA		SA		EAP		Western Europe	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Mining and quarrying	121.4	69.1	108	89	–	–	177.6	77.2	151.8	161.5	–	–
Manufacturing	83.7	94.0	76	52	113.7	90.8	129.0	67.8	97.4	83.7	123.2	96.8
Electricity, gas, and water supply	198.3	228.9	118	88	–	–	135.9	68.8	123.6	139.9	–	–
Construction	93.1	75.1	145	73	101.2	111.2	193.0	106.7	98.0	117.3	100.6	106.6
Wholesale and retail, trade and hotels and restaurants	181.9	118.8	83	61	109.0	81.4	198.9	145.0	133.9	91.3	98.3	76.7
Transport, storage	94.3	96.7	96	112	122.0	109.9	226.7	135.0	115.0	111.3	113.4	97.3
Finance and business services	178.9	130.9	104	114	212.2	143.5	140.5	346.8	171.8	113.0	211.2	130.2
Communal services	256.7	106.8	156	165	142.0	114.0	112.5	39.7	99.0	96.1	148.3	112.9
Others not well specified	207.0	91.3	118	154	118.2	91.2	270.6	99.9	91.4	115.8	114.3	81.8
Formality												
No	132.9	95.2	108	73	116.9	102.9	–	–	93.6	74.4	–	–
Yes	140.1	131.2	109	103	117.9	99.8	–	–	111.8	103.0	–	–

Source: Authors' calculations using Household Surveys (World Bank)

Table III.

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than those with lower education. The gender differences across those patterns, however, differ (and this will be analyzed latter after the earnings gaps decompositions).

Individuals' earnings in urban areas tend to be higher than those in rural areas. Married males tend to earn higher than the rest of the population. Those with no elderly at home tend to earn higher than their counterparts with at least one elderly at home. The only exception to that happens among females in SSA (recall that SSA is also the region of the world where workers tend to live more with their elderly relatives).

Regarding occupations, is no surprise that "directors and upper management" and "professionals and technicians" tend to have higher earnings than those at other occupations. Interestingly, "armed forces" are also a high-paying occupation for women in SSA. This may reflect that females who join the army, generally, do not do so in lower-hierarchy positions. Regarding economic sectors, it is also no surprising to verify that finance and business services are at the top earnings.

3. Gender earnings gap decompositions

Table IV show the decompositions for the gender gaps in hourly earnings (at the main occupation), measured as a percentage of the average females' earnings. SSA, MENA, and ECA are shown in Table IV, while SA, EAP, and western Europe are in Table IV. The structure of the tables is the same across regions. The components of the gender earnings gaps are shown in columns (labeled as Delta 0, Delta M, Delta F, and Delta X), together with the percentages of males and females in the common support (labeled as CSF and CSM)[5].

The matching variables that are sequentially added are shown as consecutive lines. First, the "demographic set" of variables is added: age, urban status, education, marital status, presence of child in the household, presence of an elder in the household, and presence of other income-generator in the household (the first and obvious matching variable within the pooled data set is "country"). As mentioned, these are sequentially added as matching variables to measure the extent to which the observed gender earnings gaps can be attributed to gender differences in observed characteristics. On top of the "demographic set" some job-related variables are added, but with replacement. That is, first the number of hours per week is added as a matching variable to the "demographic set"; then the type of employment variable replaces the number of hour per week as a matching variable; then the occupation variable takes the place type of employment and so on with economic sector and formality. Last, the "all variables" line includes all demographic and job-related variables in the matching.

It can be noted that the most comprehensive set of matching variables is the one that shows the lowest measures of common support for both males and females. These are particularly low for SA. This is a common feature of all non-parametric methods (the curse of dimensionality). The inclusion of a comprehensive set of variables may constraint the comparison of males and females to a small (and perhaps non-representative) set of individuals. For that reason, the discussion of the results below will be done considering the demographic set of variables first and all variables afterwards.

In ECA, EAP, and western Europe, the gender earnings gap that remains after matching on demographic characteristics (i.e. after comparing males and females with the same observable characteristics regarding the demographic set) are higher than their corresponding original earnings gap (the one that does not account for gender

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	Delta 0 %	Delta M %	Delta F %	Delta X %	CSM %	CSF %
	SSA					
			Delta = 34.50%			
Demographic set						
Country	37.18	0.00	0.00	−2.68	100.00	100.00
Age	33.96	0.00	0.00	0.54	100.00	100.00
Urban	36.99	0.00	0.00	−2.49	100.00	100.00
Education	34.83	0.30	−0.15	−0.48	99.15	99.95
Marital status	25.80	−0.35	−0.20	9.25	96.90	98.22
Presence of child in the household	30.09	−0.54	−0.56	5.52	95.94	95.61
Presence of older in the household	28.72	−0.92	0.08	6.62	95.37	93.93
Presence of other member with income in the household	28.85	−1.03	0.79	5.90	92.63	90.67
Job-related variables						
Hours of work per week	39.49	0.44	−0.10	−5.32	85.08	82.52
Type of Employment	17.81	8.10	−0.16	8.76	88.48	87.68
Occupation	37.96	0.04	2.06	−5.56	74.62	79.69
Economic sector	45.57	0.88	1.25	−13.19	73.13	79.64
Formality	27.51	−1.14	1.06	7.08	89.05	89.22
All variables	31.02	16.62	−9.36	−3.78	46.50	55.38
	MENA					
			Delta = 8.25%			
Demographic set						
Country	6.08	0.00	0.00	2.17	100.00	100.00
Age	−3.74	0.00	0.00	11.98	100.00	100.00
Urban	−0.46	−0.04	0.00	8.75	98.47	100.00
Education	4.92	0.33	0.00	3.00	94.56	100.00
Marital status	3.87	1.31	0.11	2.95	87.81	99.34
Presence of child in the household	3.88	0.92	0.11	3.35	83.58	97.76
Presence of older in the household	3.80	1.35	0.10	3.00	82.84	97.44
Presence of other member with income in the household	6.09	0.60	0.06	1.49	73.92	96.39
Job-related variables						
Hours of work per week	12.96	3.13	−0.50	−7.35	65.15	94.32
Type of employment	6.09	0.60	0.06	1.49	73.92	96.39
Occupation	7.21	2.74	1.80	−3.50	52.63	91.94
Economic sector	7.90	3.18	2.88	−5.72	46.24	90.29
Formality	6.92	1.99	0.27	−0.94	68.28	95.44
All variables	12.24	−5.40	3.55	−2.15	25.50	77.68
	ECA					
			Delta = 17.80%			
Demographic set						
Country	17.88	0.00	0.00	−0.08	100.00	100.00
Age	19.00	0.00	0.00	−1.19	100.00	100.00
Urban	19.99	0.02	0.00	−2.21	99.92	100.00
Education	26.67	−0.09	0.00	−8.78	99.61	99.97
Marital status	25.55	−0.26	0.12	−7.61	99.01	97.88
Presence of child in the household	25.49	−0.23	0.13	−7.59	98.89	97.59
Presence of older in the household	25.38	−0.21	0.16	−7.53	98.62	97.30
Presence of other member with income in the household	25.74	−0.22	−0.98	−6.74	97.71	96.04

(*continued*)

Table IV.
Gender earnings gaps decompositions by region

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	Delta 0 %	Delta M %	Delta F %	Delta X %	CSM %	CSF %
Job-related variables						
Hours of work per week	29.72	0.41	−2.05	−10.28	94.32	92.13
Type of employment	25.68	−0.18	−0.91	−6.78	96.90	95.67
Occupation	25.05	−0.57	−0.42	−6.26	88.07	87.89
Economic sector	27.07	−0.55	−1.20	−7.51	80.40	78.67
Formality	25.55	−0.36	−0.91	−6.48	96.86	95.69
All variables	27.49	−0.38	−0.12	−9.18	47.28	52.87
	SA					
			Delta = 47.51%			
Demographic set						
Country	47.51	0.00	0.00	0.00	100.00	100.00
Age	46.58	0.00	0.00	0.93	100.00	100.00
Urban	42.33	1.82	0.00	3.36	95.63	100.00
Education	33.04	6.55	0.00	7.92	78.27	100.00
Marital status	28.05	8.53	0.31	10.62	72.82	98.73
Presence of child in the household	25.82	10.34	0.65	10.69	70.20	97.62
Presence of older in the household	28.51	9.94	1.21	7.85	68.64	96.90
Presence of other member with income in the household	21.38	13.15	4.03	8.95	60.59	88.00
Job-related variables						
Hours of work per week	28.64	11.38	−5.54	13.03	43.58	78.25
Type of employment	21.38	13.15	4.03	8.95	60.59	88.00
Occupation	42.27	18.99	−14.26	0.52	47.07	82.04
Economic sector	47.61	26.41	−12.32	−14.20	33.67	44.34
All variables	18.84	57.38	−30.27	1.57	10.62	21.11
	EAP					
			Delta = 9.62%			
Demographic set						
Country	9.62	0.00	0.00	0.00	100.00	100.00
Age	10.53	0.00	0.00	−0.91	100.00	100.00
Urban	11.34	0.00	0.00	−1.73	100.00	100.00
Education	15.04	0.05	0.00	−5.48	99.50	100.00
Marital status	11.63	−0.89	0.94	−2.06	96.44	93.81
Presence of child in the household	11.69	−1.84	1.45	−1.69	93.94	90.72
Presence of older in the household	11.90	−1.99	1.64	−1.93	93.36	90.06
Presence of other member with income in the household	13.40	−2.95	0.90	−1.73	89.15	86.34
Job-related variables						
Hours of work per week	16.43	−4.04	−0.37	−2.41	81.70	80.82
Type of employment	13.97	−2.61	0.41	−2.16	87.85	85.26
Occupation	11.92	−7.33	3.96	1.07	68.73	70.52
Economic sector	11.95	−4.44	1.22	0.88	65.47	70.03
Formality	13.84	−3.60	1.81	−2.43	84.80	82.46
All variables	14.49	−16.35	7.97	3.51	30.97	39.78
	Western Europe					
			Delta = 22.80%			
Demographic set						
Country	24.04	0.00	0.00	−1.23	100.00	100.00
Age	23.73	0.00	0.00	−0.93	100.00	100.00
Urban	24.17	0.00	0.00	−1.37	100.00	100.00

Table IV.

(*continued*)

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	Delta 0 %	Delta M %	Delta F %	Delta X %	CSM %	CSF %
Education	25.78	−0.02	0.00	−2.96	99.94	99.99
Marital status	26.07	−0.09	0.04	−3.21	99.74	99.42
Presence of child in the household	26.07	−0.09	0.04	−3.21	99.74	99.42
Presence of older in the household	26.04	−0.10	0.06	−3.19	99.59	99.24
Presence of other member with income in the household	25.69	−0.21	0.08	−2.76	98.96	98.52
Job-related variables						
Hours of work per week	38.97	−0.26	−0.30	−15.60	96.72	93.83
Type of employment	24.58	0.15	−0.04	−1.88	96.30	97.48
Occupation	24.91	−2.13	0.76	−0.74	90.38	93.17
Economic sector	26.99	−1.60	0.68	−3.26	85.62	86.88
All variables	21.76	−2.86	5.91	−2.00	44.09	47.08

Source: Authors' calculations using Household Surveys (World Bank)

Table IV.

differences in characteristics). This is also the case for the LAC region (Atal *et al.*, 2009). Women show observable characteristics that would make them more attractable to the labor markets (and hence, better paid), but this is actually not the case. In the other three regions under analysis, SSA, MENA, and SA, the unexplained gender earnings gap that remain after matching on demographic characteristics are below their corresponding original gap.

When analyzing the role of each particular variable on the explanation of the earnings gaps, it is interesting to note that age moves down the unexplained wage gap in MENA, reflecting that males tend to inhabit the prime-age segments of the distribution in greater proportion than women. The inclusion of education as a matching variable moves up the counterfactual earnings gaps in MENA, ECA, and EAP, reflecting that higher school achievements for females are not necessarily compensated in the labor markets. In contrast, the inclusion of education moves down the counterfactual earnings gap in SA. Marital status is a variable that substantially contributes to the explanation of the earnings gap. The inclusion of such variable in the matching reduces the counterfactual earnings gap in SSA, SA, and EAP.

