IZA Journal of Labor & Development
a SpringerOpen Journal

ORIGINAL ARTICLE Open Access

Gender wage gap dynamics in a changing Ukraine

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Abstract

The period 2003–2007 was a period of economic and political changes for Ukraine. In 2005, following the Orange Revolution, the new government engaged in a series of economic reforms, among which was strengthening the legislation aimed at encouraging gender equality in the labor market. Using data from the Ukrainian Longitudinal Monitoring Survey (ULMS) I explore the impact of these economic and political changes on the gender wage gap. Policies for gender equality seem to be responsible for at least part of the reduction of the wage gap among the workers of the public sector, both through the reduction in the differences between the remuneration of observable characteristics for men and women and through the reduction in horizontal and vertical segregation. On the other hand, the impact of these policies among workers of the private sector (and especially among the informally employed) seems much smaller, especially as far as the impact on horizontal and vertical segregation is concerned.
This study utilizes the ULMS data set, a project initiated within the IZA-program "Labor Markets in Emerging and Transition Economies". The project is financially supported by a consortium led by IZA, Bonn. The other permanent members of the consortium are CERT, Heriot-Watt University Edinburgh, EERC-Ukraine and RWI-Essen. Any opinions expressed here are those of the author and not those of ISET, University of Bologna or IZA institute.

1. Introduction

Two decades after the dissolution of the Soviet Union and the beginning of transition, Ukraine is still a changing country. The Orange revolution (November 2004-January 2005), marked a big turning point in Ukrainian history. Following it, several reforms were implemented, accelerating Ukraine's movement out of its transition period and significantly changing the environment in which economic agents operate. A number of acts of the new government concerned labor market legislation, with a particular emphasis on gender equality. This was a sign of change and an important step in defense of one of the most vulnerable and disadvantaged groups of Ukrainian society in line with the international commitments subscribed by previous governments.[1]

In their 2005 study of the gender gap in Ukraine, Ganguli and Terrell welcomed this renewed interest towards gender equality and analyzed the evolution of the gender wage gaps from 1986 (with communism) to 2003 in order to evaluate the distance of Ukraine from the European benchmarks of gender equality in the labor markets. They found that the mean gender gap in Ukraine - corrected for differences in the hours of

work - was relatively higher than in other countries[2] and it was higher especially in the public sector. (Pignatti 2011), analyzing 2003–2004 data, found that patterns of gender wage gaps in the formal and informal sectors of the economy differed, with the gender wage gap remaining largely unexplained in the formal sector and almost fully explained by individual and job characteristics in the informal one.

Since 2005 several decrees and laws on gender equality have been passed, adding to the already existing provisions contained in the Constitution and Labor Code of Ukraine.[3] The increased efforts to promote gender equality and to address gender based discrimination have coincided with Ukrainian efforts to speed up the process of integration into the global community and the achievement of the Millennium Development Goal on gender equality. In a 2010 document published by ILO, Olga Kupets lists the progress achieved (for example a decreasing trend characterizing the official measures of the gender wage gap) but also stresses the need for their consolidation and for a renewed effort to define a long-term modernization strategy for the labor market incorporating the principles of gender equality.

In 2010, however, the Ukrainian political scene saw new significant changes[4] which are already affecting – and will increasingly affect – the development of the Ukrainian labor market. Sticking to the area of gender equality, the Ministry for Family, Youth and Sports, previously responsible for the implementation of the State Programme for Ensuring Gender Equality in Ukrainian Society up to 2010, has been transformed into the State Service of Youth and Sports, and no longer deals with gender policy. This move has raised concern among national experts on gender policy and international organizations.

The main goal of this paper is to study the evolution of the gender wage gap in the Ukrainian labor market in a period (2003–2007) characterized by the introduction of new regulations and institutions explicitly designed to promote gender equality.

The analysis will move along several different dimensions. Starting from the aggregate level and from the identification of the raw wage gap, I will delve deeper into the analysis, looking at determinants of the wage gap across the wage distribution and across different sectors of the economy (private/public, formal/informal). I will ask to what extent the measured wage gaps depend on a different remuneration of characteristics (interpreted as an indication of discrimination) or on different endowments. I will also look for evidence in favor or against the persistence of "glass ceilings" and "sticky floors" for women's wages in Ukraine and will try to see whether results are common across different sectors of the labor market. This part of the analysis is particularly interesting as the same aggregate outcomes can hide very different underlying dynamics and patterns in different sectors of the economy.

As a final step, I will decompose the changes in the wage gap in the period 2003–2007, looking at what is due to a change in the composition of the labor force (considering not only human capital but also job characteristics) and what is instead due to differences in returns for men and women.

The paper starts with a brief literature review followed by a short description of the main events and trends characterizing Ukraine's history in the period 2003–2007. In section 4 I will introduce the dataset used and in section 5 the main methodologies used in this paper. In section 6 I will present the results and proceed to the analysis. Section 7 is the conclusion.

2. Literature review

The evolution of the gender wage gap during the transition from a planned economy to a market-based economy has been subject of intense study over the last 15 years. This has been due to at least two reasons. First of all, whenever there is a period of big changes the most vulnerable segments of the population are exposed to a significantly larger risk of falling into a state of poverty and deprivation. As women have long been identified as one of the most vulnerable groups in the labor markets,[5] studying and understanding the dynamics of the gender wage gap was therefore a crucial step in order to design more effective social policies. Secondly, the regime shifts taking place in transition countries could be seen as a quasi-natural experiment allowing researchers to shed light on the true impact of such an epochal change on the relative position of men and women in the labor market.

Theoretically the effect of the transition process on the gender wage gap was uncertain. If it was true that in most planned economies (and certainly Soviet Union) participation of women in the labor market was higher than in the west and with wage gaps relatively lower (Newell and Reilly 2001), it was also true that several studies had showed gender segregation existed both at a horizontal and a vertical level and women's wages were mostly concentrated in the lower part of the wage distribution (Brainerd 2000; Newell and Reilly 2001). Given these initial conditions, the simultaneous freeing of competitive market forces and the reduction in the role of the state could lead both to an increase in the gender wage gap or to its reduction depending on the relative strength of the forces at work, the institutional arrangements adopted by the new policy makers in power (such as laws and regulations promoting gender equality or an increase in minimum wages) and the labor market choices of men and women in the new economic environment. The empirical studies conducted since the second part of the 1990s confirmed this expectation.

Among the forces expected to increase the gender wage gap was certainly the increase in the wage dispersion associated with the reduced support of the state to "vulnerable categories". The increase in wage dispersion has been a worldwide phenomenon that has characterized the last decades, but is even more evident in the case of transition countries. More uncertain was the expected effect of the changes in managers' incentive structures and their greater freedom to remunerate higher productivity workers differently, resulting in an increased competition for the best workers that could raise – and indeed raised in most cases - the remuneration of individual characteristics. Other factors potentially affecting the gender wage gap during transition were the decrease in female segregation in low paid jobs[6] and the exit of low earners (most of which were women) from the labor market.[7]

It is interesting to note how the interaction among these effects led to very different final outcomes in different countries. For example, studying a sample of Former Soviet Union (FSU) and Central and Eastern European (CEE) countries and comparing the gender wage gap in those countries a few years before and after the beginning of transition, (Brainerd 2000) was able to identify two very distinct patterns. While in Russia and Ukraine the gender wage gap increased, both at the mean and at the median, in CEE countries it decreased. Brainerd explained these two different patterns with different evolutions in the labor markets[8]:

– the stronger widening in the wage distribution associated with the pervasiveness of wage arrears, and nominal wage rigidity (including minimum wage rigidity) in presence of high inflation in the FSU countries;

– a smaller widening of the distribution and a greater increase in the remuneration of observed skills (higher for women) in CEE countries.

Results for China also fit in this picture, although the contribution of the increase in the remuneration of observed skills to the evolution of the gender wage gap looks reversed. (Liu, Meng and Zhang 2000) report an increase in the gender wage gap associated with a decreasing relative importance of its unexplained component over the period under study. This is because – contrary to the situation in Soviet Union and in Central and Eastern Europe – in the period under study Chinese men had a relatively higher level of observable skills.

Later studies, with longer time spans, better datasets and - in most cases - more advanced econometric techniques, confirmed the importance of the channels identified by the earlier literature and most of the previous findings, with some factors losing importance while others gained it.

Ukraine is a very good example of how the situation in a country can evolve with the passage of time. Here the initial pattern identified by Brainerd does not seem to continue when the time horizon is extended. (Ganguli and Terrell 2005), using the Ukrainian Longitudinal Monitoring Survey dataset covering the years from 1986 to 2003, found that while the gap had been slightly increasing from the pre-transition period to the beginning of transition, it diminished below the initial point after one decade. This reduction showed that also in Ukraine the transition process and the series of economic and political changes that characterized it had helped reducing the gender gap.

The analysis of Ganguli and Terrell is also important as it extended beyond the mean gap to analyze changes across all the distribution, estimating a number of counterfactual scenarios. The picture that emerged was of a country in which the average gap was decreasing in later years, mostly due to changes in the lower end of the wage distribution. Ganguli and Terrell suggested as a possible explanation of this phenomenon the increasing importance of minimum wages (exactly the opposite of what was observed in the first years of transition) raising the "floor" for women at the same time as the rewards for men in the lower part of the distribution deteriorated. In the higher half of the wage distribution, instead, the "ceiling" to women's earnings appeared to be quite persistent. Surprisingly enough, the mean gap was found to be larger in the public sector, with the glass ceiling there being lower (making the gap higher). Even though this seemed to be partially explained by a more favorable distribution of men's skills in the public sector, compared to the one observed in the private one, Ganguli and Terrell concluded that the path towards greater gender equality in Ukraine would have required a greater commitment to gender equality by the government, not only through legislation, but also directly, by increasingly behaving as a gender equal employer.

But how likely are government efforts to increase gender equality to be successful? Evidence from empirical studies seems to indeed suggest that introducing gender-equalizing policies can, in some instances, help reduce the gender wage gap. For example, (Jolliffe and Campos 2005) found a steady reduction in the gender wage gap in Hungary during the period 1986–1998. In this case, the authors stress the role of the reforms of the legal and institutional framework designed and implemented by the Hungarian government in curbing discriminatory practices (the reduction in the gender wage gap is almost identical to the reduction in its unexplained component). In other

cases, as in (Juraida 2005), the effectiveness of anti-discrimination policies on the gender wage gap appears to be more limited.

Ukraine gives us an interesting opportunity to learn more about the evolution of the gender wage gap in a country where policy makers have started actively pursuing gender equalization. Obviously, given the short period of time passed from the implementation of gender equalizing policies and the multitude of changes taking place in the period under analysis, I do not expect to be able to precisely quantify the impact of government efforts on the gender wage gap. However, exploiting the fact that the introduction of new legislations and policies to favor gender equality is likely to affect different segments of the labor market asymmetrically, it might still be possible to identify a relationship between these efforts and the evolutions observed in these different segments. For example, one would expect the policies to be more effective in reducing wage discrimination as well as horizontal and vertical discrimination in the public sector, where – by definition – the control of policy makers is the strongest. The effectiveness of the policies should then decrease as one moves to the private sector and have the lowest impact among the informally employed.

3. Ukraine in the period 2003–2007: the economy, the Orange Revolution and the new legal provisions for gender equality in the Ukrainian labor market

3.1 A growing economy

For the Ukrainian economy the period of 2003–2007 was one of strong growth (higher than average growth in CEE and CIS countries) stimulated by increasing exports and internal demand. The growth rate of real GDP remained between 7.3 and 12.1 percent over the whole period, with the exception of the year 2005 in which international steel prices plummeted, pulling down Ukrainian GDP growth to 2.7 percent.[9] In the same period, Ukrainian prices grew faster than in neighbouring countries. Starting from a 5.2 percent level in 2003,[10] CPI grew at rates between 9 and 12.8 percent in the remaining years. We can thus say that the Ukrainian economy in the period 2003–2007 was booming. This also affected the labor market, where the unemployment rate decreased steadily from 9.1 percent in 2003 to 6.4 percent in 2007.[11] In this period the private sector became the largest source of employment as the relative size of the public sector shrunk. Growth translated only to a limited extent into higher nominal and real wages, peaking in 2005 and reaching their minimum level in 2007.

3.2 A changing political scenario

The main political event of the period was the "Orange Revolution", a peaceful mass protest that led to the victory of Ukraine's reformist forces. The Orange Revolution started in the closing months of 2004 and continued until the beginning of 2005. The years that followed saw an intensification of structural reforms and the adoption and implementation of new pieces of legislation. Among the main structural reforms introduced since year 2000, the IMF (2008a) lists reforms in areas related to business, trade, energy and the government's budget. Most of these took place in the period 2003–2007.[12]

One of the areas in which the reformist drive became more apparent in this period was that of gender equality. (Kupets 2010) cites a number of important milestones that shaped gender equality policy in Ukraine, all in the period 2003–2007 (or, more precisely, after 2005):

– Presidential Decree No. 1135 on Improvement of Activity of National and Regional Executive Power Bodies on Ensuring Equal Rights and Opportunities of Men and Women (signed on 26 July 2005);
– The Law of Ukraine on Ensuring Equal Rights and Opportunities for Women and Men (in force since 1 January 2006);
– The State Programme for Ensuring Gender Equality in Ukrainian Society up to 2010 (approved by the Decree of the Cabinet of Ministers of Ukraine on 27 December 2006);
– The Decree of the Cabinet of Ministers of Ukraine on Preparation and Conduction of the Year of Gender Equality (adopted on 16 May 2007);
– The Inter Agency Council on Family, Gender Equality, Demographic Development and Human

Trafficking Prevention was formed and its main tasks and duties were specified according to the Decree of the Cabinet of Ministers on 5 September 2007.

Following this proliferation of laws and related legal acts, the issue of gender started being incorporated into the main systems of the country – at the national as well as at the regional level - with the main responsibility for gender strategy development and implementation being attributed to the Ministry for Family, Youth and Sports.

The picture that emerges here is that of a country in the process of change on many different levels, all affecting directly or indirectly the labor markets. I expect these changes to have affected labor market dynamics, particularly the relative position of men and women.

4. Data and data issues

The Orange Revolution (late November 2004 to January 2005) marked a clear turning point in Ukrainian public policies. The availability of the Ukrainian Longitudinal Monitoring Survey (ULMS) dataset covering the years (2003–2007) – before and after the Orange Revolution – gives us the chance to monitor the way in which the gender wage gap evolved in this period characterized by substantial economic and political changes.

The Ukrainian Longitudinal Monitoring Survey (ULMS) is a nationally representative, household panel survey established to monitor Ukraine's path of transition from Communism to a market-oriented economy. The target of the household survey is the working age population, spanning people aged between 15 and 70. The ULMS was undertaken for the first time in the spring of 2003, when it included around 4,000 households and approximately 8,500 individuals. The second wave was administered between May and July 2004. Sample sizes fell to 3,397 and 7,200 respectively. The third wave was collected in the second half of 2007. The number of surveyed households fell to about 3,100 and the number of individuals to approximately 6,800. The data used in this paper are those from the individual questionnaires for the two reference weeks in

2003 and 2007. The individual questionnaire contains detailed information about the form of the employment relationship, monthly incomes, hours worked and individual and job characteristics.

Thanks to the structure of the questionnaire, it is possible to distinguish salaried workers from self-employed workers and also formally employed (individuals who are working as employees on the basis of a written contract) from informally employed (without a written contract). It should be emphasized that in the analysis I will be looking at informal employment relationships (job not registered in either informal or formal sector firms) rather than employment in the informal sector (individuals working in informal sector firms).

Looking at informal employment relationships is important, as shown in a recent paper (Pignatti 2011) exploring the existence of a possible link between labor market segmentation and the gender earnings gap in Ukraine in the years 2003 and 2004. The separate analysis of the formal and informal segments of the Ukrainian labor market led to distinctively different conclusions. While the gender pay gap in the formal sector appeared to be characterized by a substantial unexplained component, the gender pay gap in the informal segment of the labor market turned out to be fully explained by differences in individual and job characteristics. For this reason, in the following section, the analysis will be conducted not only at the aggregate level, contrasting public and private sector dynamics (as in the Ganguli and Terrell paper) but will also explore the evolution of the gender wage gap for formal and informal employees. As Ganguli and Terrell did – and differently from (Pignatti 2011) - I decided to exclude the self-employed from the analysis and to focus on salaried workers.

In this paper, the gender wage gap will be estimated using real hourly wages. This is preferable to using monthly wages, as the number of hours worked by women is usually lower than that of men and this alone justifies part of the wage gap when we look at monthly salaries. Once more, this is possible thanks to the detail of the data collected in the reference week section of the questionnaire. Salaried employees are asked in both reference weeks to give their last monthly net salary in Hryvnia and to indicate the number of hours they worked in each of the previous 4 working weeks. To calculate hourly wages I took monthly wages and divided them by the number of hours obtained adding up the hours worked in the 4 weeks times 1.1 (to correct for the number of weeks in one month).[13] Hourly wages for 2007 were then transformed in real wages in 2003 terms dividing them by the change in CPI between 2003 and 2007.[14]

Like in all CIS countries, salaried workers in Ukraine have been confronted with wage arrears. This phenomenon had already reduced substantially in 2003 and had almost disappeared in 2007. However, because in 2003 a substantial fraction of workers still reported to have received less or more than the contractual wage in the last month preceding the reference week, in order to take into account the effects of these "disturbances" I included in the wage regressions dummy variables for both cases.

An issue one has to be aware of when analyzing wages is that of selection. Unless missing data about monthly wages, hours of work or control variables and missing observations (due to attrition) are distributed approximately uniformly across the sample, the conclusions of this paper will be valid only for the observations in our sample and therefore one should be cautious when extending them to the whole population.

5. Methodology

After a brief analysis of the descriptive statistics characterizing the 2003 and 2007 samples, I will proceed to the analysis of the raw gap at the mean and across the distribution. First of all, I will estimate the size of the raw wage gap, not only at the aggregate level but also along the public/private (as Ganguli and Terrell did in 2005) and formal/informal dimensions. The raw wage gap at the mean will be estimated using ordinary least squares while the raw wage gap across the distribution will be estimated with quantile regressions.[15] I will then decompose the gender wage differentials (and their changes)[16] to see whether they can be explained by differences in observable characteristics or depend instead upon some unexplained factor.

In a situation characterized by horizontal or vertical segregation (as it was in Former Soviet Union), the type of occupation and the sector in which women are working might help explaining the size of the gender wage gap. To test whether this is still the case in Ukraine, all the decompositions will be performed using three different specifications of the wage equations:

- Specification 1 - Base equation: including only age, age squared, educational dummies, tenure, tenure squared together with dummies for wages temporarily above and below contractual wages and regional dummies;
- Specification 2- adding job variables to specification 1: part time, type of occupation (from managerial to elementary positions);
- Specification 3 – introducing sectoral dummies: industry, services, agriculture, hunting and fishing and public administration.

5.1 Decomposition at the mean

The decomposition of the wage gap at the mean is performed using both "standard" (Oaxaca 1973, Blinder 1973) and the "weighted" version of the Oaxaca-Blinder decomposition suggested by Oaxaca and Ransom (1994). Oaxaca and Ransom suggest using as benchmark for the decomposition of the wage gap at the mean a weighted average of the coefficient vectors for the two groups, rather than taking the coefficients of one or the other as reference group.[17] The weights in this case are being calculated as suggested by Neumark (1988).[18] In both cases the wage gap is decomposed in two parts: an explained part due to differences in characteristics (or endowments) and an unexplained part ("discriminatory component") due to differences in coefficients.

The decomposition of the changes in the wage gap between 2003 and 2007 is done using the methodology proposed by Juhn et al. (1991). In this case it is the change in the wage gap across two periods to be decomposed into an explained and an unexplained part. Of course in this case the decomposition is more complex, having to take into account the evolution of the gap. Given two points in time, the formula for the change in the outcome differential can be written as:

$$\Delta WG = WG_2 - WG_1 = \left[D_2\left(dX_2, \hat{\beta}_2\right) - D_1\left(dX_1, \hat{\beta}_1\right)\right] + [dr_2 s_2 - dr_1 s_1]$$

Where dX_2 and dX_1 are the differences in endowments and $\hat{\beta}_1$ and $\hat{\beta}_2$ are the coefficients in the two periods. The product of r_t and s_t is the vector of residuals that in this case has been rewritten as the product of the standardized residuals in a given

period (r_t , with t=1 or 2) times the standard deviation of the residuals themselves (s_t, with t=1 or 2). The first expression corresponds to the "predicted gap" (dE) and the second part is the change in the "residual gap" (dU). These two parts can be further decomposed obtaining:

$$dE = D_{OQ}\left[(dX_2 - dX_1), \hat{\beta}_2\right] + D_{OP}\left[dX_1, \left(\hat{\beta}_2 - \hat{\beta}_1\right)\right] + D_{OQOP}\left[(dX_2 - dX_1), \left(\hat{\beta}_2 - \hat{\beta}_1\right)\right]$$
$$dU = D_{UQ}[(dr_2 - dr_1), s_1] + D_{UP}[dr_1, (s_2 - s_1)] + D_{UQUP}[(dr_2 - dr_1), (s_2 - s_1)]$$

The three terms of the decomposition of the "predicted gap" are respectively:

- the part explained by changes in the group differences in "observed quantities"
- the part explained by changes in "observed prices"
- an adjustment term accounting for the interaction effect due to the simultaneous change of prices and quantities.

The three terms of the decomposition of the "residual gap" are respectively:

- the part explained by changes in the group differences in residual positions (resulting from changes in "unobserved quantities" and in discrimination given a certain residual inequality)
- the part explained by changes in residual inequality (changes in "unobserved prices" affecting the distribution of residuals for given unobserved quantities)
- an adjustment term accounting for the interaction effect.

5.2 Decomposition across the distribution

Studies decomposing the wage gap across the distribution usually follow the simulation-based methodology presented by Machado and Mata in their 2005 paper. In this case, however, to decompose the wage gap across the distributions I will adopt the approach suggested by (Melly 2005 and 2006). In his 2005 paper Melly introduced a new estimator of distribution functions in the presence of covariates that does not rely on simulation and it is, therefore, much faster to implement. In addition, in his 2006 paper Melly shows that his estimator is numerically equivalent to the Machado and Mata (2005) decomposition when the number of simulations goes to infinity.[19]

The semiparametric approach suggested by Melly starts by estimating a number quantile regressions uniformly distributed between 0 and 1 in order to estimate the conditional wage distribution.[20] Results obtained have then to be integrated in order to obtain the unconditional distribution. This approach is particularly interesting as it does not require imposing any distributional assumptions and uses the information contained in the regressors, allowing the covariates to influence the entire conditional distribution. Even more interesting is the possibility, associated with this procedure, to estimate counterfactual unconditional distributions.

Taking the distribution of characteristics for women and the coefficients estimated using the observations for men it is then possible to estimate the counterfactual distribution we would observe if they had men's output function (if women's characteristics were remunerated in the same way as men's) and vice versa.