The further inclusion of job-related characteristics move the unexplained component of the earnings gaps up and down, with variability depending on the variable to include on the matching and the region of the world. The inclusion of hours of work per week moves up the counterfactual earnings gaps in all regions under analysis. Including type of employment leaves the gap unaltered with respect to the demographic set in all regions but SSA where it drops. Adding occupation as a matching variable increases the counterfactual gap in SSA in SA leaving it almost unaltered in the rest of the regions. In no region, however, the unexplained gender earnings gaps show a reduction after introducing occupation as a matching variable. This apparently paradoxical result, which has also been found for Latin America, suggest that the reduction of gender occupational segregation is a wrong target when trying to reduce gender earnings disparities (Calonico and Ñopo, 2009). A slightly similar story can be depicted for economic sectors. The inclusion of formality, in those

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regions where the data allows it, leaves the counterfactual earnings gap almost unaltered. All in all, the inclusion of all job-related characteristics moves the unexplained component of the earnings gaps down in two regions (SA and western Europe) and up in the other four (SSA, MENA, ECA, and EAP).

A related feature is that the Delta F and Delta M components of the earnings gap also have the potential to increase. Delta M, the component of the earnings gap that can be attributed to the existence of certain combination of observable characteristics to which males reach but females do not, is positive in two regions (SSA and SA), negative in MENA and statistically zero the other regions. Females in SSA and SA suffer from a sort of glass ceiling or barriers to the access to certain well paid segments of the labor markets which males can access. Interestingly, the same two regions show display a negative measure of Delta F, suggesting that there are also some other well paid segments of the labor markets to which females access and males not. The access barriers in these two regions work for both, males and females, but females suffer from barriers that imply higher earnings limitations for them. Regarding Delta F as well it is interesting to note that EAP and to a lesser extent western Europe display a positive component. This may be an indication of the existence of certain females' confinements within the labor markets with earnings that are below the average of the rest of the markets.

As it is shown in Table V, calculating gender earning gap decompositions by country, it was found evidence about notable cross-country heterogeneity behind the region averages. SSA region have the countries with the greatest earning gaps, Comoros, Congo, and Ghana – as well as the smallest one – Nigeria, while the earnings of women are greater than those of men. After controlling for demographic matching variables it is observed that in the case of ECA and western Europe, the unexplained component is equal or greater than the original gap, reflecting small educational differences by gender in those regions.

Beyond averages. Exploring the distribution of unexplained gender earnings differences

One of the advantages of the matching approach is that it allows an exploration of unexplained gender differences in pay within different segments of the labor markets. In this way we can report that (these results are shown on Figures 1-6, Table VI, and Figures A1-A6 in the Appendix 2):

- For SSA the highest unexplained gender differences in pay are found among those who live with another labor income generator within their households, those working in "communal services" and those holding informal jobs.
- For MENA the highest unexplained gaps are found among younger workers (15-24) with none or primary education, with no presence of elderly at their households, working either part-time or over-time (but not full-time) and among those with lower earnings.
- In ECA the situation slightly differs as the highest unexplained gaps are found among married part-time workers, living with elderly and with no other labor income generator at home. Is SA, as in MENA, the highest earnings gaps are among those with none or primary incomplete education; and as in ECA, for those with no other income generator at home. Additionally, the unexplained earnings gaps in SA are high among those working in elementary occupations.

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Country	Delta %	Delta 0 Demographic variables %	All variables %
Congo	52.50	33[a]	20.47[a]
Comoros	50.20	40.46[a]	85.26[a]
Ghana	44.20	27.22[a]	57.34[a]
Madagascar	42.63	23.73[a]	−1.91
Tanzania	38.02	45.11	41.41[a]
Nigeria	−14.17	−8.20	3.76
SSA	*34.50*	*28.85*[a]	*31.02*[a]
Yemen	23.36	10.13	11.81
Tunisia	4.04	5.65[a]	12.16[a]
MENA	*8.25*	*6.09*[a]	*12.24*[a]
Estonia	39.01	45.14[a]	48.7[a]
Czech Republic	33.18	32.78[a]	35.19[a]
Albania	30.07	35.15[a]	48.75[a]
Slovakia	26.74	32.4[a]	30.06[a]
Tajikistan	25.17	37[a]	19.63
Latvia	25.01	38.89[a]	42.47[a]
Bulgaria	21.97	30.11[a]	31.33[a]
Croatia	13.97	22.11[a]	19.78[a]
Hungary	13.76	24.8[a]	26.05[a]
Poland	10.25	20.66[a]	26.79[a]
Moldova	8.88	2.73	−4.84
Bosnia and Herzegovina	5.73	9.81	3.15
ECA	*17.80*	*25.74*[a]	*27.49*[a]
Nepal	47.51	21.38	18.84
SA	*47.51*	*21.38*	*18.84*
Mongolia	9.62	13.4[a]	14.49[a]
EAP	*9.62*	*13.4*[a]	*14.49*[a]
UK	38.02	37.55[a]	24.62[a]
Cyprus	33.47	31.61[a]	23.43[a]
Luxembourg	31.33	28.01[a]	20.16[a]
Germany	29.55	26.64[a]	20.9[a]
Iceland	25.00	30.05[a]	42.27[a]
Finland	22.10	26.49[a]	26.35[a]
Portugal	20.71	36.34[a]	40.75[a]
Spain	14.21	19.02[a]	20.83[a]
Italy	13.04	19.87[a]	24.16[a]
Belgium	12.84	13.14[a]	11.8[a]
Greece	12.43	16.76[a]	17.61[a]
Ireland	11.02	8.11[a]	7.42
Austria	10.40	11.54[a]	13.47[a]
Western Europe	22.80	25.69[a]	21.76[a]

Note: [a]Statistically different than zero at the 99% level
Source: Authors' calculations using Household Surveys (World Bank)

Table V.
Original and unexplained components of the gender wage gap, by country

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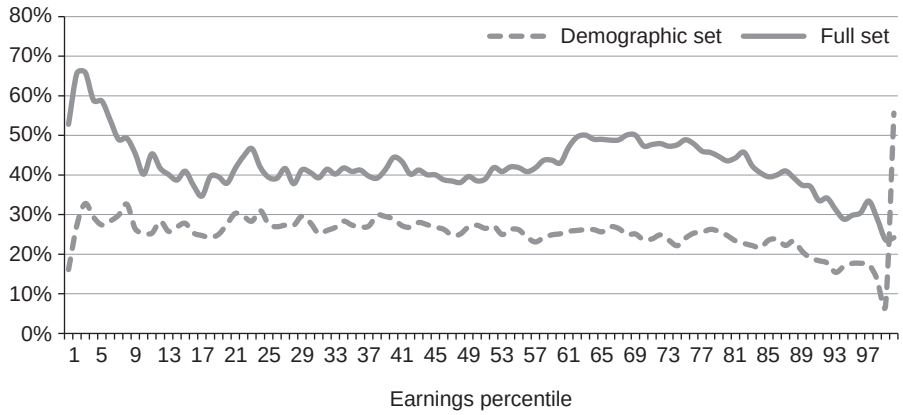

Figure 1.
Unexplained gender earnings gap by percentiles of the earnings distribution of males and females – SSA

Source: Authors' calculations using Household Surveys (World Bank)

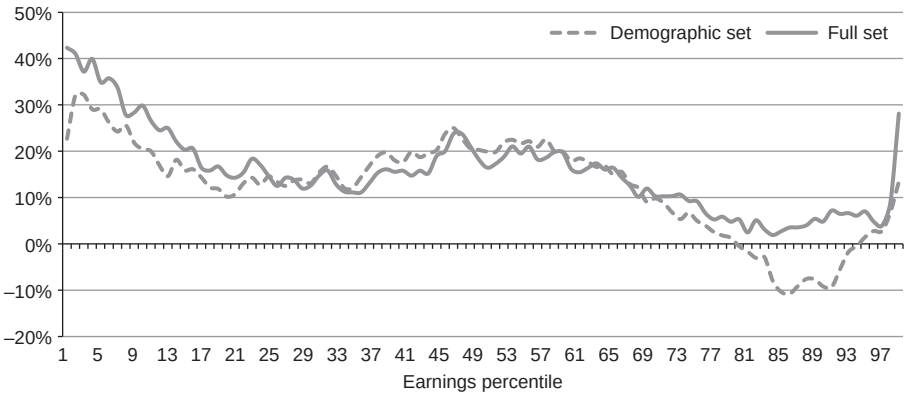

Figure 2.
Unexplained gender earnings gap by percentiles of the earnings distribution of males and females – MENA

Source: Authors' calculations using Household Surveys (World Bank)

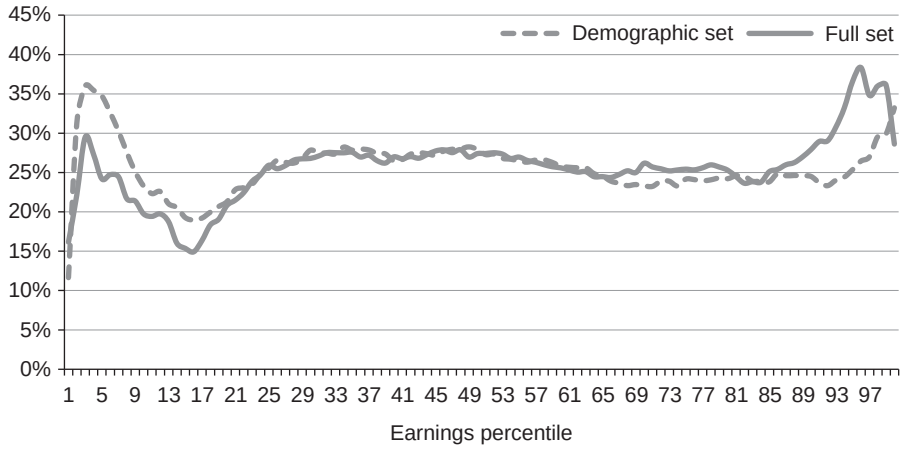

Figure 3.
Unexplained gender earnings gap by percentiles of the earnings distribution of males and females – ECA

Source: Authors' calculations using Household Surveys (World Bank)

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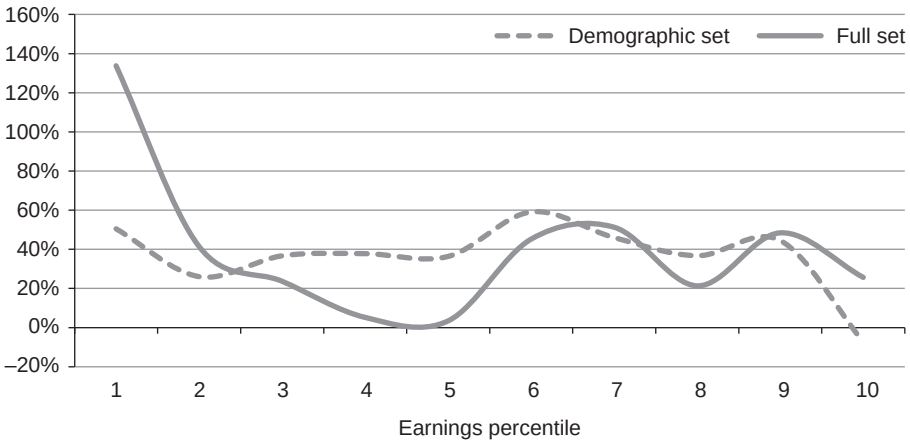
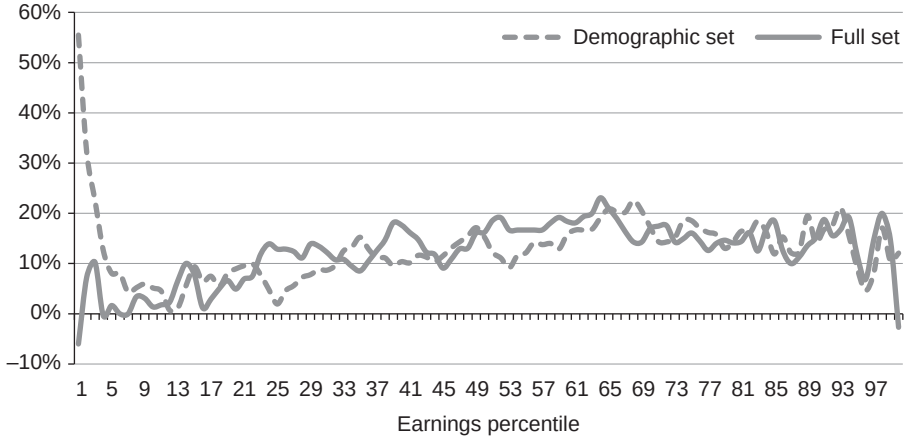


Source: Authors' calculations using Household Surveys (World Bank)

Figure 4. Unexplained gender earnings gap by deciles of the earnings distribution of males and females – SA