I use this counterfactual distribution to decompose differences in men and women's wage distributions at deciles 1 to 9 (10^{th}, 20^{th}, 30^{th}, 40^{th}, 50^{th}, 60^{th}, 70^{th}, 80^{th} and 90^{th} percentiles). For each of these deciles I decompose the observed difference between the two wage distributions into an explained and an unexplained part.

The formula for the decomposition of the wage gap at each decile (θ) is the following:

$$Q^{\theta}(\ln w^{f}) - Q^{\theta}(\ln w^{m}) = \left[\underbrace{Q^{\theta}\left(X^{f}, \hat{\beta}^{m\theta}\right) - Q^{\theta}\left(X^{m}, \hat{\beta}^{m\theta}\right)}_{\text{CHARACTERISTICS}}\right] + \left[\underbrace{Q^{\theta}\left(X^{f}, \hat{\beta}^{f\theta}\right) - Q^{\theta}\left(X^{f}, \hat{\beta}^{m\theta}\right)}_{\text{COEFFICIENTS}}\right]$$

Where:

m is for males, f is for females, θ indicates the decile, X indicates the vector of explanatory variables and $\hat{\beta}$ the vector of estimated coefficients. The expression between the first brackets (to the left) gives us the part of the gap explained by differences in characteristics, while the second expression tells us instead which part is due to differences in remuneration of characteristics for men and women. Here the reference group is, obviously, men.

This, however, is just a "static" counterfactual analysis, that is, the analysis of what would have been the counterfactual wage gap, where women remunerated as men in a given period. It is possible to use the same methodology to conduct also a counterfactual analysis of the changes in the gender wage gap, calculating several alternative counterfactuals to identify the factors explaining the gap dynamics between 2003 and 2007. In this work I will calculate 4 counterfactual gaps, two for women and two for men, following the same strategy adopted by Dohmen et al. (2008):

1. Women:

a the gap that would have been observed in 2007 if women had the same characteristics they had in 2003:

$$\left[Q^{\theta}\left(X^{f03}\hat{\beta}^{f07}\right) - Q^{\theta}\left(X^{m07}\,\hat{\beta}^{m07}\right)\right]$$

b the gap that would have been observed in 2007 if the returns to women's characteristics had remained the same they were in 2003:

$$\left[Q^{\theta}\left(X^{f03}\hat{\beta}^{f07}\right) - Q^{\theta}\left(X^{m07}\,\hat{\beta}^{m07}\right)\right]$$

2. Men

a the gap that would have been observed in 2007 if men had the same characteristics they had in 2003:

$$\left[Q^{\theta}\left(X^{f07}\hat{\beta}^{f07}\right) - Q^{\theta}\left(X^{m03}\,\hat{\beta}^{m07}\right)\right]$$

b the gap that would have been observed in 2007 if the returns to men's characteristics had remained the same they were in 2003:

$$\left[Q^{\theta}\left(X^{f07}\hat{\beta}^{f07}\right) - Q^{\theta}\left(X^{m07}\,\hat{\beta}^{m03}\right)\right]$$

6. Results

6.1 Descriptive analysis

In Table 1 [21] we can observe that real hourly wages of Ukrainian workers have increased substantially from 2003 to 2007. This is consistent with fact that in the period under analysis the Ukrainian economy was booming - maybe even overheating – driven by steel exports and by a strong and increasing internal demand.

On average, in our dataset, hourly wages have more than doubled both for men and for women. The only exception to this finding can be found by looking at the informally employed women (Table 2). In this case the hourly wages, despite having

Table 1 All employed

	2003		2007		2003			2007		
	Females	Males	Females	Males	Females	Males		Females	Males	
					Mean hourly wages	Mean hourly wages	Ratio F/M	Mean hourly wages	Mean hourly wages	Ratio F/M
Age 15-24	9.3	14.8	12.2	21.1	1.44	1.86	0.78	3.12	4.38	0.71
Age 25-39	36.3	34.9	42.3	39.2	1.53	2.30	0.67	3.30	4.78	0.69
Age 40-54	46.5	37.7	37.6	28.0	1.47	2.04	0.72	3.48	4.11	0.85
Age 55-64	6.7	10.3	6.9	9.6	1.28	1.70	0.76	3.23	3.64	0.89
Age 65+	1.2	2.3	1.1	2.1	1.16	1.86	0.62	2.40	2.63	0.91
Elementary and less	12.5	22.8	9.0	15.0	1.21	1.83	0.66	2.98	3.83	0.78
Secondary	62.0	59.3	66.0	67.2	1.37	1.96	0.70	2.90	4.18	0.69
University and higher	25.5	17.9	24.9	17.8	1.91	2.74	0.70	4.70	5.54	0.85
Managers	1.7	3.0	3.0	5.1	2.09	5.05	0.41	5.01	5.93	0.84
Professionals	21.0	11.7	18.9	11.3	1.97	2.34	0.84	5.31	5.66	0.94
Technicians and associate professionals	21.5	11.2	21.0	8.2	1.33	2.35	0.57	3.21	4.36	0.74
Clerks	11.0	4.3	11.0	4.9	1.56	1.73	0.90	3.23	3.61	0.89
Service workers and shop and market sales	12.2	3.5	13.7	3.9	1.19	1.38	0.86	2.72	4.23	0.64
Skilled agricultural, forestry, and fishery workers	0.9	2.3	0.4	1.6	1.26	1.40	0.90	2.28	3.20	0.71
Craft and related trades workers	10.4	34.0	8.9	33.4	1.58	2.09	0.76	2.95	4.74	0.62
Plant and machine operators and assemblers	2.7	11.4	2.8	13.8	1.66	2.08	0.80	3.22	3.95	0.82
Elementary occupations	18.7	18.7	20.2	17.8	1.13	1.52	0.75	2.30	3.12	0.74
Agriculture	4.2	8.3	4.2	7.4	1.18	1.01	1.17	2.94	2.66	1.11
Industry	19.6	34.5	17.1	30.6	1.60	2.35	0.68	3.34	4.93	0.68
Services	72.0	54.1	74.9	58.6	1.45	2.06	0.70	3.33	4.31	0.77
Public administration	4.1	3.1	3.8	3.4	1.69	2.20	0.77	3.63	4.22	0.86
Total	1638	1370	1441	1364	1.48	2.07	0.71	3.33	4.36	0.76

Source: ULMS – Own calculations.

Table 2 Employed in an informal employment relationship

	2003		2007		2003			2007		
	Females	Males	Females	Males	Females	Males		Females	Males	
					Mean hourly wages	Mean hourly wages	Ratio F/M	Mean hourly wages	Mean hourly wages	Ratio F/M
Age 15-24	18.7	35.7	30.5	36.4	1.32	1.79	0.74	2.86	3.32	0.86
Age 25-39	50.6	38.4	40.8	39.0	1.35	1.93	0.70	2.46	4.42	0.56
Age 40-54	29.2	22.6	22.0	21.7	1.34	1.19	1.13	2.34	3.82	0.61
Age 55-64	1.5	1.2	5.0	2.1	0.74	2.21	0.34	2.26	1.83	1.24
Age 65+	0.0	2.2	1.6	0.8	-	0.65	-	1.27	1.02	1.24
Elementary and less	26.6	31.0	16.4	20.6	1.44	1.78	0.81	2.80	2.99	0.93
Secondary	62.7	57.2	72.7	77.1	1.29	1.74	0.74	2.41	4.08	0.59
University and higher	10.7	11.8	10.9	2.4	1.34	1.25	1.07	2.86	2.44	1.17
Managers	0.0	2.2	0.0	0.0	-	2.62	-	-	-	-
Professionals	2.2	1.2	2.7	1.1	4.55	0.90	5.04	2.66	1.22	2.18
Technicians and associate professionals	1.7	3.0	4.0	3.1	1.64	2.23	0.74	2.77	2.96	0.94
Clerks	5.1	3.9	12.5	4.7	1.57	1.75	0.90	3.04	3.43	0.88
Service workers and shop and market sales	50.4	19.2	51.1	6.3	1.25	1.12	1.12	2.30	3.15	0.73
Skilled agricultural, forestry, and fishery workers	0.8	1.9	1.4	0.0	1.75	0.97	1.79	2.15	-	-
Craft and related trades workers	9.3	22.6	8.4	33.9	2.12	2.16	0.98	4.24	5.22	0.81
Plant and machine operators and assemblers	0.0	7.7	1.6	9.1	-	2.68	-	2.71	2.20	1.23
Elementary Occupations	30.4	38.2	18.2	41.9	1.18	1.54	0.76	2.00	3.44	0.58
Agriculture	7.2	10.7	3.5	6.9	0.89	0.98	0.91	2.80	2.57	1.09
Industry	10.3	14.4	11.7	17.7	1.42	1.89	0.75	3.10	3.70	0.84
Services	82.5	74.9	84.8	75.3	1.35	1.73	0.78	2.44	3.96	0.62
Public administration	0.0	0.0	0.0	0.0	-	-	-	-	-	-
Total	90	75	119	140	1.33	1.68	0.79	2.52	3.81	0.66

Source: ULMS – Own calculation

increased substantially (1.9 times) from 2003 to 2007 have grown significantly less than they did for men (2.3 times). This is reflected in the ratio of female-to-male hourly wages which decreased from 0.79 to 0.66 passing from being the highest in 2003 to being the smallest in 2007. In all other cases the ratio of female-to-male wages has increased.

The evolution has not been uniform across the sample. For example, younger women (age 15–24), who were over represented among the informally employed, saw their situation deteriorate while things remained stable or substantially improved for other age groups, especially for women aged 40 and above. The situation also improved for

the less educated and for those with university education or higher. One possible explanation for the relative improvement in the condition of less educated women could be the flight of the lowest earners from the labor market, resulting *ceteris paribus* in an increase in their average wage with respect to men with the same level of education. However, this does not seem the case if we look at Table 3. The average hourly wage of women remaining informal was significantly lower than that of the leavers. Surprisingly enough, the relative status of the less educated women improved regardless of the type of contractual arrangement they had (formal or informal) or of the part of the economy in which they worked (public or private).[22]

Looking at the occupational variables, two clear trends emerge. At the top of the classification, in the highly skilled positions (managers and professionals) the condition of women improved dramatically regardless of where they worked, with the exception of the informal sector where the number of women in those positions was negligible. For female managers, the wage ratio more than doubled from 2003 to 2007. For professionals, the change was less dramatic, but took the wage ratio close to unity. Instead, for service workers and shop and market sales workers, skilled workers in agriculture, forestry and fishing and craft and trade related workers the wage ratio went down significantly.

At the sectoral level the agricultural sector stands out. Women in agriculture, hunting and fishing seem to have earned on average more than men both in 2003 and 2004. The situation in the industrial sector shows no sign of change (apart from the

Table 3 Summary statistics:employed in 2003 who remained informal

Informal	% of employees within each category		Mean hourly wages	
	Females	Males	Females	Males
Age 15-24	29.7	45.0	1.05	2.63
Age 25-39	46.0	41.6	1.00	1.71
Age 40-54	24.3	13.3	0.84	1.29
Age 55-64	0.0	0.0	-	-
Age 65+	0.0	0.0	-	-
Elementary and less	28.1	48.2	1.19	2.21
Secondary	62.8	51.8	0.94	1.89
University and higher	9.1	0.0	0.95	-
Managers	0.0	0.0	-	-
Professionals	0.0	0.0	-	-
Technicians and associate professionals	0.0	10.9	-	2.27
Clerks	0.0	0.0	-	-
Service workers and shop and market sales	54.2	9.8	1.10	1.42
Skilled agricultural, forestry, and fishery workers	0.0	0.0	-	-
Craft and related trades workers	0.0	33.0	-	2.00
Plant and machine operators and assemblers	0.0	4.5	-	2.84
Elementary Occupations	45.8	41.8	0.75	2.06
Agriculture	0.0	6.3	-	0.70
Industry	8.2	23.6	1.99	2.09
Services	91.8	70.0	0.91	2.15
Observations	10	13	10	13

Source: ULMS – Own calculations.

shrinking of the size of the sector itself) while the wage ratio increased in both the service and public administration sectors.