Source: Authors' calculations using Household Surveys (World Bank)

Figure 5. Unexplained gender earnings gap by percentiles of the earnings distribution of males and females – EAP

- EAP is the only region of the world for which there is no clear segment of the market in which the earnings gaps are more pronounced. The unexplained earnings gaps are almost equally pronounced across all segments.
- The situation in western Europe shows some similarities, but also some differences with respect to what happens in other regions of the world. On one hand, two elements in western Europe that contrast with the rest of the world are that the unexplained gender earnings gaps are more pronounced among older worker (35 years old and older) and in urban areas. On the other hand, as in MENA and SA, those with no education or primary incomplete are those who suffer from the highest unexplained earnings disparities. Along the same line of similarities with respect to other regions of the world, part-time workers suffer from higher unexplained gaps, as in MENA and ECA. And similarly to ECA as

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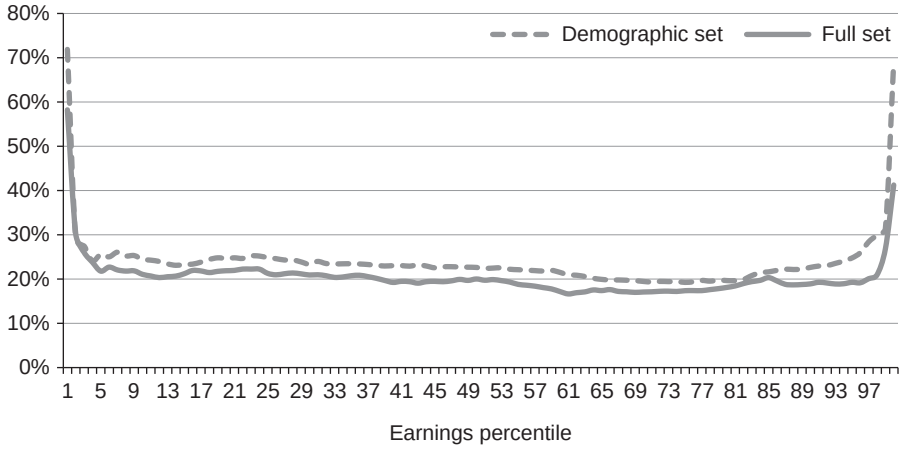

Figure 6.
Unexplained gender earnings gap by percentiles of the earnings distribution of males and females – western Europe

Source: Authors' calculations using Household Surveys (World Bank)

well, married workers suffer from high unexplained gaps; but the gaps are also high among divorced people in western Europe.

- The unexplained component of the earnings gap is higher at the lower tails of the earnings distributions in all regions, both after controlling for the set of demographic variables and after controlling for the full set. In the case of SSA and MENA, after the 80th percentile the unexplained wage gaps show a negative slope and the introduction of the job-related variables moves up its distribution. In the case of western Europe, the distribution of Delta 0 has the shape of inverted "U," and the introduction of job-related variables leaves almost unchanged its magnitude.
- When analyzing such distributions at the country level (Table VI), for three selected percentiles (the 25th, the 50th, and the 75th) not much country differences arise. The cases of Madagascar, Hungary, Portugal, and Spain highlight as showing negative unexplained gender earnings gaps at the 50th percentile. Around the middle of the earnings distributions females earn more than males in those countries.

Table VII summarizes all the information describing the segments of the labor markets for which the unexplained gender earnings gaps are more pronounced. The most salient regularities that can be traced in most of the regions under analysis are two: part-time workers and those with lower educational achievement suffer from the highest unexplained gender earnings gaps. It is interesting to note that this also shows some similarities with respect to Latin America (see Atal *et al.*, 2009).

4. Gender earnings gap and the economic, cultural, and political characteristics

Having shown the heterogeneity on unexplained gender earnings gaps across the world, this section will explore the cross-country linkages of these disparities and other socio-economic and political variables. Figures A4-A6 illustrate the correlation between the unexplained gender earnings gaps (the one that remains after controlling

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Country	25 percentile Delta 0 Delta %	25 percentile Delta 0 Demographic variables %	25 percentile Delta 0 All variables %	50 percentile Delta 0 Delta %	50 percentile Delta 0 Demographic variables %	50 percentile Delta 0 All variables %	75 percentile Delta 0 Delta %	75 percentile Delta 0 Demographic variables %	75 percentile Delta 0 All variables %
Congo	14.86	22.34[a]	27.21[a]	12.53	12.01[a]	10.28	34.69	28.96[a]	19.1[a]
Comoros	4.62	0.96	9.03[a]	9.29	7.16[a]	13.35[a]	17.84	15.59[a]	20.25[a]
Ghana	−2.85	7.88	3.61	3.35	6.17	1.93	15.16	11.99[a]	12.14[a]
Madagascar	−2.34	−1.80	4.08	11.43	22.76[a]	−6.45	−0.88	2.90	3.02
Tanzania	11.67	10.88[a]	15.64[a]	11.79	7.25[a]	10.73[a]	4.61	3.78[a]	13.24[a]
Nigeria	5.20	6.18[a]	5.72[a]	10.37	7.54[a]	4.58	22.83	15.54[a]	17.4[a]
SSA	*0.00*	*3.81*[a]	*8.09*[a]	*6.5462*	*8.32*[a]	*9.48*[a]	*11.5295*	*10.37*[a]	*14.32*[a]
Yemen	1.58	3.93[a]	7.32[a]	6.05	5.85[a]	10.11[a]	19.49	13.37[a]	14.27[a]
Tunisia	10.54	3.74	4.04	11.89	8.99	13.67	5.77	8.44	8.12
MENA	*−0.40*	*3.86*[a]	*7.26*[a]	*2.32*	*6.28*[a]	*10.55*[a]	*13.72*	*12.79*[a]	*13.87*[a]
Estonia	−25.74	−13.34	5.63	−14.42	−8.04	5.04	11.10	15.62[a]	21.43[a]
Czech Republic	−2.59	2.51	12[a]	0.02	2.76	1.29	3.68	9.27[a]	5.77[a]
Albania	−7.06	−4.39[a]	−6.79	0.15	3.47[a]	0.66	8.51	13.14[a]	9.05[a]
Slovakia	2.71	6.25[a]	7.01[a]	5.25	8.47[a]	10.45[a]	9.94	15.35[a]	12.96[a]
Tajikistan	0.04	3.42[a]	−2.33	9.29	11.66[a]	10.51[a]	14.55	17.21[a]	17.28[a]
Latvia	0.26	3.99[a]	−2.05	7.22	10.73[a]	8.48[a]	18.72	21.67[a]	20.51[a]
Bulgaria	−2.17	−0.30	3.65	−0.91	1.24	4.59[a]	0.99	5.11[a]	9.68[a]
Croatia	3.24	6.18[a]	8.68	4.78	7.75[a]	11.37[a]	12.40	15.45[a]	18.88[a]
Hungary	−3.77	−1.87	−1.37	−0.48	−0.51	−1.10	0.19	1.72	−1.13
Poland	−0.23	−1.12	−1.70	4.84	6.06[a]	6.34[a]	7.36	11.56[a]	12.11[a]
Moldova	3.20	5.71[a]	5.08[a]	6.21	9.36[a]	11.48[a]	10.95	13.03[a]	14.85[a]
Bosnia and Herzegovina	5.06	5.12[a]	4.45	17.91	14.1[a]	15.28[a]	35.05	29.52[a]	20.11[a]
ECA	*−2.07*	*0.66*	*1.36*	*1.61*	*5.99*[a]	*6.4*[a]	*7.10*	*12.29*[a]	*12.77*[a]
Nepal	7.74	7.77	11.43	18.68	13.19	8.14	42.46	33.65[a]	21.69
SA	*7.74*	*7.77*	*11.43*	*18.68*	*13.19*	*8.14*	*42.46*	*33.65*[a]	*21.69*

(*continued*)

Table VI.
Original and unexplained components of the gender wage gap, by percentiles

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Country	25 percentile Delta 0			50 percentile Delta 0			75 percentile Delta 0		
	Delta %	Demographic variables %	All variables %	Delta %	Demographic variables %	All variables %	Delta %	Demographic variables %	All variables %
Mongolia	1.95	3.04	−1.75	0.20	1.69	2.58	0.60	3.47[a]	6.96[a]
EAP	*1.95*	*3.04*	*−1.75*	*0.20*	*1.69*	*2.58*	*0.60*	*3.47*	*6.96*
UK	−0.61	3.02	0.26	5.92	8.55[a]	6.26	11.66	14.3[a]	11.19[a]
Cyprus	−1.49	−0.12	−1.05	1.47	2.23	1.53	3.26	4.93[a]	3.79[a]
Luxembourg	11.64	10.97[a]	7.48	19.78	22.39[a]	25.69[a]	29.56	30.7[a]	31.55[a]
Germany	−3.42	−1.99	−2.76	−2.98	−2.35[a]	2.27	5.85	7.94[a]	10.34[a]
Iceland	−0.18	7.02[a]	−3.02	6.27	10.88[a]	4.16	11.74	14.48[a]	10.28[a]
Finland	6.19	3.81	17.26[a]	2.45	4.9[a]	15.67[a]	10.20	15.35[a]	22.33[a]
Portugal	−6.43	−6.97[a]	−6.43	−2.42	0.11	−2.03	1.87	5.61[a]	6.37[a]
Spain	−16.44	−15.57[a]	−16.07[a]	−4.24	−0.01	−5.91	3.10	5.26[a]	6.71
Italy	0.52	1.64	0.76	5.00	5.25[a]	7.6[a]	3.74	4.9[a]	9.11[a]
Belgium	6.77	12.65[a]	15.2[a]	9.74	12.69[a]	9.45[a]	8.46	12.86[a]	10.71[a]
Greece	−6.16	−6.28[a]	2.25	−0.74	2.7[a]	7.83[a]	8.53	13.79[a]	19.11[a]
Ireland	−1.28	−0.49	7.18[a]	7.18	7.6[a]	12.72[a]	12.02	13.77[a]	18.17[a]
Austria	−4.27	−3.84[a]	−0.92	2.03	2.41[a]	7.12[a]	10.35	11.44[a]	11.56[a]
Western Europe	−3.06	−0.37	1.70	4.43	6.28[a]	7.56[a]	7.97	10.85[a]	11.31[a]

Note: [a]Statistically different than zero at the 99% level
Source: Authors' calculations using Household Surveys (World Bank)

Table VI.

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	SSA	MENA	ECA	SA	EAP	Western Europe
Demographic set						
Age		Young (15-54)				Older (35 +)
Urban/rural						Urban
Education		None/ primary incomplete		None/ primary incomplete		None/primary incomplete
Marital status			Married or live together			Married or live together and divorced
Presence of children in the household						
Presence of elderly in the household		No	Yes			
Presence of other member with labor income	Yes		No	No		
Job-related variables						
Hours of work		Part time and over time	Part time			Part time
Type of employment						
Occupation				Elementary occupations		
Economic sector	Communal services					
Job formality	Informal					
Earnings percentiles		Poorer				

Source: Authors' calculations using Household Surveys (World Bank)

Table VII.
Labor market segments with highest unexplained gender earnings gap by region

for the full set of matching variables described above) and GDP per capita, institutionalized democracy, and predominant religion, respectively:

- Figure 7 plots GDP per capita, measured in 2005 PPP terms, against the unexplained component of the wage gap. The negative relationship between the two variables that the figure depicts is weak, as judged by the R^2 coefficient (0.0066). Without considering Luxemburg within the analysis the R^2 would increase (0.0377). Bigger economies tend to show smaller gender disparities, but the relationship is not too strong.
- Figure 8 plots institutionalized democracy against the unexplained component of the wage gap, showing a positive relationship between both. Countries with more institutionalized democracies tend to show bigger unexplained gender disparities, although, as above, the relationship is not too strong.
- Figure 9 show bar diagrams of the unexplained component of the gender earnings gaps groups by the predominant religion in the countries. The results show no clear pattern. If any, the unexplained gender earnings gaps are slightly higher in Muslim countries than in the rest of the world.