6.2 The raw wage gaps

I start my econometric analysis by estimating the raw wage gap at the mean and across the distribution. In Table 4 I report the results of the simple OLS and quantile regressions performed on pooled samples of men and women with the dummy variable female as the only explanatory variables. As announced in the methodological part (section 5), the regressions are performed:

- on the sample including all employees
- on the samples including, respectively, employees in formal and informal working relationships
- on the samples including, respectively, employees in the private and public sectors.

The log wage gap for the sample including all employees is fairly stable, oscillating from −0.26 to −0.24. Looking at quantile estimates the overall (small) reduction appears to be the result of an increase in the gap at the very bottom of the distribution (deciles 1 to 3) and of a reduction (with the exception of the coefficient at the median) from the 4^{th} decile up. It seems that women at the bottom of the distribution started losing ground from the relatively "less disadvantaged" position in which they were in 2003. In their work, (Ganguli and Terrell 2005) suggested that this "wage floor" at the bottom of the distribution could be related to an increase in the minimum wage, becoming more binding in 2003 with respect to the past years they observed. If the minimum wage was indeed responsible for the relative improvement of the wage gap for women at the bottom of the distribution, the increase of the wage gap in 2007, after a period of strong growth might not be necessarily a negative sign (at least in absolute terms). As it can be seen from Figure 1, the distribution of wages shifted noticeably to the right between 2003 and 2007, with more people (men and women) earning more than the minimum wage.[23] Therefore, the increase of the gap at the bottom of the distribution is not incompatible with the possibility of an improvement (in absolute terms) of women's conditions, even though this improvement would have been higher had gender inequality not increased.

The apparent stability of the raw gap between 2003 and 2007 also seems to hide very different dynamics characterizing specific parts of the economy. For example, while the wage gap has decreased in the case of the employed in the public sector (−0.059), it appears to have increased in the private sector, especially in the case of informal employment relationships (+0.191). These data underline a dramatic change in the structure of the gender wage gap distribution in the economy in the period under analysis, with several forces at work and different parts of the labor market being affected asymmetrically. The analysis of the raw gap at different quantiles strengthens this message. Gaps at the bottom of the distribution have been increasing under all specifications, while at the top of the distribution they have been flattening out or decreasing in most cases. Once more, things evolve differently in the case of the informally employed, for whom the gender gap shoots as high as 0.63 and 0.693 in the last two deciles from much lower levels. These patterns can easily be seen looking at Figure 2.

Table 4 Raw gender wage gap by decile and at the mean

		d1	d2	d3	d4	d5	d6	d7	d8	d9	OLS
	2003	-0.049	-0.150	-0.181	-0.300	-0.335	-0.339	-0.301	-0.340	-0.307	-0.256
All		(-0.034)	(0.025)***	(0.028)***	(0.041)***	(0.019)***	(0.015)***	(0.020)***	(0.020)***	(0.044)***	(0.021)***
	2007	-0.118	-0.220	-0.297	-0.288	-0.329	-0.241	-0.274	-0.272	-0.288	-0.239
		(0.021)***	(0.030)***	(0.030)***	(0.000)***	(0.033)***	(0.010)***	(0.041)***	(0.026)***	(0.039)***	(0.022)***
Formal	2003	-0.038	-0.144	-0.185	-0.311	-0.336	-0.342	-0.303	-0.331	-0.303	-0.259
		(-0.026)	(0.016)***	(0.029)***	(0.042)***	(0.020)***	(0.015)***	(0.020)***	(0.024)***	(0.044)***	(0.021)***
	2007	-0.136	-0.223	-0.272	-0.288	-0.357	-0.259	-0.264	-0.223	-0.251	-0.231
		(0.020)***	(0.034)***	(0.030)***	(0.017)***	(0.027)***	(0.028)***	(0.042)***	(0.027)***	(0.045)***	(0.023)***
Informal	2003	-0.093	-0.015	-0.069	-0.231	-0.319	-0.276	-0.223	-0.308	-0.144	-0.162
		(-0.21)	(-0.146)	(-0.144)	(-0.189)	(0.160)**	(0.100)***	(0.124)*	(0.123)**	-0.238	(0.095)*
	2007	-0.041	-0.174	-0.300	-0.336	-0.363	-0.386	-0.357	-0.629	-0.693	-0.353
		(-0.122)	(-0.106)	(0.108)***	(0.111)***	(0.117)***	(0.071)***	(0.079)***	(0.113)***	(0.160)***	(0.082)***
Private	2003	-0.068	-0.134	-0.249	-0.223	-0.272	-0.292	-0.273	-0.223	-0.262	-0.220
		(-0.071)	(0.052)**	(0.075)***	(0.034)***	(0.051)***	(0.073)***	(0.060)***	(0.058)***	(0.089)***	(0.043)***
	2007	-0.073	-0.223	-0.272	-0.288	-0.332	-0.243	-0.273	-0.366	-0.288	-0.258
		(-0.047)	(0.052)***	(0.057)***	(0.022)***	(0.041)***	(0.039)***	(0.048)***	(0.046)***	(0.078)***	(0.032)***
Public	2003	-0.049	-0.162	-0.190	-0.340	-0.370	-0.342	-0.316	-0.357	-0.354	-0.276
		(0.029)*	(0.022)***	(0.029)***	(0.036)***	(0.033)***	(0.025)***	(0.017)***	(0.031)***	(0.051)***	(0.024)***
	2007	-0.077	-0.232	-0.284	-0.288	-0.341	-0.274	-0.288	-0.185	-0.062	-0.217
		(0.032)**	(0.042)***	(0.028)***	(0.016)***	(0.047)***	(0.029)***	(0.063)***	(0.054)***	-0.078	(0.032)***

Source: ULMS. Wage regressions having as only explanatory variable the dummy female.
Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

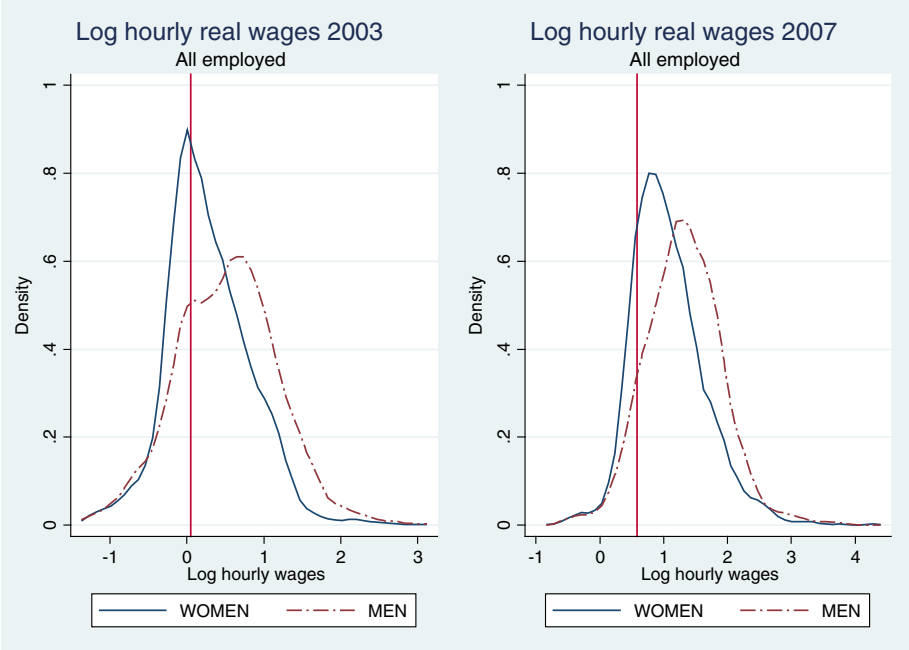

Figure 1 Log hourly wage distributions by gender: all employed – years 2003 and 2007.

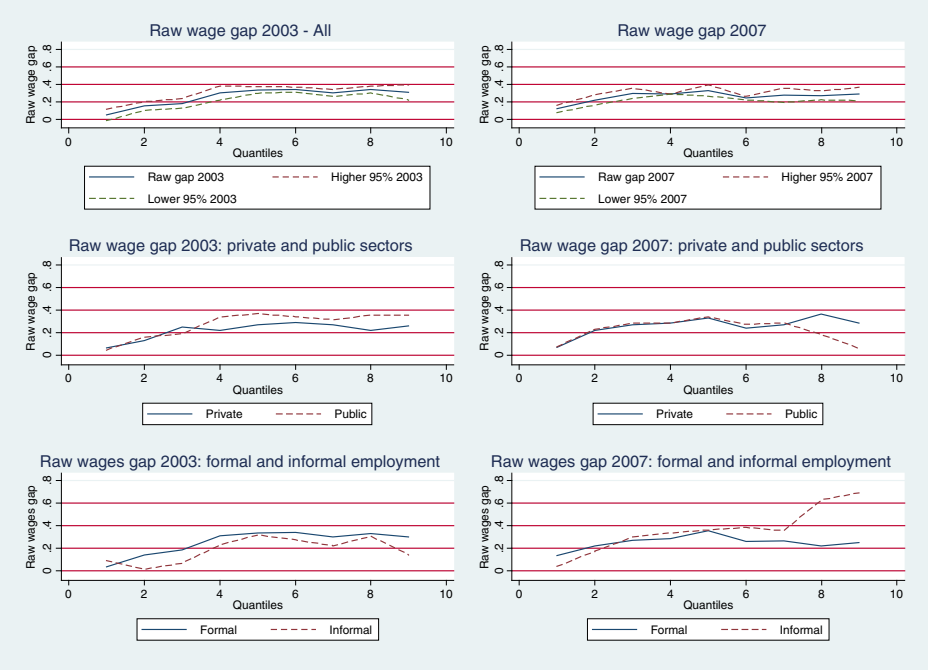

Figure 2 Gender wage gap by decile: Aggregate, by sector and type of contractual arrangement – years 2003 and 2007.

6.3 Decomposition at the mean: Oaxaca-Blinder and Oaxaca-Ransom decompositions

The gender wage gap in all subsamples and in all specification is substantial (between .20 and .35 if we exclude the case of the informally employed in 2003).

If we look at the first columns of Tables 5 and 6 (corresponding to the basic model for year 2003) we can see that the existing gap depends overwhelmingly from the unexplained component. The explained component, when it is significant, has the effect of "closing" part of the gap. This tells us that in 2003 Ukrainian women had better observable characteristics than men. Without this, the wage gap would have been even larger.

Adding occupational and sectoral variables allows us to test for the potential existence of segregation both at the horizontal and at the vertical level. The evidence, once more, is consistent across subsamples. The inclusion of job and industry variables provokes a change in the sign of the explained component. Now the explained components justify part of the wage gap, suggesting that women's collocation across and within sectors penalizes them and more than offsets their better individual characteristics. Interestingly, the Oaxaca and Ransom decomposition shows that in 2003, segregation into less paid occupations and sectors seems to explain most of the (smaller) wage gap (at least when the coefficient is significant) in the informal sector, while this is not true in the other cases.[24] This finding, however, vanishes when I perform the standard Oaxaca-Blinder composition and keep men as reference group.