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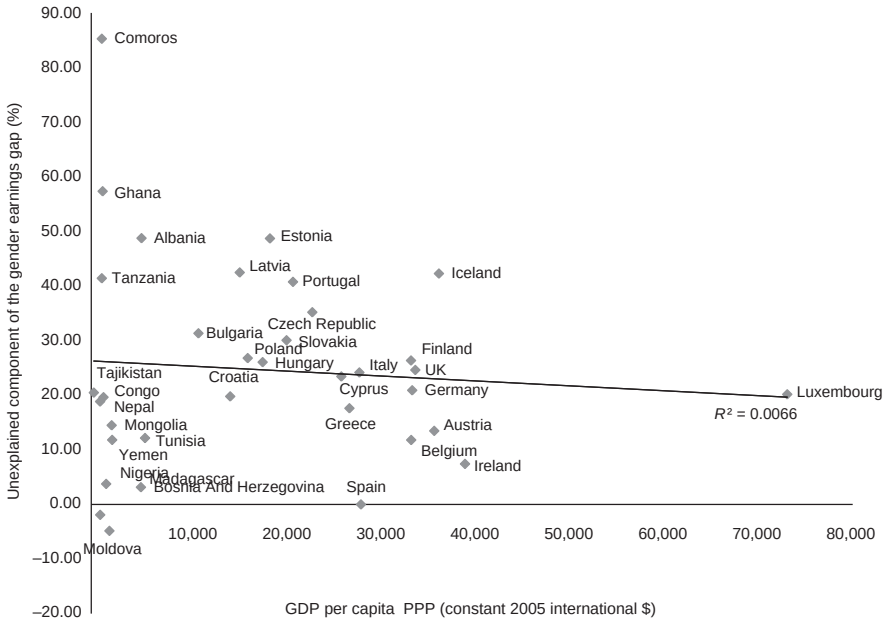
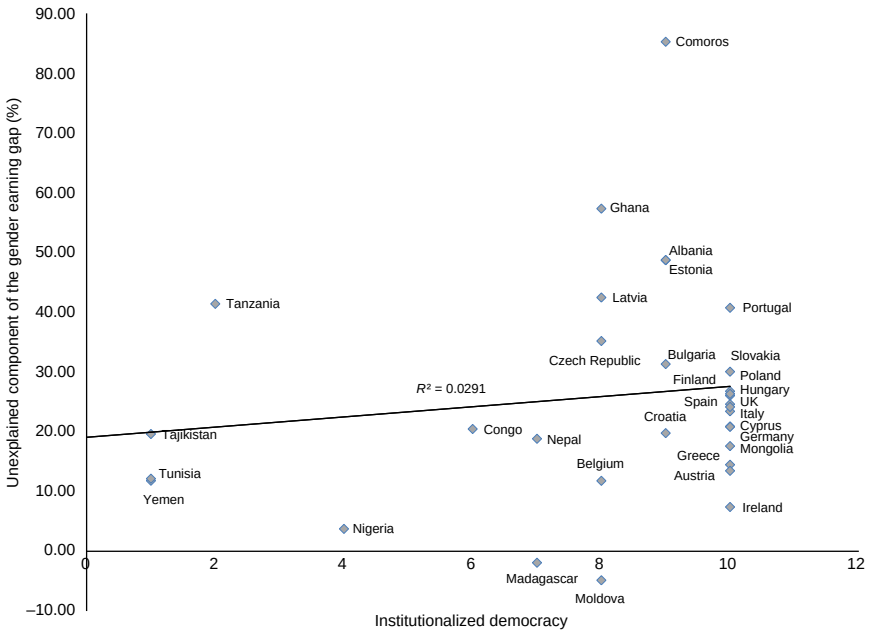


Source: Authors' calculations using World Bank Indicators

Figure 7.
Unexplained component of the gender earnings gap against GDP per capita



Note: The institutionalized democracy indicator is an 11-point scale (0-10) derived from indicators on the competitiveness of political participation, the openness and competitiveness of executive recruitment and constraints on the chief executive (see Appendix Figure A3 for details)
Source: Authors' calculations using Marshall and Jaggers, 2011 (www.systemicpeace.org/polity/polity4.htm)

Figure 8.
Unexplained component of the gender earnings gap against democracy level

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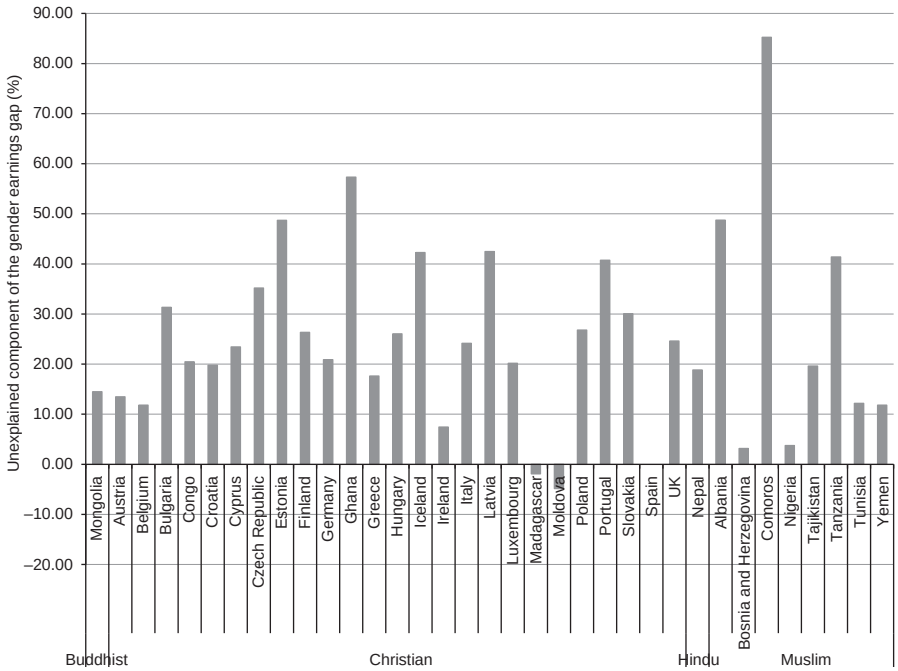

Note: The figure reports the religion that shows the largest group of adherents in each country
Source: The World Factbook, 2009 (www.cia.gov/library/publications/the-world-factbook/index.html)

Figure 9.
Unexplained component of the gender earnings gap and religion, by country

The results from comparing the unconditional gender earnings gaps with the same socio-economic and political indicators (available upon request) deliver similar results.

5. Concluding remarks

This paper has presented gender earnings disparities for an as comprehensive as possible list of countries. A prominent result is the vast heterogeneity of gender differentials. An important component of those earnings differentials cannot be explained on the basis of gender differences in observable characteristics that the labor markets rewards. At a cross-country level, the gaps cannot be completely linked neither to socio-economic nor to political indicators. Much of the earnings gaps are yet to be explained.

Among the regularities that can be observed across the globe highlights the role of part-time work, a predominantly female way of participating in the labor markets which particularly suffers from higher unexplained gender disparities in pay. Another regularity, seen in most of the regions, is the fact that unexplained gender earnings disparities tend to be more pronounced among low-educated workers, and part-time workers. These regularities on the descriptive statistics of gender earnings gaps may serve as indications of areas for which more analytical work, with a stronger emphasis on causality, is needed for advancing the understanding of gender disparities.

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Notes

1. For more details about the harmonization of the data sets, see Montenegro and Hirn (2008).
2. The gender earnings gaps decomposition for these countries can be found in two companion papers: Atal *et al.* (2009) and Hoyos and Ñopo (2010).
3. These regions are controlled for economic sector because for the first region all the individuals are informal (i.e. they are not covered by social security) and in the second region all the individuals are formal (covered by social security), in this way social security is not a proper control for informality.
4. Using Kolmogorov-Smirnov tests we conclude at the 90 percent confidence that the distributions of characteristics do not differ across the sets of variables, for both males and females. That is, restricting the dataset due to data availability does not bias the sample.
5. See Ñopo (2008) for a detailed description of the components and the common supports.

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(The Appendices follow overleaf.)

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Appendix 1

Table AI.
Region literature review

Country	Authors and year	Data	Main findings	Methodology
International comparison 124 countries in east and southern Africa west Africa east Asia Pacific, south Asia, east and central Europe, rest of Europe, Middle East, north Africa, Americas	Tzannatos (1999)	ILO data base	The paper examines the level and changes in female and male participation rates, employment segregation and female relative to male wages across the world economy. It is presented a decomposition of the economy-wide female relative wage in employment effect (changes in sectoral employment), female wage effect (changes in gender pay gap within sectors) and structural wage effect (changes in male earnings). It finds sufficient evidence supporting that labor markets in developing countries are transformed in the sense that gender differentials in employment and pay are narrowing much faster than in industrialized. Growth benefits women at large, inequalities can have significantly adverse effects on welfare, and market-based development alone can be a weak instrument for reducing inequality	Decomposition of the economy-wide female relative wage
Australia, Austria, Britain, Bulgaria, Canada, Czech Republic, east Germany, west Germany, Hungary, Ireland, Israel, Italy, Japan, the Netherlands, New Zealand, Norway, Poland, Russia, Slovenia, Sweden, Switzerland, USA	Blau and Kahn (2003) Cornish (2007)	International Survey Programme	Using micro-data for 22 countries over 1985-1994 period, it was found that more compressed male wage structures and lower female net supply are both associated with lower gender pay gap. The extent of collective bargaining coverage in each country is significantly associated with the gender pay gap. Moreover, a large part of the difference in the gender differential between high gap and low gap countries is explained by the differences across these countries in overall wage structure, and in the differences in female net supply. The John, Murphy and Pierce decomposition suggested a strong role for wage inequality and wage setting institutions in affecting gender pay gap It is estimated that women earn about 78% of what men make. The principal reasons for the existence of gender pay discrimination are the occupational segregation and the global trend towards greater informality arising from market liberalization. For the most part of the world, existing labor market mechanisms have not made significant progress in remedying this global gender pay gap. Measures that can deliver increases in women's pay to reduce this discrimination are critical to their survival and prosperity	John, Murphy, and Pierce decomposition Article
Meta-analysis: 62 countries; micro-data: 58 countries	Weichselbaumer *et al.* (2007)	Meta-analysis conducted by Weichselbaumer and Winter-Ebmer (2005); International Social Survey Programme (ISSP) 1985-2000	It is used two very different approaches to explore the relation between market orientation and gender wage differentials in international data. The first approach employs meta-analysis data and takes advantage of the fact that many studies already exist which use national data sources to the best possible extent. The second approach uses comparable micro data. In each cases, it is calculated the gender earning gap using Oaxaca-Blinder decomposition. Using both data bases, it is obtained the conclusion about the existence of a strong negative correlation between competitive markets and gender wage gaps, in particular when competitive markets are measured by the components "free trade", "absence of regulation" and "legal structure". More market orientation might be related to gender wage gaps via its effects on competition in product and labor markets and the general absence of regulation in the economy	Oaxaca-Blinder decomposition

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Country	Authors and year	Data	Main findings	Methodology
Sub-Saharan: Ghana, Malawi, Nigeria; south and east Asia: Bangladesh, Indonesia, Nepal, Vietnam; eastern Europe and central Asia: Albania, Bulgaria, Tajikistan: Latin American and the Caribbean: Ecuador Guatemala Nicaragua Panama	Hertz *et al.* (2008).	RIGA-L dataset	It is used the Oaxaca-Blinder decomposition to understand the determinants of wage-gaps between men and women, between urban and rural workers, and between those employed in the rural agricultural versus the rural non-agricultural sectors, for the 14 developing and transition economies. The average gender gap in daily wages across the 14 countries was on the order of 25 percent in favor of men. There was no clear regional pattern to the size of the raw wage difference, yet there is a clear regional difference in the breakdown between its explained and unexplained components. The average unexplained share of the wage gap was very high, at roughly 90 percent. While the geographic and sectorial wage gaps should respond to changes in the level of human capital, and in the location of non-farm employment opportunities, in other words, to economic development, there seems to be no evidence that the gender wage premium responds to economic growth *per se*	Oaxaca-Blinder decomposition
SSA				
Cote D'ivoire, Ethiopia, Kenya, Cameroon, Ghana, Madagascar, Mauritania, Malawi, Nigeria, Uganda	Kolev and Sirven	World Bank Survey-based Harmonized Indicators Program 2000	Participation in productive employment in urban areas was appreciably lower for women, yet countries with more favorable employment outcomes for men also had higher employment ratios among women and less gender disparities in employment. In most countries. Unemployment was largely an urban phenomenon, affecting women disproportionately. Women were overrepresented among the underemployed. Low-paid work was an important issue in seven countries for which data were available, affecting both men and women. In most countries, women experienced a disadvantage in earnings. Women tended to be underrepresented in the industry and service sectors and overrepresented in agriculture. For both men and women, education did not seem to be associated with lower unemployment and higher employment. The returns from education on earnings were important, and education also had a positive effect on gender wage equity	Ratios and indicators
Ethiopia	Kolev and Suarez	Labor Force Survey 2005	On average women's monthly wages represented in 2005 only about 55 percent of men's wages. No more than 50 percent of the observed wage gap could be attributed to explained differences in characteristics, leaving a large fraction of the gap unexplained. A non-negligible proportion of the gender wage gap – at least 11 percent but no more than 23 percent on average – was explained by the differences in education endowments between men and women. Job characteristics were found to be systematically less favorable for women	Mincer equations, Cotton-Neumark decomposition procedure
Madagascar	Nordman, Rakotomanana, and Robilliard	Enquête périodique auprès des ménages (EPM) 2001 and 2005	Regarding labor allocation, participation of women in the Malagasy labor market appears to be high, and it increased between 2001 and 2005. Overall, the structure of employment changed between 2001 and 2005. The evolution in employment status can be explained in part by some of the shocks experienced by the Malagasy labor market between 2001 and 2005. The study found a strong positive impact of education on the probability of getting a paid job, for both men and women. Regarding gender inequality in earnings, the results show that the average gender wage gap is relatively small and stable over time. Across wage employment sectors, the gender gap appears to be lowest in the public sector and highest in the informal sector	Oaxaca and Neumark's Decomposition