In 2007, after the Orange revolution and a period characterized by numerous economic and political changes, the picture appears somehow different. As we have seen in the analysis of the raw gap, on average the wage gap is stable or slightly decreasing, as it is the relative importance of the unexplained component. However, it remains true that not all parts of the labor market evolve in the same way. For example, while in the public sector and among the formally employed (which include also public employees) the gap decreases, in the private sector and – even more – among the informally employed, we see it increasing. Overall, women's individual characteristics contribute to the containment of the gender gap. Also in 2007, when we move from the first (basic) specification to the ones including occupational and sectoral variable, a bigger part of the gender gap is explained. It seems, therefore, that despite the efforts to achieve gender equality, in 2007 horizontal and vertical segregation still existed in the Ukrainian labor market.

6.4 Decomposition of the change in the gender wage gap at the mean

Tables 7 and 8 report estimates of the decomposition of the change in the gender wage gap between 2003 and 2007, performed using the methodology presented by Juhn et al. (1991). The two tables differ simply in terms of sets of reference coefficients and reference residual distributions. In Table 7 I report the results obtained taking as reference the coefficient and residuals obtained pooling both groups together. In Table 8 I use as reference coefficients and residual distributions those estimated for men.

The changes in the overall gender wage gap and in particular the reduction of the gender wage gap in the formal sector are driven by the changes in the public sector that, despite a substantial reduction in relative size, in 2007 still employed slightly less than 50% of the total employees in the economy (down from more than 60% in 2003). In the private sector, however, things look different, with the gender gap increasing, particularly among the informally employed.

Table 5 Decomposition at the mean: Oaxaca and Ransom

	2003			2007		
	Specification 1	Specification 2	Specification 3	Specification 1	Specification 2	Specification 3
All						
Difference	-0.256	-0.257	-0.264	-0.238	-0.236	-0.234
	(0.023)***	(0.023)***	(0.023)***	(0.024)***	(0.024)***	(0.025)***
Decomposition						
- Explained	0.047	-0.042	-0.061	0.048	-0.027	-0.038
	(0.008)***	(0.013)***	(0.014)***	(0.009)***	(0.015)*	(0.016)**
- Unexplained	-0.303	-0.215	-0.203	-0.286	-0.210	-0.196
	(0.021) ***	(0.019)***	(0.019)***	(0.022)***	(0.019)***	(0.020)***
Formal						
Difference	-0.260	-0.261	-0.266	-0.232	-0.233	-0.234
	(0.023)***	(0.023)***	(0.023)***	(0.025)***	(0.025)***	(0.025)***
Decomposition						
- Explained	0.046	0.038	-0.056	0.047	-0.022	-0.028
	(0.009)***	(0.013)***	(0.014)***	(0.010)	(0.015)	(0.016)*
- Unexplained	-0.306	-0.223	-0.210	-0.279	-0.211	-0.206
	(0.021)***	(0.020)***	(0.019)***	(0.023)***	(0.020)***	(0.020)***
Informal						
Difference	-0.162	-0.159	-0.166	-0.330	-0.309	-0.290
	(0.100)	(0.100)	(0.105)	(0.080)***	(0.076)***	(0.079)***
Decomposition						
- Explained	0.015	-0.117	-0.106	-0.046	-0.197	-0.251
	(0.044)	(0.065)*	(0.081)	(0.034)	(0.056)***	(0.061)***
- Unexplained	-0.177	-0.042	-0.059	-0.284	-0.112	-0.039
	(0.092)*	(0.079)	(0.081)	(0.071)***	(0.053)**	(0.054)

Table 5 Decomposition at the mean: Oaxaca and Ransom *(Continued)*

Public						
Difference	-0.277	-0.277	-0.278	-0.225	-0.224	-0.222
	(0.027)***	(0.027)***	(0.027)***	(0.035)***	(0.035)***	(0.035)***
Decomposition						
- Explained	0.050	-0.049	-0.070	0.059	-0.023	-0.032
	(0.010)***	(0.016)***	(0.017)***	(0.015)***	(0.023)	(0.023)
- Unexplained	-0.327	-0.228	-0.208	-0.284	-0.201	-0.190
	(0.025)***	(0.023)***	(0.022)***	(0.032)***	(0.028)***	(0.028)***
Private						
Difference	-0.219	-0.223	-0.225	-0.249	-0.251	-0.247
	(0.044)***	(0.044)***	(0.044)***	(0.034)***	(0.034)***	(0.034)***
Decomposition						
- Explained	0.035	-0.069	-0.075	0.032	-0.040	-0.055
	(0.017)**	(0.026)***	(0.028)***	(0.013)**	(0.021)*	(0.022)**
- Unexplained	-0.254	-0.153	-0.150	-0.281	-0.211	-0.192
	(0.041)***	(0.036)***	(0.036)***	(0.032)***	(0.027)***	(0.027)***

Source: ULMS.
Specification 1 - Base equation: including only age, age squared, educational dummies, tenure, tenure squared together with dummies for wages temporarily above and below contractual wages and regional dummies;
Specification 2- adding to specification 1 job variables: part time, type of occupation (from managerial to elementary positions);
Specification 3 – introducing sectoral dummies: industry, services, agriculture, hunting and fishing and public administration.
Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6 Decomposition at the mean: Oaxaca and Blinder

	2003			2007		
	Specification 1	Specification 2	Specification 3	Specification 1	Specification 2	Specification 3
All						
Difference	-0.256	-0.257	-0.264	-0.238	-0.236	-0.234
	(0.021)***	(0.021)***	(0.021)***	(0.022)***	(0.022)***	(0.023)***
Decomposition						
- Explained	0.041	-0.020	-0.037	0.064	0.057	0.022
	(0.016)***	(0.031)	(0.034)	(0.018)***	(0.037)	(0.043)
- Unexplained	-0.298	-0.237	-0.227	-0.302	-0.293	-0.256
	(0.024)***	(0.036)***	(0.039)***	(0.026)***	(0.040)***	(0.046)***
Formal						
Difference	-0.260	-0.261	-0.266	-0.232	-0.233	-0.234
	(0.021)***	(0.021)***	(0.022)***	(0.023)***	(0.023)***	(0.023)***
Decomposition						
- Explained	0.049	-0.031	-0.044	0.076	0.089	0.055
	(0.017)***	(0.032)	(0.035)	(0.020)***	(0.039)**	(0.043)
- Unexplained	-0.308	-0.230	-0.222	-0.308	-0.322	-0.289
	(0.025)***	(0.037)***	(0.039)***	(0.027)***	(0.043)***	(0.046)***
Informal						
Difference	-0.162	-0.159	-0.166	-0.330	-0.309	-0.290
	(0.102)***	(0.106)	(0.112)	(0.079)***	(0.076)***	(0.081)***
Decomposition						
- Explained	0.055	-0.004	-0.268	0.112	0.070	0.179
	(0.153)	(0.219)	(0.304)	(0.104)	(0.193)	(0.218)
- Unexplained	-0.217	-0.156	0.102	-0.441	-0.379	-0.469
	(0.186)	(0.239)	(0.318)	(0.135)***	(0.206)*	(0.231)**

Table 6 Decomposition at the mean: Oaxaca and Blinder *(Continued)*

Public						
Difference	-0.277	-0.277	-0.278	-0.225	-0.224	-0.222
	(0.025)***	(0.025)***	(0.025)***	(0.032)***	(0.033)***	(0.033)***
Decomposition						
- Explained	0.056	-0.038	-0.040	0.034	0.076	0.084
	(0.018)***	(0.037)	(0.039)	(0.034)	(0.064)	(0.066)
- Unexplained	-0.333	-0.239	-0.237	-0.259	-0.301	-0.307
	(0.028)***	(0.043)***	(0.044)***	(0.045)***	(0.070)***	(0.072)***
Private						
Difference	-0.219	-0.223	-0.225	-0.249	-0.251	-0.247
	(0.042)***	(0.043)***	(0.043)***	(0.032)***	(0.032)***	(0.032)***
Decomposition						
- Explained	0.041	0.102	-0.006	0.018	0.029	0.000
	(0.037)	(0.072)	(0.084)	(0.024)	(0.052)	(0.062)
- Unexplained	-0.260	-0.324	-0.219	-0.267	-0.279	-0.247
	(0.051)***	(0.078)***	(0.089)**	(0.036)***	(0.057)***	(0.065)***

Source: ULMS.
Specification 1 - Base equation: including only age, age squared, educational dummies, tenure, tenure squared together with dummies for wages temporarily above and below contractual wages and regional dummies;
Specification 2- adding to specification 1 job variables: part time, type of occupation (from managerial to elementary positions);
Specification 3 – introducing sectoral dummies: industry, services, agriculture, hunting and fishing and public administration.
Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 7 Decomposition of the change in the gender wage gap at the mean (reference estimates – pooled samples over both groups)

	Specification 1				Specification 2				Specification 3			
	D	Q	P	QP	D	Q	P	QP	D	Q	P	QP
All												
Total differential of which:	-0.020				-0.020				-0.023			
Explained	-0.001	0.007	-0.010	0.001	-0.013	0.026	-0.041	0.002	-0.019	0.031	-0.047	-0.003
Unexplained	-0.019	-0.015	0.003	-0.007	-0.008	-0.001	-0.002	-0.005	-0.004	0.000	-0.001	-0.003
Formal												
Total differential of which:	-0.028				-0.028				-0.029			
Explained	0.000	0.003	-0.003	-0.001	-0.016	0.016	-0.035	0.004	-0.014	0.020	-0.021	-0.013
Unexplained	-0.028	-0.024	0.002	-0.005	-0.013	-0.008	-0.002	-0.003	-0.015	-0.017	0.008	-0.006
Informal												
Total differential of which:	0.188				0.191				0.183			
Explained	0.047	0.032	-0.190	0.205	0.124	0.106	-0.148	0.165	0.164	0.264	-0.122	0.022
Unexplained	0.141	0.184	-0.028	-0.016	0.067	0.085	0.014	-0.032	0.019	0.036	0.016	-0.033
Public												
Total differential of which:	-0.048				-0.049				-0.052			
Explained	-0.006	-0.002	0.010	-0.015	-0.022	0.029	-0.033	-0.018	-0.039	0.018	-0.042	-0.014
Unexplained	-0.042	-0.036	-0.002	-0.004	-0.027	-0.034	0.005	0.001	-0.013	-0.009	-0.002	-0.002
Private												
Total differential of which:	0.037				0.035				0.030			
Explained	0.001	0.027	-0.036	0.010	-0.022	0.003	-0.048	0.022	-0.011	0.057	-0.050	-0.017
Unexplained	0.036	0.067	-0.013	-0.017	0.058	0.081	-0.011	-0.012	0.041	0.057	-0.011	-0.005

Source: ULMS.
Specification 1 - Base equation: including only age, age squared, educational dummies, tenure, tenure squared together with dummies for wages temporarily above and below contractual wages and regional dummies;
Specification 2- adding to specification 1 job variables: part time, type of occupation (from managerial to elementary positions);
Specification 3 – introducing sectoral dummies: industry, services, agriculture, hunting and fishing and public administration.

From the observation of Table 7 we see that only a minimum part of the change in the gender gap can be explained by the change in observables when we control just for individual characteristics and regional dummies. The only exception is constituted by the informally employed, where the change in observables explains about 25% of the change in the gap, against an overall average of only about 7%. Women's observable characteristics appear to have remained more or less stable in the public sector and among formal employees and to have deteriorated in the private sector, particularly among informal employees.