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Country	Authors and year	Data	Main findings	Methodology
Benin, Kenya, Madagascar, Mauritius, Morocco, Senegal, and Uganda	Nordman and Wolff	Investment Climate Assessment (ICA) surveys	This study makes use of matched employer-employee data collected in seven African countries to shed light on the magnitude of the gender wage gap in the manufacturing sector. Raw gender gaps calculated at the mean of the samples tend to hide significant differences in the magnitude of the gaps along the wage distribution. They investigated the belief that differences among the seven African countries might be a result of the presence of selectivity effects, through gender differences in access to jobs	Quantile regression, fields decomposition, mean and quantile decomposition
Tanzania	Parra and Wodon	SAM 2001 constructed by Thurlow and Wobst (2003)	An exogenous increase in the demand for any of the six sectors would help (at the margin) to close the gap between total pay for male and female workers, and between total pay for educated and non-educated workers. Results would suggest that promoting value added growth in Tanzania could help close the gap between female and male labor income	Structural path analysis (SPA) on social accounting matrices (SAMs)
Ethiopia	Suárez	Labor Force Survey (LFS) 2005	There is a strong gender-based division of labor in Ethiopia, which is much more acute in rural areas. Women work more and for longer hours than men in the household, while the reverse is true in the labor market. Women spend more time at work than men, this phenomenon being observed to a greater extent in rural areas. Women are clearly disadvantaged in terms of job allocation. Unpaid family workers account for the highest share of female workers, while the majority of male workers are self-employed. As they become educated and reach higher levels of education, men and, to a greater extent, women, strongly increase their chances of working in the public sector, which is the most rewarding wage-employment sector because it offers the highest earnings and protection	Descriptive statistics, multinomial logit regressions, tobit models
Sierra Leone	Wodon and Ying	Integrated Household Survey	Women are found to work much more than men on domestic tasks, especially in rural areas. For many children, the burden of domestic work is high as well, reaching more than 20 hours per week on average in some cases. Access to basic infrastructure services (water and electricity) makes a large difference in the amount of time spent on domestic work.	Descriptive statistics, OLS
Republic of Congo	Backiny-Yetna and Wodon	Households Expenditure (ECOM) survey	Labor income tends to be controlled by men. The results presented here show that, when women control a higher share of total labor income within the household, the household tends to allocate larger shares of its resources to investments that benefit their children. The evidence here suggests that in the Republic of Congo, as in other countries, the unitary household hypothesis does not hold well	Descriptive statistics, standard regression analysis
Nigeria	Urdinola and uentin Wodon	Core Welfare Questionnaire Indicator (CWIQ) surveys 2003	Most of household decisions are made by men. Women participate more often in decisions on expenditures for food, heath, and education, but even in these areas, men more often than not remain the main decision makers. The decision-making power of women is especially low among poor households, in part, because in such households, the likelihood that women will be the main contributor of household income is much lower as well. This study found that increasing the contribution ability of women to household income leads to higher decision-making power for them within the household	Bivariate probit techniques

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Country	Authors and year	Data	Main findings	Methodology
MENA				
Egypt	El-Haddad (2009)	Egyptian Labor Market Survey 1998 and 2006	Egypt's labor market structure is dominated by the divide between the public and private. The country's labor market changed as a result of the Economic Reform and Structural Adjustment Program (ERSAP) in 1991. Job quality in Egypt is higher for women than men due to their higher relative employment share in the public sector. Real monthly wages are consistently higher for men than women	Oaxaca decomposition
Egypt	Kandil (2009)	Labour Market Survey 1988 and 1998; Labour Market Panel Survey 2006	The overall gender wage gap and discrimination in absolute term are far from being constant along the wage distribution. Although relative discrimination decreases along the wage distribution, contribution of discrimination in explaining the gender wage gap rises during the three years even at the top of the wage distribution. It seems that the increase in the skills of the labor force, especially for women, did not lead to a reduction for neither absolute nor relative discrimination	Two-stage regression quantiles (2SRQ), Oaxaca-Blinder decomposition; Machado and Mata methodology
Morocco	Nordman and Wolff (2006)	Firm Analysis and Competitiveness Survey (FACS) 2000	There exists a glass ceiling effect in manufacturing firms of Morocco, the earnings gap being much higher at the top of the distribution than at the bottom. The gender earnings gap seems to be mainly due to differences in observed characteristics between men and women at every level of the earnings distribution. Within firms where women and men have identical labor market characteristics, females are less rewarded for their observed endowments than males are and this is all the more true when they reach top positions	Quantile's regressions, quantile decomposition
ECA				
Italy, Spain, Portugal, the Netherlands, the Czech Republic, Latvia, Slovakia, Lithuania and Norway	Simón	European Structure of Earnings Survey (2002)	Female segregation into low-wage structures emerges as the main contributor to the gender pay gap, with female segregation into low-wage workplaces as an outstanding origin of both the gender pay gap in all European economies and of international differences in its size. International disparities in global characteristics of the wage structure, and in particular in the extent of wage inequality, are not major determinants of inter-country differences in the size of the gender wage gap in Europe. Policy initiatives like wage formation systems with the aim of influencing the wage structure might not be central in order to reduce the gender pay gap. Cross-country differences in the origin and the magnitude of the gender gap in pay are particularly significant between the new members of the European Union, which suggests the existence of a remarkable diversity into this group of countries.	Extension of the Juhn *et al.* decomposition
Estonia	Rückert (2002)	Estonian Labour Force Survey (1995, 1999)	The increase of the Estonian gender wage gap of approximately 7% was decomposed into four components. It was found that the main cause for the increase in the pay differential is the absence of improvement of the position of women within the male residual distribution. However, the magnitude of the influence of this so-called "gap effect" on the change in the pay differential was reduced by the counteracting sum of the wage structure components. In other words, the fall in observed wage inequality between 1995 and 1999 has a negative impact on the widening of the gender gap. It was shown that the wage gaps between men and women for both years increase in size as we move up the wage distribution. Performing the Juhn *et al.* decomposition at different quantiles for both years reveals that the magnitude of the gender specific and wage structure effects are not homogeneous across the distribution	Extension of the Juhn *et al.* decomposition using quantile regression approach

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Country	Authors and year	Data	Main findings	Methodology
Bulgaria, Czech Republic, Hungary, Khazakstan, Latvia, Poland, Russia, Slovakia, Ukraina, Uzbekistan, Yugoslavia	Newell and Reilly (2001)	Bulgarian Household Budget Survey, Social Stratification Surveys, Polish Labour Force Surveys, FRY Labour Force Surveys, Latvian Household Budget Survey, Russian Longitudinal Monitoring Surveys, Ukraine Living Standards Measurement Survey, Kazakhstan Labour Force Survey, The European University Institute and Essex University Survey in Uzbekistan	The gender pay gap has not exhibited, in general, an upward tendency over the transitional period to which available data relate. Most of the gender pay gap is ascribed to the "unexplained" component using conventional decompositions and this may partly be attributable to the proxy measure for labor force experience used in this study. Quantile regression analysis indicates that, in all but one country, the *ceteris paribus* gender pay gap rises as we move up the wage distribution	Oaxaca-Blinder decomposition
Turkey	Tansel (2004)	Household Expenditure Survey (1994)	When controlled for observed characteristics and sample selection, for men, public administration wages are higher than private sector wages except at the university level where the wages are at par. State-owned enterprise wages for men are higher than private sector wages. Similar results are obtained for women. Further, while wages of men and women are at parity in the public administration, there is a large gender wage-gap in the private sector in favor of men. Private returns to schooling are found to be lower in the noncompetitive public rather than in the competitive private sector	Oaxaca-Blinder decomposition
Bulgaria	Dimova and Gang (2004)	Integrated Household Surveyes (1995, 1997, and 2001)	While skilled labor's pattern of reallocation into the public sector remains roughly the same over time, the inflow of highly educated laborers into the private sector and self-employment increases. These changes coincide with the erosion of the returns to observed skills in the private sector and self-employment, while the public sector continues to reward all types of education at higher than the elementary level	Earnings equations after correcting for selection bias

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Country	Authors and year	Data	Main findings	Methodology
Russia	Lehmann and Wadsworth (2001)	Russian Longitudinal Monitor Survey (1994, 1995, 1996, and 1998)	The median gender wage gap would be around 25 points higher than the actual observed gap. Similarly, the counterfactual ratio of mean graduate pay to mean pay of those with primary education is around 20 points lower than observed. The parameters of the counterfactual wage distributions are very similar to the parameters of the observed wage distributions of those not in arrears. For those wishing to study aspects of wage differentials and inequality in Russia, it may be feasible to use the subset of those not in arrears and still get close to the true population parameters	Counterfactual distributions
Czech Republic, Bulgaria, Hungary, Poland, Russia, Slovakia, and Ukraine	Elizabeth Brainerd (2000)	Household surveys taken before and after the implementation of market reforms	The results indicate a consistent increase in female relative wages across eastern Europe, and a substantial decline in female relative wages in Russia and Ukraine. Women in the latter countries have been penalized by the tremendous widening of the wage distribution in those countries. Increased wage inequality in eastern Europe has also depressed female relative wages, but these losses have been more than offset by gains in rewards to observed skills and by an apparent decline in discrimination against women	Juhn-Murphy-Pierce decomposition
SA				
Hong Kong, Korea, Singapore, Taiwan, Indonesia, Malaysia, Philippines, Thailand, Japan, India, China	Meng (1998)		Female labor participation in most Asian countries is closely linked to national economic development. Also, it has been found that these changes in technology and world-trade patterns have caused Asian women to participate more in the non-agricultural sector. Gender wage differentials are heavily influenced by culture and labor-market institutional settings but have little to do with economic development	Literature review
South and east Asia; Latin America	Camps, Camou, Maubrigades and Mora-Sitja (2006)	United Nations datasets	In the east Asian, the erosion of the gender gap seems to be mainly explained by the Stopler-Samuelson and Becker simple model. With the exception of China, the exposure to international trade openness acts as an engine of erosion of the gender wage differences. The improvement of women's condition in most of the cases has further consequences for the analysis of wage inequality. Since traditionally women have been at the bottom of the wage hierarchy, their economic improvement also narrows wage dispersion and income inequality	Panel Data Models, Gini Index within men and within women
EAP				
Indonesia	Pirmana (2006)	The National Labour Force Survey (SAKERNAS)	The result of estimating Mincerian earnings equation shows that factors as human capital, socio-demography-economic characteristic and location factors affects significantly individual earnings. The profile of earnings inequality by gender seems to be an "inverted U" fashion, with the male-female earnings gap narrowing as educational attainment went up. The results also suggest that the industrial affiliation of female workers matter	Mincer equations; Oaxaca-Blinder decomposition
Mongolia	Pastore (2010)	School to Work Survey (SWTS)	From the estimation of determinants of gender differences in early career, it was found that, on average, female wages are not lower than those of males. However, the conditional gender gap becomes significant and sizeable for the over-20s. The decomposition shows that most of the gap is due to differences in the way the market values the same characteristics of men and women. If wages were paid equally, women should have 11.7 percent more for their higher education attainment and overall 22 percent more	Juhn-Murphy-Pierce decomposition