Of the 93% of the change in the overall gap unexplained by observables, most (about 80%) is due to an improvement in women's relative position in the residual wage distribution and only marginally to a narrowing of the distribution itself. Similar conclusions can be drawn looking at the decomposition of the change in the public sector and for the formally employed.

The increase in the gap we observe in the private sector and among the informally employed appears to be due to the fact that the narrowing of the distribution of

Table 8 Decomposition of the change in the gender wage gap at the mean (reference estimates – male coefficients and residual distributions)

	Specification 1				Specification 2				Specification 3			
	D	Q	P	QP	D	Q	P	QP	D	Q	P	QP
All												
Total differential of which:	-0.020				-0.020				-0.023			
Explained	0.007	0.008	-0.004	0.004	-0.013	0.019	-0.036	0.003	-0.018	0.032	-0.035	-0.014
Unexplained	-0.028	-0.007	-0.016	-0.004	-0.007	0.012	-0.015	-0.004	-0.005	0.013	-0.012	-0.006
Formal												
Total differential of which:	-0.028				-0.028				-0.029			
Explained	0.009	0.004	0.006	0.000	-0.001	0.009	-0.015	0.005	0.009	0.022	0.002	-0.016
Unexplained	-0.037	-0.014	-0.020	-0.004	-0.027	-0.005	-0.019	-0.003	-0.038	-0.023	-0.010	-0.005
Informal												
Total differential of which:	0.188				0.191				0.183			
Explained	0.024	0.018	-0.256	0.262	0.077	0.142	-0.197	0.132	0.172	0.380	-0.093	-0.115
Unexplained	0.163	0.207	0.007	-0.050	0.114	0.140	0.047	-0.073	0.011	0.050	0.036	-0.075
Public												
Total differential of which:	-0.048				-0.049				-0.052			
Explained	-0.033	-0.002	0.008	-0.039	-0.046	0.019	-0.018	-0.047	-0.054	0.021	-0.024	-0.051
Unexplained	-0.015	-0.001	-0.034	0.020	-0.003	0.000	-0.028	0.024	0.002	0.000	-0.025	0.027
Private												
Total differential of which:	0.037				0.035				0.030			
Explained	-0.002	0.021	-0.042	0.019	-0.075	-0.006	-0.110	0.040	-0.051	0.070	-0.094	-0.027
Unexplained	0.040	0.077	-0.018	-0.019	0.111	0.149	-0.009	-0.029	0.081	0.113	-0.012	-0.020

Source: ULMS.
Specification 1 - Base equation: including only age, age squared, educational dummies, tenure, tenure squared together with dummies for wages temporarily above and below contractual wages and regional dummies;
Specification 2- adding to specification 1 job variables: part time, type of occupation (from managerial to elementary positions);
Specification 3 – introducing sectoral dummies: industry, services, agriculture, hunting and fishing and public administration.

earnings (associated with the remuneration of attributes) has been more than offset by a deterioration of the position of women in the residual distribution (that could be due to a worsening of unobservable characteristics or to an increased discrimination). In a situation in which average wages have been increasing substantially, it looks like women in the private sector and especially among the informally employed have lost terrain. In the public sector, on the other hand, the positive effect of the narrowing of the distribution of earnings has been strengthened by an improvement of the position of women in the residual distribution (that could be due to the improvement of unobservable characteristics or to a reduction in discrimination).

The same patterns are observed when I use as reference coefficients and residual distributions estimated for men (Table 8) with the exception of the public sector, where most of the reduction in the wage gap is now explained by changes in the explained components. Considerations about changes in the distribution of earnings and of residuals for women working in the public sectors, however, do not change.

The introduction of occupational and sectoral variables in the analysis (specifications 2 and 3) increases the explained component of the wage gap relative to the unexplained one in almost all cases. The impacts, however, are significantly different across sectors and/or types of contractual arrangement. In particular, occupational and sectoral variables help explaining almost all of the (large) increase of the wage gap among the informal employed and at the same time most of the reduction of the wage gap in the public sector. As occupation and sectoral variables allow us to test for the existence of vertical and/or horizontal segregation, this result seems to imply that in the public sector women have managed both to progress in terms of occupation and to switch to (or to remain in) economic activities that benefited mostly from growth, while exactly the opposite seems to have happened to the informally employed. Women in the private sector (which include both formally employed and informally employed) appear to be somehow in between, with some improvement in terms of occupational outcomes more than offset by the worsening of their position in the residual distribution.

The change in the gap appears to derive from the net effect of several forces, pushing sometimes in different directions. On one hand, the relative change in observables (including occupation and economic sectors) seems to penalize women in the informal sector and to work in their favor in the public one. On the other hand, the improvement in the remuneration of observables seems to work towards a reduction of the gap everywhere. Where the second effect prevails, or where the two effects work together like in the public sector, the gap shrinks. Where it does not, as in the private sector and for the informally employed, it expands. Again, in these last two cases, the deterioration of the position of women in the residual distribution (which does not happen in the other cases) also continues playing a role. Interestingly enough, in the informal sector this component gets much smaller as I introduce occupational and sectoral variables among the explanatory variables. This indicates that a substantial part of the apparent deterioration in the position of women in the residual distribution in the case of the informally employed is due to increased segregation of women in occupations (such as service workers and shop and market salespersons) and sectors (such as services) that did not benefit from growth as much as those where men were most present.

This picture is compatible with a situation in which the introduction and enforcement of gender legislation is starting to affect the labor market, beginning with public employees and (to a lesser extent) the formally employed but having more difficulties in"reaching" the informal segment of the labor market.

6.5 Decomposition of the gap across the distribution by year[25]

As we have seen, the gender wage gap varies across the distribution and its pattern changed in different ways in different parts of the labor market during the period 2003–2007.

In 2003 the gender gap at the bottom of the distribution was overall relatively small. As we have already discussed, (Ganguli and Terrell 2005) suggested this result was the evidence of a "wage floor" for women and attributed this result to the role of minimum wages. As we move up through the wage distribution, the gap increases, to reach a maximum above the 4^{th} decile, evidence compatible with the existence of, what in the

literature is called, a "wage ceiling" for women. This pattern, which I identify analyzing the aggregate distribution of wages in 2003, hides some differences (across sectors and contractual forms) and I am going to analyze them by looking – as in previous sections – at three different specifications: one including exclusively individual characteristics and regional dummies, the second one adding to the previous one occupational variables and the last one including also sectoral variables. As the results of the second and third specification are qualitatively very similar (the introduction of sectoral variables just strengthens the results), I will report only the results relative to the first and the last specifications.[26]

When I estimate the basic model (Tables 9 and 10), the decomposition of the wage gap by decile shows that in all sectors the existing gap is not due to worse observable characteristics of women. Indeed, the contrary is true. Age, tenure and educational characteristics – when they turn out to be significant – contribute to the reduction of the gap that otherwise would have been even larger. This is evident in all regressions but the panel relative to the private sector employees, where only the difference in coefficients is significant, indicating that in this sector women's individual characteristics are not significantly better (or worse) than men's.

Overall, observables contribute to the reduction of the log wage gap by 0.05-0.07 points (that is, the wage gap is from 5 to 7 percentage points smaller than it would have been otherwise). This is almost enough to offset the negative effect of coefficients at the bottom deciles, while the same is not true as we go up in the distribution and the size of the unexplained component grows.

In 2003, the private sector shows on average lower wage gaps than those observed in the public sector across all the distribution, with the exception of the lowest decile. Moreover, differently from what happens in the public sector (where the gap increases as we move to the top of the distribution) the gap reaches the maximum towards the median of the distribution, to decrease again as one gets close to the top. Therefore, in the private sector I do not find strong evidence to support the existence of a "wage ceiling" for women. At the very top (9^{th} decile) women in the private sector are estimated to get on average 21.4% less than men against those in the private sector 37.5% (at the median the differences were respectively 30.4% and 35.2%).

When I add occupational and sectoral variables to the basic specification (Tables 11 and 12) differences in characteristics cease, in most cases, to contribute significantly to the reduction of the gender wage gap. In the case of those employed in the private sector, this component actually starts contributing to the gap. This clearly indicates how women tend to be disadvantaged, not only in terms of remuneration of their observed characteristics but also by being segregated in occupations and economic sectors with worse remuneration prospects.

From 2003 to 2007 things changed substantially.

Among the formally employed and the public employees, the wage gap increased at the bottom of the distribution and decreased at the top, remaining stable at the central deciles. The largest reduction in the gender gap took place in the public sector, due both to an increase in the part explained by observed characteristics and to a decrease in the unexplained part. Once more, the contribution of observable characteristics appears to be positive if I consider only individual characteristics (specification 1) and turns to insignificant when I include occupational and sectoral variables, with the

Table 9 Decomposition of the gender wage gap by decile – Specification 1 (reference estimates – male coefficients and residual distributions)

					All				
2003									
	d1	**d2**	**d3**	**d4**	**d5**	**d6**	**d7**	**d8**	**d9**
Raw difference	-0.022	-0.132	-0.228	-0.308	-0.339	-0.354	-0.339	-0.323	-0.328
	(0.017)***	(0.012)***	(0.012)***	(0.014)***	(0.018)***	(0.017)***	(0.023)***	(0.023)***	(0.025)***
Characteristics	0.065	0.060	0.064	0.062	0.062	0.059	0.062	0.067	0.068
	(0.028)*	(0.024)**	(0.024)***	(0.023)***	(0.023)***	(0.023)***	(0.023)***	(0.026)***	(0.034)**
Coefficients	-0.087	-0.193	-0.291	-0.370	-0.402	-0.413	-0.401	-0.390	-0.397
	(0.029)***	(0.023)***	(0.023)***	(0.022)***	(0.020)***	(0.020)***	(0.020)***	(0.022)***	(0.029)***
2007									
Raw difference	-0.103	-0.196	-0.261	-0.294	-0.315	-0.306	-0.283	-0.272	-0.209
	(0.015)***	(0.015)***	(0.017)***	(0.015)***	(0.019)***	(0.021)***	(0.025)***	(0.029)***	(0.034)***
Characteristics	0.048	0.054	0.054	0.057	0.058	0.060	0.060	0.058	0.066
	(0.026)*	(0.024)**	(0.023)***	(0.021)***	(0.018)***	(0.022)***	(0.023)***	(0.026)***	(0.039)**
Coefficients	-0.151	-0.250	-0.315	-0.351	-0.373	-0.366	-0.342	-0.330	-0.275
	(0.025)***	(0.023)***	(0.020)***	(0.019)***	(0.017)***	(0.018)***	(0.020)***	(0.021)***	(0.031)***
					Formal				
2003									
	d1	**d2**	**d3**	**d4**	**d5**	**d6**	**d7**	**d8**	**d9**
Raw difference	-0.036	-0.147	-0.235	-0.309	-0.338	-0.352	-0.341	-0.327	-0.338
	(0.016)**	(0.012)***	(0.011)***	(0.014)***	(0.019)***	(0.019)***	(0.024)***	(0.024)***	(0.026)***
Characteristics	0.056	0.057	0.061	0.062	0.066	0.062	0.065	0.070	0.072
	(0.023)**	(0.021)***	(0.021)***	(0.020)***	(0.019)***	(0.019)***	(0.022)***	(0.026)***	(0.033)**
Coefficients	-0.092	-0.203	-0.296	-0.371	-0.403	-0.414	-0.406	-0.397	-0.410
	(0.025)***	(0.020)***	(0.020)***	(0.020)***	(0.019)***	(0.019)***	(0.020)***	(0.022)***	(0.029)***

Table 9 Decomposition of the gender wage gap by decile – Specification 1 (reference estimates – male coefficients and residual distributions) *(Continued)*

2007									
	d1	**d2**	**d3**	**d4**	**d5**	**d6**	**d7**	**d8**	**d9**
Raw difference	-0.127	-0.219	-0.273	-0.306	-0.317	-0.297	-0.268	-0.245	-0.167
	(0.014)***	(0.015)***	(0.018)***	(0.015)***	(0.020)***	(0.023)***	(0.025)***	(0.029)***	(0.034)***
Characteristics	0.038	0.047	0.049	0.053	0.050	0.056	0.051	0.054	0.075
	(0.030)	(0.024)**	(0.025)**	(0.026)**	(0.023)**	(0.026)**	(0.026)**	(0.026)**	(0.037)**
Coefficients	-0.165	-0.265	-0.322	-0.359	-0.367	-0.353	-0.320	-0.299	-0.243
	(0.027)***	(0.023)***	(0.023)***	(0.022)***	(0.022)***	(0.023)***	(0.022)***	(0.021)***	(0.030)***

Source: ULMS.
Specification 1 - Base equation: including only age, age squared, educational dummies, tenure, tenure squared together with dummies for wages temporarily above and below contractual wages and regional dummies;
Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 10 Decomposition of the gender wage gap by decile – Specification 1 (reference estimates – male coefficients and residual distributions)

					Private				
2003	**d1**	**d2**	**d3**	**d4**	**d5**	**d6**	**d7**	**d8**	**d9**
Raw difference	-0.063	-0.143	-0.235	-0.284	-0.304	-0.313	-0.272	-0.236	-0.214
	(0.039)	(0.027)***	(0.031)***	(0.031)***	(0.034)***	(0.038)***	(0.043)***	(0.042)***	(0.061)***
Characteristics	0.059	0.031	0.021	0.018	0.021	0.033	0.036	0.051	0.049
	(0.047)	(0.046)	(0.042)	(0.037)	(0.035)	(0.037)	(0.039)	(0.043)	(0.065)
Coefficients	-0.122	-0.175	-0.256	-0.302	-0.324	-0.345	-0.308	-0.287	-0.263
	(0.047)***	(0.039)***	(0.041)***	(0.036)***	(0.030)***	(0.031)***	(0.033)***	(0.036)***	(0.048)***
2007									
Raw difference	-0.124	-0.195	-0.242	-0.285	-0.304	-0.306	-0.322	-0.328	-0.274
	(0.027)***	(0.023)***	(0.025)***	(0.026)***	(0.028)***	(0.029)***	(0.030)***	(0.035)***	(0.051)***
Characteristics	0.042	0.038	0.042	0.046	0.047	0.053	0.049	0.043	0.032
	(0.037)	(0.038)	(0.037)	(0.036)	(0.031)	(0.034)*	(0.035)	(0.036)	(0.045)
Coefficients	-0.166	-0.233	-0.284	-0.331	-0.350	-0.358	-0.371	-0.371	-0.305
	(0.035)***	(0.034)***	(0.034)***	(0.032)***	(0.031)***	(0.031)***	(0.031)***	(0.033)***	(0.045)***
					Public				
2003	**d1**	**d2**	**d3**	**d4**	**d5**	**d6**	**d7**	**d8**	**d9**
Raw difference	-0.035	-0.148	-0.240	-0.314	-0.352	-0.370	-0.365	-0.356	-0.375
	(0.015)**	(0.011)***	(0.011)***	(0.014)***	(0.018)***	(0.017)***	(0.022)***	(0.025)***	(0.027)***
Characteristics	0.056	0.059	0.063	0.065	0.067	0.062	0.068	0.069	0.063
	(0.035)*	(0.026)**	(0.028)**	(0.028**)	(0.026)**	(0.025)**	(0.029)***	(0.034)**	(0.037)*
Coefficients	-0.090	-0.207	-0.303	-0.379	-0.418	-0.433	-0.433	-0.425	-0.439
	(0.032)***	(0.025)***	(0.028)***	(0.029)***	(0.027)***	(0.025)***	(0.027)***	(0.029)***	(0.039)***
2007	**d1**	**d2**	**d3**	**d4**	**d5**	**d6**	**d7**	**d8**	**d9**
Raw difference	-0.116	-0.208	-0.259	-0.286	-0.319	-0.302	-0.268	-0.211	-0.136
	(0.017)***	(0.017)***	(0.021)***	(0.021)***	(0.025)***	(0.027)***	(0.034)***	(0.043)***	(0.044)***

Table 10 Decomposition of the gender wage gap by decile – Specification 1 (reference estimates – male coefficients and residual distributions) *(Continued)*

Characteristics	0.038	0.045	0.060	0.071	0.069	0.072	0.080	0.082	0.129
	(0.035)	(0.034)	(0.034)**	(0.037)**	(0.036)**	(0.038)**	(0.040)**	(0.043)**	(0.060)***
Coefficients	-0.154	-0.253	-0.319	-0.357	-0.388	-0.374	-0.348	-0.292	-0.265
	(0.032)***	(0.030)***	(0.029)***	(0.032)***	(0.034)***	(0.030)***	(0.034)***	(0.038)***	(0.047)***

Source: ULMS.
Specification 1 - Base equation: including only age, age squared, educational dummies, tenure, tenure squared together with dummies for wages temporarily above and below contractual wages and regional dummies;
Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 11 Decomposition of the gender wage gap by decile – Specification 3 (reference estimates – male coefficients and residual distributions)

					All				
2003									
	d1	**d2**	**d3**	**d4**	**d5**	**d6**	**d7**	**d8**	**d9**
Raw difference	-0.048	-0.148	-0.226	-0.294	-0.333	-0.350	-0.334	-0.324	-0.331
	(0.017)***	(0.011)***	(0.011)***	(0.014)***	(0.016)***	(0.017)***	(0.020)***	(0.019)***	(0.023)***
Characteristics	0.026	0.008	-0.015	-0.023	-0.016	-0.009	0.013	0.036	0.079
	(0.026)	(0.024)	(0.027)	(0.031)	(0.030)	(0.028)	(0.029)	(0.033)**	(0.044)***
Coefficients	-0.074	-0.156	-0.210	-0.272	-0.317	-0.341	-0.347	-0.359	-0.410
	(0.028)***	(0.022)***	(0.022)***	(0.022)***	(0.018)***	(0.016)***	(0.015)***	(0.018)***	(0.027)***
2007	**d1**	**d2**	**d3**	**d4**	**d5**	**d6**	**d7**	**d8**	**d9**
Raw difference	-0.115	-0.194	-0.242	-0.275	-0.299	-0.310	-0.307	-0.277	-0.212
	(0.014)***	(0.013)***	(0.014)***	(0.013)***	(0.017)***	(0.020)***	(0.025)***	(0.029)***	(0.033)***
Characteristics	0.011	0.004	0.005	0.009	0.010	0.018	0.027	0.034	0.044
	(0.030)	(0.028)	(0.028)	(0.029)	(0.029)	(0.029)	(0.029)	(0.033)	(0.044)
Coefficients	-0.127	-0.198	-0.247	-0.284	-0.309	-0.328	-0.334	-0.310	-0.256
	(0.023)***	(0.022)***	(0.021)***	(0.019)***	(0.020)***	(0.019)***	(0.019)***	(0.021)***	(0.031)***
					Formal				
2003									
	d1	**d2**	**d3**	**d4**	**d5**	**d6**	**d7**	**d8**	**d9**
Raw difference	-0.044	-0.147	-0.227	-0.296	-0.333	-0.350	-0.338	-0.326	-0.343
	(0.017)**	(0.012)***	(0.013)***	(0.015)***	(0.017)***	(0.018)***	(0.021)***	(0.020)***	(0.021)***
Characteristics	0.032	0.015	-0.005	-0.004	-0.002	-0.001	0.014	0.036	0.075
	(0.027)	(0.024)	(0.026)	(0.029)	(0.030)	(0.029)	(0.031)	(0.034)	(0.043)**
Coefficients	-0.076	-0.162	-0.222	-0.292	-0.331	-0.349	-0.352	-0.362	-0.418
	(0.027)***	(0.021)***	(0.021)***	(0.021)***	(0.020)***	(0.020)***	(0.021)***	(0.024)***	(0.030)***

Table 11 Decomposition of the gender wage gap by decile – Specification 3 (reference estimates – male coefficients and residual distributions) *(Continued)*

2007									
	d1	**d2**	**d3**	**d4**	**d5**	**d6**	**d7**	**d8**	**d9**
Raw difference	-0.141	-0.220	-0.252	-0.284	-0.306	-0.308	-0.297	-0.245	-0.175
	(0.015)***	(0.015)***	(0.017)***	(0.017)***	(0.018)***	(0.020)***	(0.024)***	(0.030)***	(0.036)***
Characteristics	-0.017	-0.012	0.001	0.009	0.011	0.021	0.032	0.040	0.057
	(0.029)	(0.028)	(0.029)	(0.028)	(0.029)	(0.030)	(0.030)*	(0.035)*	(0.048)*
Coefficients	-0.124	-0.208	-0.254	-0.293	-0.318	-0.329	-0.329	-0.285	-0.233
	(0.024)***	(0.021)***	(0.020)***	(0.021)***	(0.021)***	(0.020)***	(0.019)***	(0.021)***	(0.034)***

Source: ULMS.
Specification 3 - Adding to specification 1 job variables and sectoral dummies: part time, type of occupation (from managerial to elementary positions), industry, services, agriculture, hunting and fishing and public administration.
Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 12 Decomposition of the gender wage gap by decile – Specification 3 (reference estimates – male coefficients and residual distributions)

					Private				
2003	**d1**	**d2**	**d3**	**d4**	**d5**	**d6**	**d7**	**d8**	**d9**
Raw difference	-0.061	-0.169	-0.244	-0.282	-0.294	-0.316	-0.305	-0.265	-0.217
	(0.038)	(0.025)***	(0.030)***	(0.034)***	(0.039)***	(0.040)***	(0.043)***	(0.046)***	(0.064)***
Characteristics	-0.013	-0.042	-0.076	-0.094	-0.070	-0.074	-0.082	-0.064	-0.048
	(0.077)	(0.064)	(0.054)**	(0.053)***	(0.051)**	(0.049)**	(0.048)**	(0.049)*	(0.060)
Coefficients	-0.048	-0.127	-0.168	-0.188	-0.224	-0.242	-0.223	-0.201	-0.169
	(0.046)	(0.038)***	(0.038)***	(0.034)***	(0.031)***	(0.036)***	(0.036)***	(0.035)***	(0.044)***
2007	**d1**	**d2**	**d3**	**d4**	**d5**	**d6**	**d7**	**d8**	**d9**
Raw difference	-0.147	-0.195	-0.237	-0.278	-0.295	-0.305	-0.317	-0.312	-0.283
	(0.032)***	(0.029)***	(0.031)***	(0.030)***	(0.029)***	(0.028)***	(0.033)***	(0.037)***	(0.048)***
Characteristics	-0.042	-0.031	-0.021	-0.004	0.009	0.018	0.023	0.031	0.019
	(0.049)	(0.041)	(0.043)	(0.041)	(0.038)	(0.038)	(0.039)	(0.043)	(0.055)
Coefficients	-0.105	-0.164	-0.216	-0.274	-0.304	-0.323	-0.340	-0.344	-0.302
	(0.035)***	(0.032)***	(0.031)***	(0.025)***	(0.025)***	(0.027)***	(0.028)***	(0.030)***	(0.040)***
					Public				
2003	**d1**	**d2**	**d3**	**d4**	**d5**	**d6**	**d7**	**d8**	**d9**
Raw difference	-0.032	-0.145	-0.222	-0.302	-0.347	-0.374	-0.378	-0.363	-0.378
	(0.021)	(0.015)***	(0.013)***	(0.015)***	(0.017)***	(0.020)***	(0.027)***	(0.027)***	(0.030)***
Characteristics	0.033	0.013	-0.019	-0.026	-0.017	-0.007	0.002	0.015	0.037
	(0.035)	(0.029)	(0.034)	(0.037)	(0.033)	(0.030)	(0.033)	(0.040)	(0.053)
Coefficients	-0.065	-0.159	-0.203	-0.275	-0.330	-0.366	-0.380	-0.377	-0.415
	(0.032)**	(0.024)***	(0.026)***	(0.025)***	(0.022)***	(0.021)***	(0.023)***	(0.026)***	(0.036)***
2007	**d1**	**d2**	**d3**	**d4**	**d5**	**d6**	**d7**	**d8**	**d9**
Raw difference	-0.107	-0.183	-0.247	-0.273	-0.300	-0.314	-0.300	-0.220	-0.148
	(0.017)***	(0.017)***	(0.019)***	(0.020)***	(0.023)***	(0.030)***	(0.039)***	(0.041)***	(0.049)***