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Country	Authors and year	Data	Main findings	Methodology
Vietnam	Liu (2001)	Vietnam Living Standard Surveys (VLSS)	As consequence of the Doi Moi reforms (economic reforms initiated in 1986 with the goal of creating a socialist-oriented market economy), absolute gender earnings gap has risen over time in the private sector; discrimination has increasingly accounted for more of the gender earnings differences, and it accounts for more of the gap in private sector than in public sector in 1997-1998 than in 1992-1993	Appleton-Hoddinott-Krishnan. Decomposition
Vietnam	Liu (2003)	VLSS	Using Juhn *et al.* (1991) decomposition and data over the period 1992-1993 and 1997-1998, it is showed that changes in observed variables have tended to narrow it, but the gap effect has tended to widen it, with the net effect being one of little change. The experience of Vietnam, illustrates the importance of discrimination as an obstacle to gender wage gap convergence	Juhn-Murphy-Pierce decomposition
Vietnam	Pham and Reilly (2006)	Vietnam-Household Living Standard Surveys (VHLSS)	It is examined the evolution of the gender pay gap for the wage employed over the period 1993 to 2002, and it is found that the transition into market-oriented economy have had a significant impact on the labor market in Vietnam and have acted to reduce gender wage disparities in the wage employment sector. The decomposition analysis suggests that the treatment effect is relatively stable across the conditional wage distribution	Quantile regression analysis
Thailand and Vietnam	Son (2007)	Vietnam: VLSS Thailand: Labor Force Surveys	Development of a decomposition methodology to explain the welfare disparity between male and female workers in terms of three components: segregation, discrimination (earning differential between males and females within occupations), and inequality. It was found the gender disparity in welfare is largely contributed by the labor market discrimination against female workers, and the other two components play a smaller role in explaining the gender welfare gap	Index of welfare disparity
Western Europe Australia, France, Japan, and Britain	Daly *et al.*, 2006	Australian Workplace Industrial Relations Survey (AWIR95), French data are from 1992 French Labour Cost and Wage Structure Survey, Japan data are from the Basic Survey of Wage Structure in 1990 and Britain data are drawn from the British Workplace Employee Relations Survey 1998 (WERS98)	Female segregation into low-wage structures emerges as the main contributor to the gender pay gap, with female segregation into low-wage workplaces as an outstanding origin of both the gender pay gap in all European economies and of international differences in its size. On the other hand, international disparities in global characteristics of the wage structure, and in particular in the extent of wage inequality, are not major determinants of inter-country differences in the size of the gender wage gap in Europe. A final point of concern is that cross-country differences in the origin and the magnitude of the gender gap in pay are particularly significant between the new members of the European Union, which suggests the existence of a remarkable diversity into this group of countries	Updates 1980s Bob Gregory's work with Becker (1975) and Mincer (1974) decomposition

(*continued*)

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Table AI.

Country	Authors and year	Data	Main findings	Methodology
Belgium, Denmark, Italy, Ireland, Spain, and UK	Roberto Plasman and Salimata Sissoko (2004)	1995 European Structure of Earnings Survey (ESES), gathered by Eurostat	The evidence show that the significance of differences in human capital in modeling gender pay differentials varies across countries. Nevertheless, a common fact among all countries under study is that these characteristics explain less than 50% of the pay gap. International comparisons of wage differentials confirm that both gender-specific factors and wage structure play an important role as gender wage gap is concerned. The striking results of the adaptation of the Oaxaca-Blinder decomposition for international comparisons are that countries, which record the lowest gender wage gap and gender differences in observed productivity characteristics as well as high levels of productive characteristics	Oaxaca and Binder decomposition, Blau and Khan decomposition, and Brown, Moon and Zoloth decomposition
Austria, Belgium, Britain, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands and Spain	Arumpalam *et al.* (2004)	European Community Household Panel (ECHP)	The gender pay gaps are typically bigger at the top of the wage distribution, a finding that is consistent with the existence of grass ceilings. For some countries gender pay gaps are also bigger at the bottom of the wage distribution, a finding that is consistent with sticky floors. The gender pay gap is typically higher at the top than the bottom end of the wage distribution, suggesting that glasses ceilings are more prevalent than sticky floors and that these prevail in the majority of our countries. The gender pay gap differs significantly across the public and private sector wage distribution of each country	Quantile regression analysis
Spain	Catalina Amuedo-Dorantes and Sara de la Rica (2005)	1995 and 2002 Spanish Wage Structure Surveys (EES-95 and EES-02)	The raw gender wage gap decreased from 0.26 to 0.22 over the course of seven years. However, even after accounting for workers' human capital, job characteristics, female segregation into lower-paying industries, occupations, establishments, and occupations within establishments, women still earned approximately 13 percent and 16 percent less than similar male counterparts as for 1995 and 2002, respectively. Most of the gender wage gap is attributable to workers' sex. Yet, female segregation into lower-paying occupations within establishments, establishments and industries accounted for a sizable and growing fraction of the female-male wage differential	Bayard, Hellerstein, Neumark and Troske estimation, pooled OLS, fixed-effects, augmented pooled OLS
USA, UK, Finland, Denmark, Germany, the Netherlands, Belgium, Austria, Ireland, France, Italy, Spain, Portugal, and Greece	Claudia Olivetti and Barbara Petrongolo (2006)	Panel Study of Income Dynamics (PSID) for the USA and the European Community Household Panel Survey (ECHPS) for Europe. Period 1994-2001	Recover information on wages for those not in works in a given year using alternative imputation techniques. Imputation is based on wage observations from other waves in the sample, observable characteristics of the non-employed, and a statistical repeated-sampling model. The authors estimate median wage gaps on the resulting imputed wage distributions and obtain higher median wage gaps on imputed rather than actual wage distributions for most countries in the sample. Correction for employment selection explains more than a half of the observed correlation between wage and employments gaps	Heckman's two-stage parametric approach
Spain	Dolado *et al.* (2005)	European Community Household Panel (ECHP-99)	In contrast with the steep pattern found for other countries, the flatter evolution of the gap in Spain hides a composition effect when the sample is split by education. For the group with college/tertiary education, we find a higher unexplained gap at the top than at the bottom of the distribution, in accordance with the conventional glass ceiling hypothesis, while for the group with lower education, the gap is much higher at the bottom than at the top of the distribution	Quantile regression analysis and Oaxaca-Blinder decomposition

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Appendix 2

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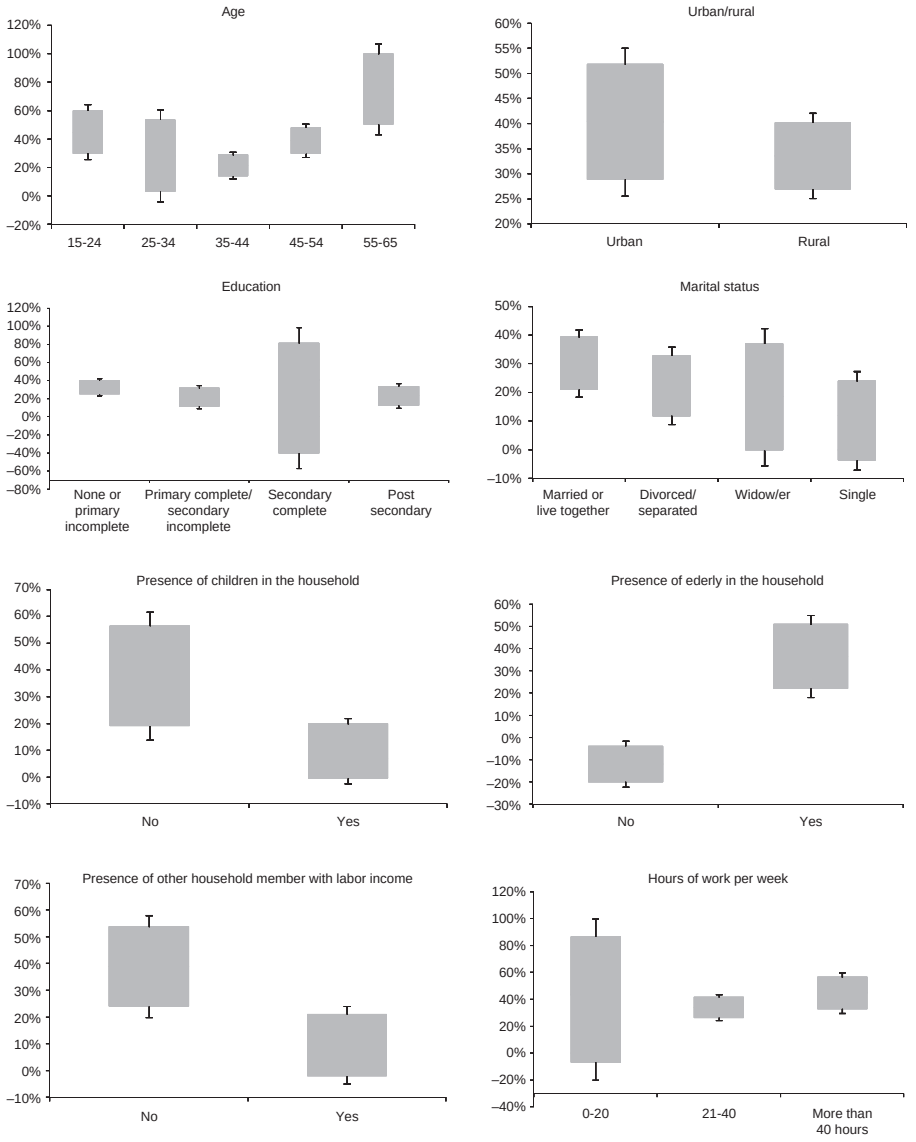

Figure A1.
Confidence intervals for the unexplained gender earnings gap (after controlling for demographic and job-related characteristics) by different characteristics – SSA region

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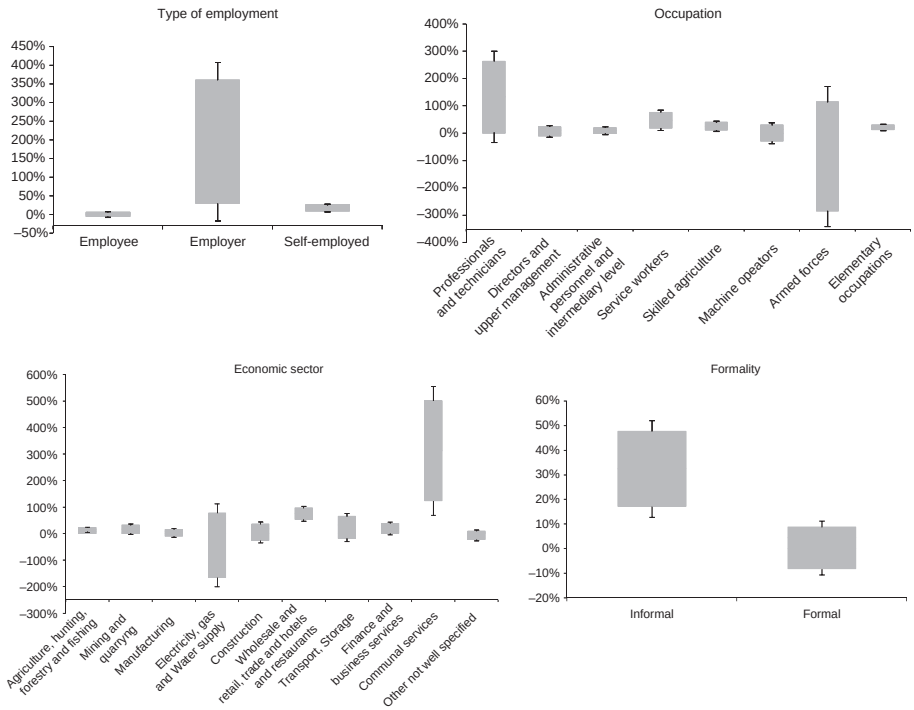

Source: Authors' calculations using Household Surveys (World Bank)

Figure A1.

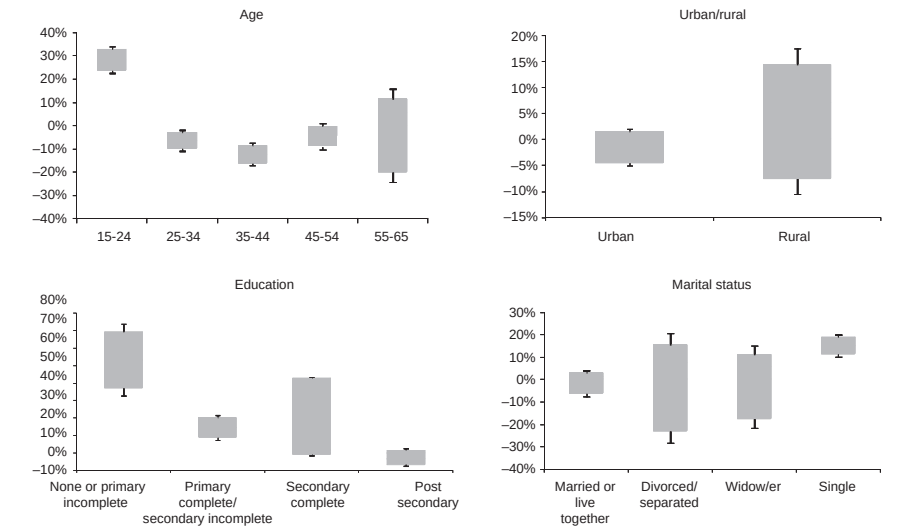

Figure A2.
Confidence intervals for the unexplained gender earnings gap (after controlling for demographic and job-related characteristics) by different characteristics – MENA region

(*continued*)

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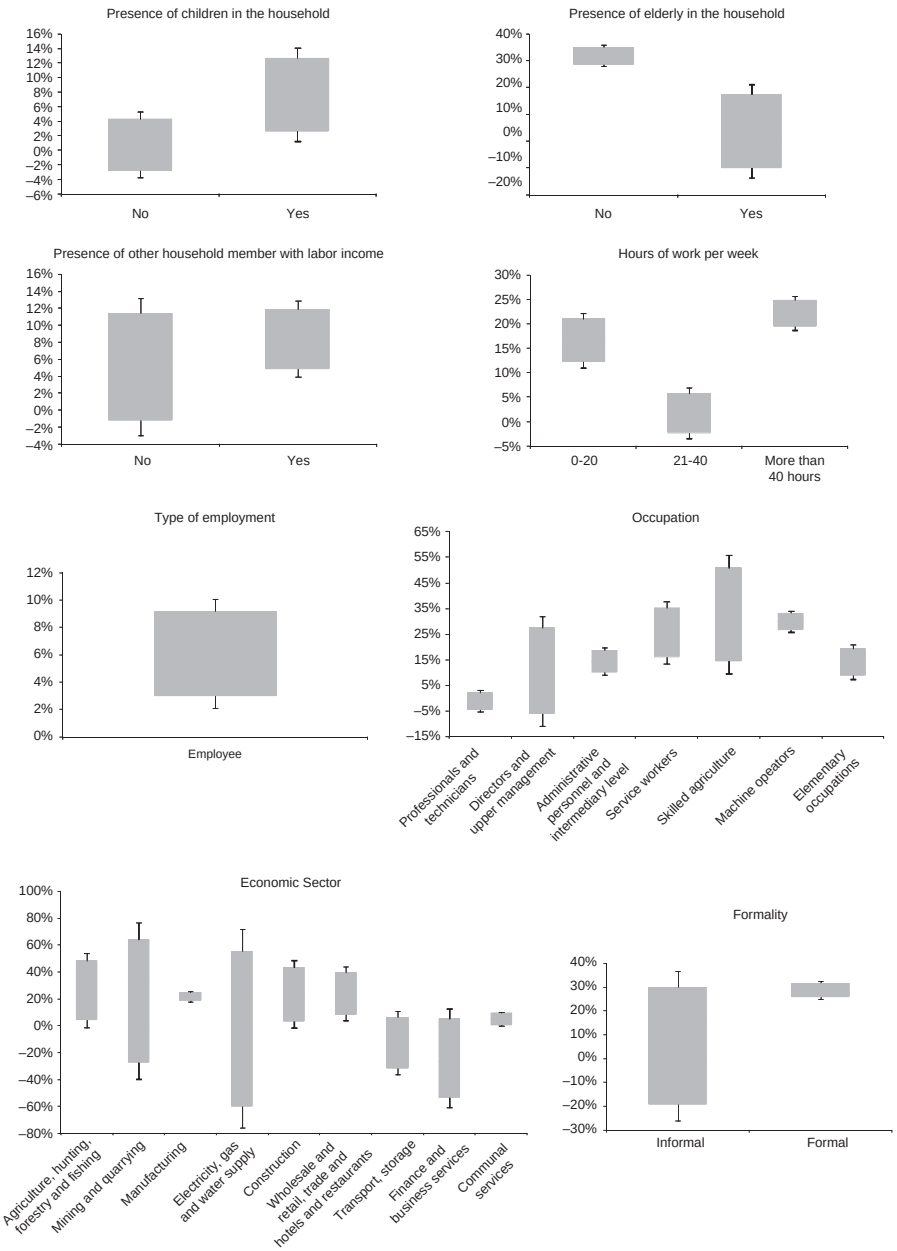

Figure A2.

Source: Authors' calculations using Household Surveys (World Bank)

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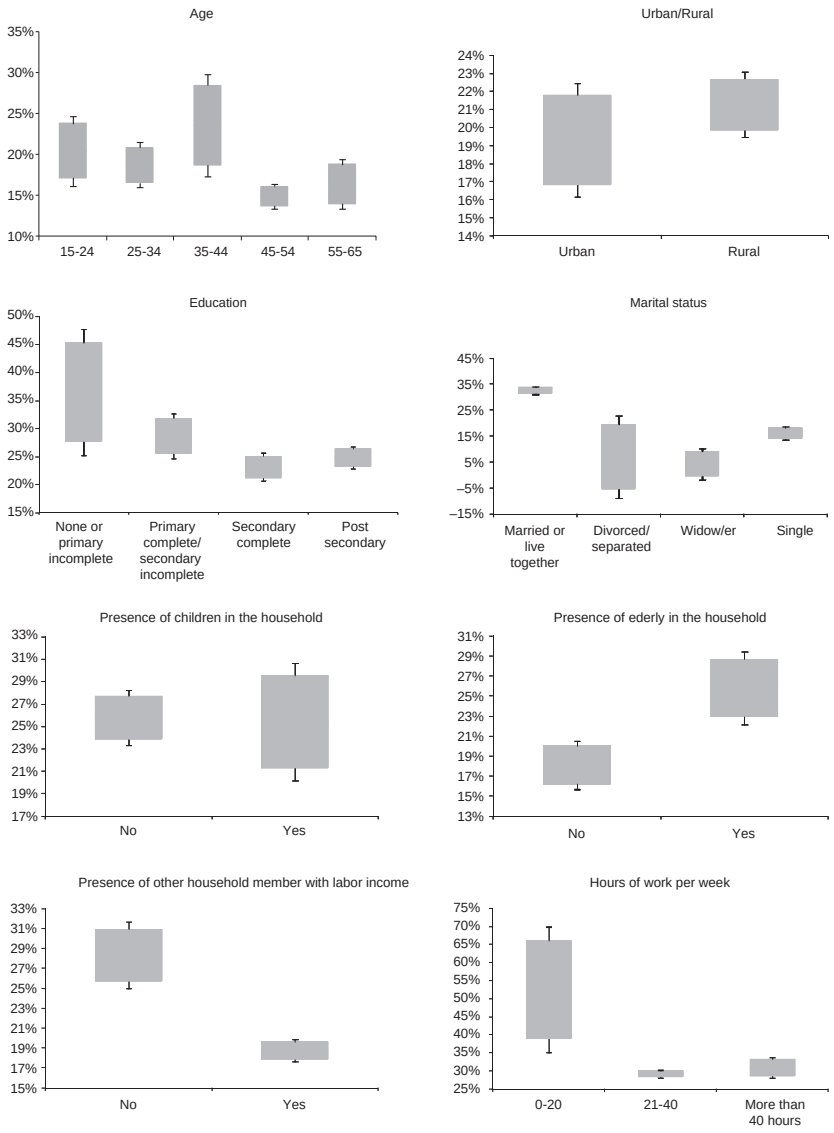

Figure A3.
Confidence intervals for the unexplained gender earnings gap (after controlling for demographic and job-related characteristics) by different characteristics – ECA region

(*continued*)

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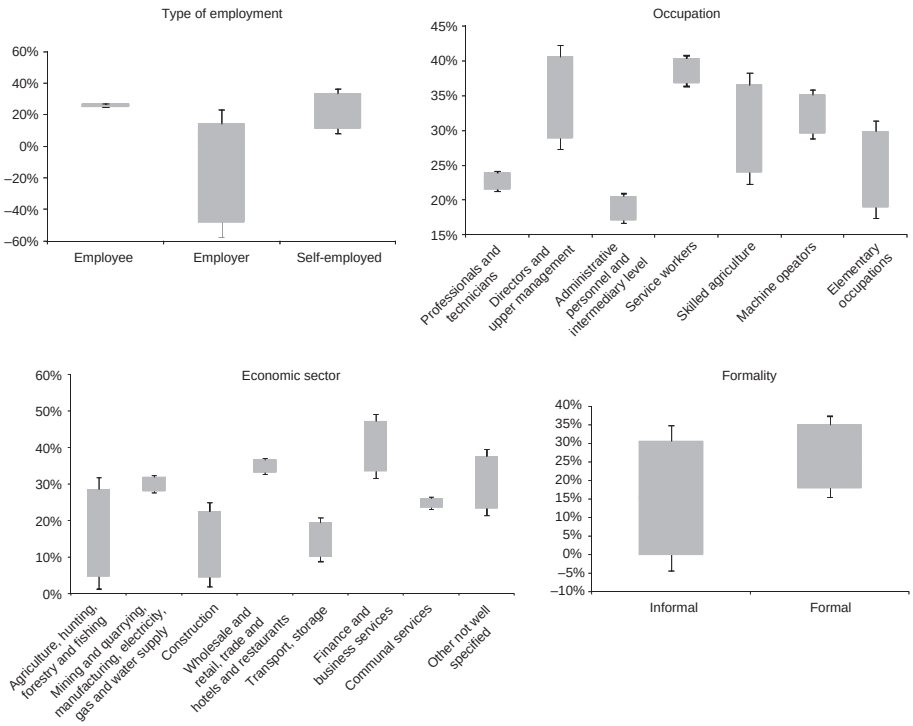

Figure A3.

Source: Authors' calculations using Household Surveys (World Bank)

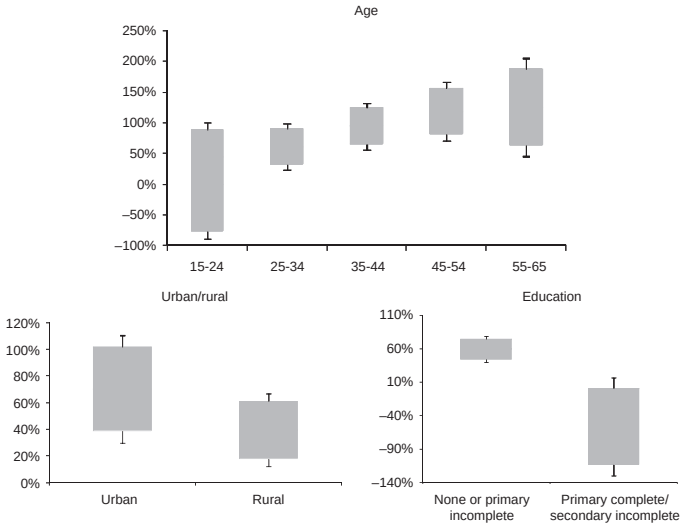

Figure A4.
Confidence intervals for the unexplained gender earnings gap (after controlling for demographic and job-related characteristics) by different characteristics – SA region

(*continued*)

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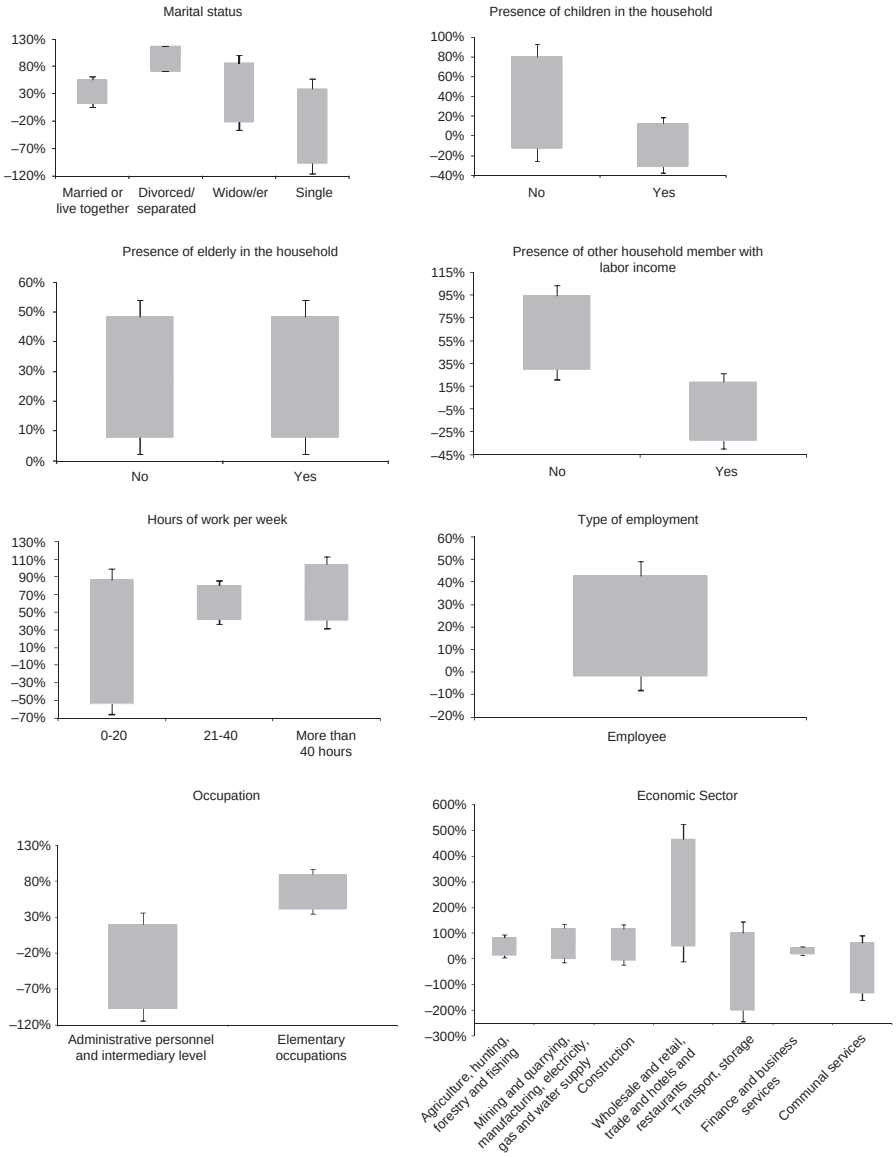

Source: Authors' calculations using Household Surveys (World Bank)

Figure A4.

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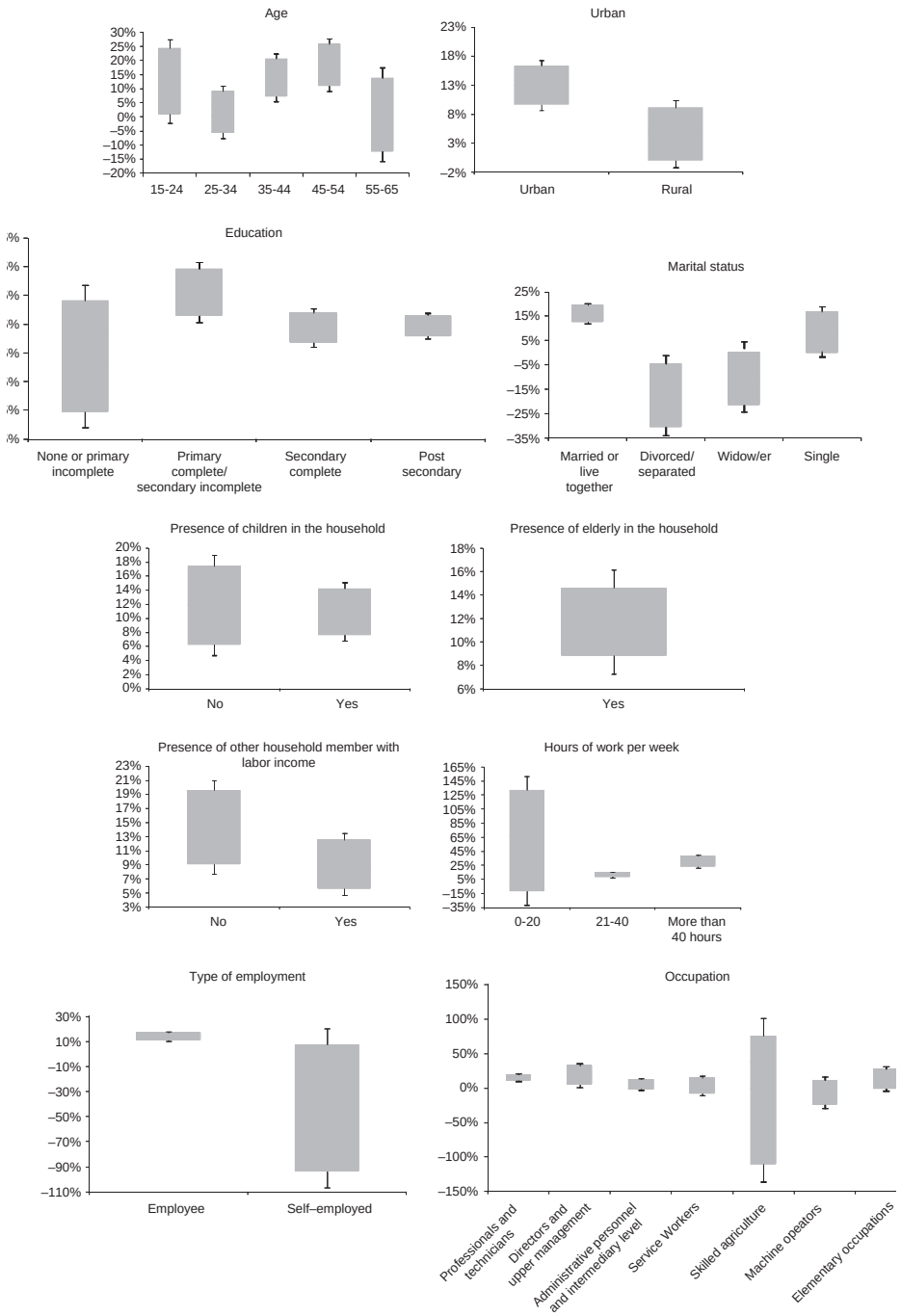

Figure A5.
Confidence intervals for the unexplained gender earnings gap (after controlling for demographic and job-related characteristics) by different characteristics – EAP region

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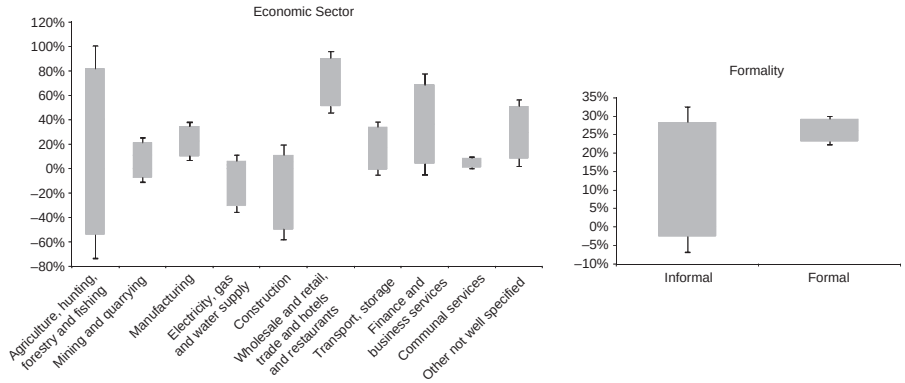

Figure A5.

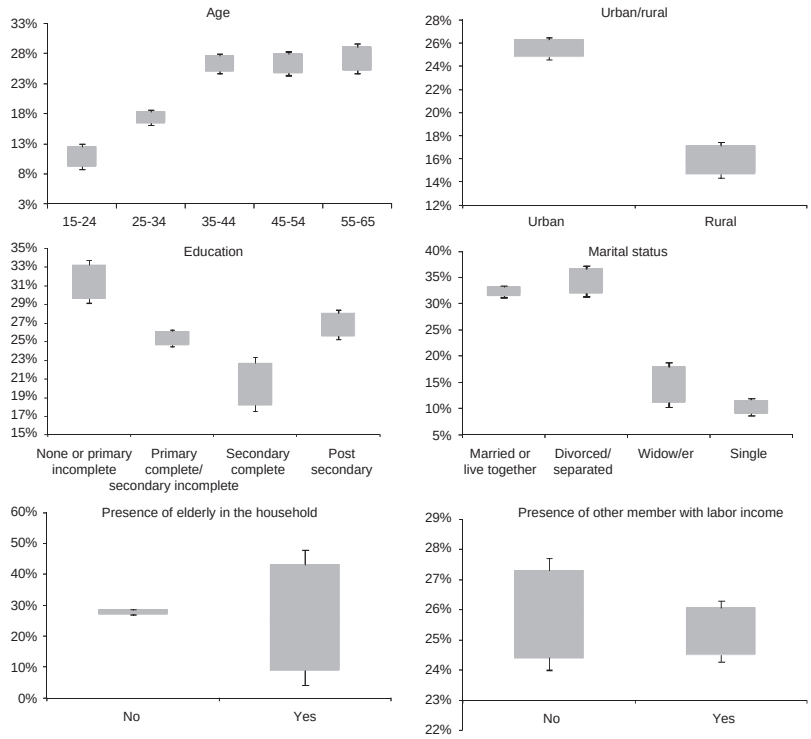

Figure A6.
Confidence intervals for the unexplained gender earnings gap (after controlling for demographic and job-related characteristics) by different characteristics – western Europe region

(*continued*)

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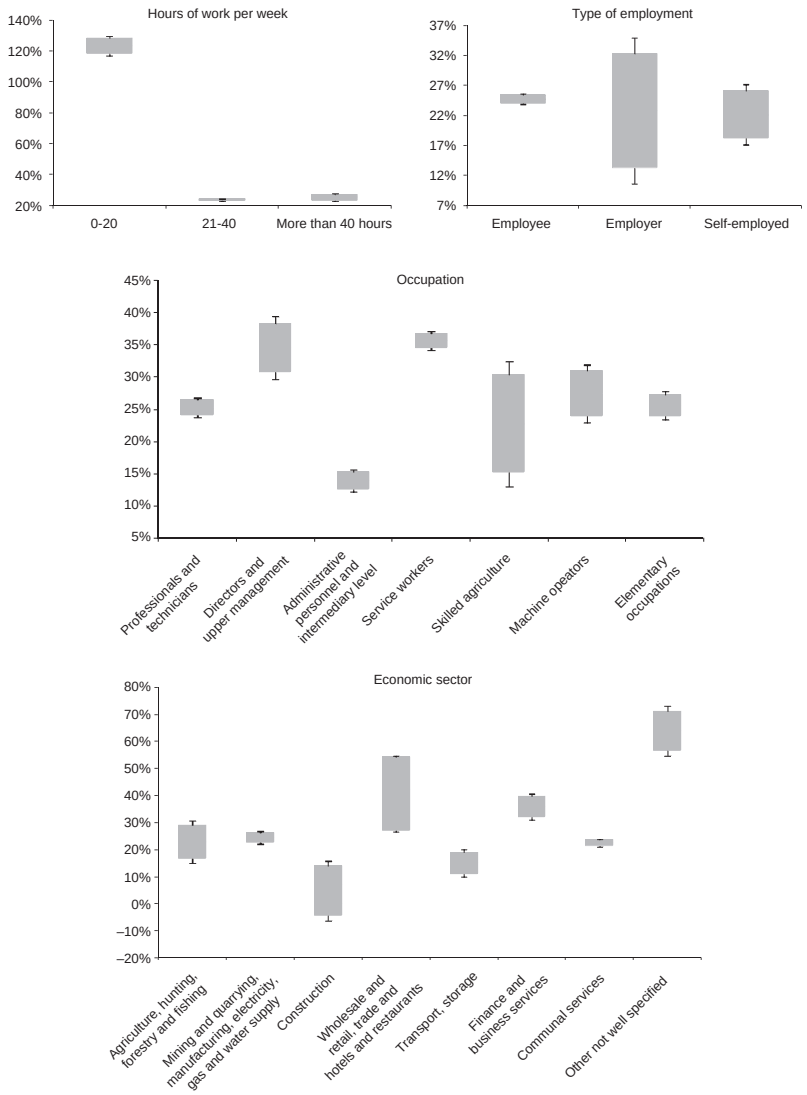

Source: Authors' calculations using Household Surveys (World Bank)

Figure A6.

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