Table 12 Decomposition of the gender wage gap by decile – Specification 3 (reference estimates – male coefficients and residual distributions) *(Continued)*

Characteristics	0.016	-0.008	-0.018	-0.016	-0.014	-0.009	0.002	0.016	0.080
	(0.046)	(0.046)	(0.045)	(0.044)	(0.045)	(0.048)	(0.051)	(0.059)	(0.077)
Coefficients	-0.123	-0.175	-0.229	-0.256	-0.285	-0.305	-0.302	-0.237	-0.228
	(0.034)***	(0.033)***	(0.030)***	(0.030)***	(0.032)***	(0.031)***	(0.031)***	(0.034)***	(0.050)***

Source: ULMS.
Specification 3 - Adding to specification 1 job variables and sectoral dummies: part time, type of occupation (from managerial to elementary positions), industry, services, agriculture, hunting and fishing and public administration.
Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

exception of the top deciles for formal employees. Thus, part of the gender gap seems still to be due, at least in part, to unfavorable observable job and sector characteristics.

The private sector seems to follow an opposite path with respect to the public one. In this case the gender gap increases or at least does not decrease at any decile and this seems to be mostly due to increasingly different remuneration of men's and women's characteristics.

Overall, the reduction of the gap, driven by the reduction taking place mainly in the public sector, seems to be due mostly to an improvement in women's individual characteristics relative to men's and to a better remuneration of these characteristics with only a limited improvement in occupational and sectoral positions. The combination of these effects seems to also result in the "weakening" of the "wage ceiling" at the top of the distribution.

6.6 Analysis of the change in the gender gap by decile in the period 2003–2007

In Tables 13 and 14 I conclude my analysis by performing the counterfactual analysis of the change in the gender gap in the period 2003–2007 across the distribution, presenting our results in a way comparable with (Ganguli and Terrell 2005) and Dohmen, Lehmann and Zaiceva (2008). The purpose of this counterfactual analysis is to discuss the possible reasons for the change in the gender gap across the distribution by analyzing alternative scenarios. I will perform the analysis adopting the three different specifications used in past sections and report the results relative to specifications 1 and 3.

As specified in the methodological section, I will calculate 4 counterfactual gaps, two for women and two for men, following the same strategy adopted by Dohmen, Lehmann and Zaiceva (2008).

Rows (a) in Tables 13 and 14 report the ratios between the actual gaps in 2007 and in 2003 while other rows report the ratios between counterfactual gaps and the actual gaps in 2003. Values above 1 indicate that the gap has been increasing (or the counterfactual gap would have been larger than the actual gap in 2003) while values below 1 indicate that the gap has been decreasing (or the counterfactual gap would have been smaller than the actual gap in 2003) and negative values indicate a reversal of the wage gap. As we have seen in previous analysis, in the period 2003–2007 the overall raw gap increased at the bottom of the distribution and diminished at the top, driven by the evolution of the wage gap in the public sector. At the same time, in the private sector was observed a generalized increase of the gap across the distribution.

Moving to the counterfactual analysis, in Table 13 (basic specification) we see that if women had been remunerated with the coefficients of 2007 but had the same distribution of characteristics they had in 2003, the gap would have been almost unchanged (or slightly higher) at the very bottom and near the median of the distribution, and would have been smaller than in reality in all other parts of the distribution, especially at the very top, indicating a relative improvement (or at least not a deterioration) in characteristics for the first groups and a deterioration for the last one. This tells us that observable characteristics for women at the bottom of the distribution improved over time contributing to a reduction in the observed wage gap, while the opposite happened at the top of the distribution where the deterioration of individual characteristics somehow prevented a larger reduction of the gap (given the remuneration of characteristics in 2007).

Table 13 Analysis of the change in the gender wage gap by decile in the period 2003-2007 – Specification 1

		d1	d2	d3	d4	d5	d6	d7	d8	d9
All	(a) Ratio gaps 2007/2003	2.408	1.467	1.641	0.960	0.982	0.711	0.910	0.800	0.938
Women	Ratio counterfactual 1a/Actual gap 2003	2.418	1.308	1.439	0.976	0.934	0.892	0.930	0.794	0.648
	Ratio counterfactual 1b/ Actual gap 2003	17.213	6.318	5.709	3.659	3.333	3.289	3.640	3.159	3.471
Men										
	Ratio counterfactual 2a/ Actual gap 2003	1.061	1.089	1.273	0.899	0.898	0.891	0.942	0.818	0.695
	Ratio counterfactual 2b/ Actual gap 2003	-14.270	-4.049	-2.941	-1.618	-1.367	-1.342	-1.585	-1.414	-1.727
Formal	(a) Ratio gaps 2007/2003	3.579	1.549	1.470	0.926	1.063	0.757	0.871	0.674	0.828
Women										
	Ratio counterfactual 1a/ Actual gap 2003	3.847	1.548	1.507	0.999	0.964	0.893	0.911	0.778	0.579
	Ratio counterfactual 1b/ Actual gap 2003	22.695	6.748	5.693	3.572	3.345	3.256	3.597	3.201	3.442
Men										
	Ratio counterfactual 2a/ Actual gap 2003	2.393	1.295	1.321	0.914	0.908	0.858	0.891	0.758	0.576
	Ratio counterfactual 2b/ Actual gap 2003	-18.153	-4.178	-2.906	-1.578	-1.403	-1.377	-1.624	-1.509	-1.802
Private	(a) Ratio gaps 2007/2003	1.074	1.664	1.092	1.291	1.221	0.832	1.000	1.641	1.099
Women										
	Ratio counterfactual 1a/ Actual gap 2003	1.970	1.472	0.959	1.283	1.100	1.034	1.144	1.400	0.841
	Ratio counterfactual 1b/ Actual gap 2003	12.666	7.147	4.142	4.841	4.040	3.805	3.993	4.707	3.984
Men										
	Ratio counterfactual 2a/ Actual gap 2003	0.105	0.886	0.888	1.236	1.150	1.040	1.055	1.253	0.775
	Ratio counterfactual 2b/ Actual gap 2003	-10.799	-4.757	-2.192	-2.164	-1.701	-1.563	-1.762	-2.231	-2.244
Public	(a) Ratio gaps 2007/2003	1.571	1.432	1.495	0.847	0.922	0.801	0.911	0.518	0.175
Women										
	Ratio counterfactual 1a/ Actual gap 2003	2.714	1.334	1.419	0.869	0.896	0.943	0.931	0.668	0.472
	Ratio counterfactual 1b/ Actual gap 2003	17.312	5.795	5.322	3.129	2.951	3.194	3.433	3.020	3.027

Table 13 Analysis of the change in the gender wage gap by decile in the period 2003-2007 – Specification 1 *(Continued)*

Men										
	Ratio counterfactual 2a/ Actual gap 2003	3.699	1.483	1.496	0.915	0.910	0.972	1.000	0.892	0.764
	Ratio counterfactual 2b/ Actual gap 2003	-13.377	-3.615	-2.760	-1.452	-1.254	-1.333	-1.516	-1.362	-1.475

Source: ULMS. Specification 1 - Base equation: including only age, age squared, educational dummies, tenure, tenure squared together with dummies for wages temporarily above and below contractual wages and regional dummies.

[a] the actual gap is the coefficient on the female dummy in the quantile regressions without covariates.

Counterfactuals: 1a $\left[Q^{\theta}\left(X^{f03}\hat{\beta}^{f07}\right)-Q^{\theta}\left(X^{m07}\,\hat{\beta}^{m07}\right)\right]$ 1b $\left[Q^{\theta}\left(X^{f07}\hat{\beta}^{f03}\right)-Q^{\theta}\left(X^{m07}\,\hat{\beta}^{m07}\right)\right]$ 2a $\left[Q^{\theta}\left(X^{f07}\hat{\beta}^{f07}\right)-Q^{\theta}\left(X^{m03}\,\hat{\beta}^{m07}\right)\right]$ 2b $\left[Q^{\theta}\left(X^{f07}\hat{\beta}^{f07}\right)-Q^{\theta}\left(X^{m07}\,\hat{\beta}^{m03}\right)\right]$.

Table 14 Analysis of the change in the gender wage gap by decile in the period 2003-2007 – Specification 3

		d1	d2	d3	d4	d5	d6	d7	d8	d9
All	(a) Ratio gaps 2007/2003	2.408	1.467	1.641	0.960	0.982	0.711	0.910	0.800	0.938
Women										
	Ratio counterfactual 1a/Actual gap 2003	2.702	1.344	1.372	0.941	0.926	0.942	1.057	0.857	0.725
	Ratio counterfactual 1b/ Actual gap 2003	17.452	6.139	5.471	3.464	3.181	3.164	3.512	3.072	3.410
Men										
	Ratio counterfactual 2a/ Actual gap 2003	1.777	1.307	1.329	0.925	0.900	0.934	1.061	0.855	0.779
	Ratio counterfactual 2b/ Actual gap 2003	-15.123	-4.171	-3.138	-1.749	-1.488	-1.416	-1.599	-1.526	-1.871
Formal	(a) Ratio gaps 2007/2003	3.579	1.549	1.470	0.926	1.063	0.757	0.871	0.674	0.828
Women										
	Ratio counterfactual 1a/ Actual gap 2003	4.337	1.567	1.377	0.906	0.902	0.883	0.952	0.720	0.514
	Ratio counterfactual 1b/ Actual gap 2003	23.250	6.684	5.544	3.459	3.286	3.253	3.616	3.240	3.550
Men										
	Ratio counterfactual 2a/ Actual gap 2003	2.873	1.425	1.348	0.919	0.904	0.912	1.008	0.780	0.659
	Ratio counterfactual 2b/ Actual gap 2003	-19.043	-4.284	-3.085	-1.706	-1.521	-1.466	-1.677	-1.670	-1.939
Private	(a) Ratio gaps 2007/2003	1.074	1.664	1.092	1.291	1.221	0.832	1.000	1.641	1.099
Women										
	Ratio counterfactual 1a/ Actual gap 2003	1.301	1.036	0.802	1.119	1.037	0.990	1.070	1.239	0.844
	Ratio counterfactual 1b/ Actual gap 2003	13.377	7.434	4.199	4.869	4.051	3.787	4.006	4.815	3.833
Men										
	Ratio counterfactual 2a/ Actual gap 2003	0.320	1.214	0.952	1.307	1.196	1.181	1.304	1.507	1.071
	Ratio counterfactual 2b/ Actual gap 2003	-13.378	-5.679	-2.740	-2.747	-2.058	-1.804	-1.815	-2.317	-2.196
Public	(a) Ratio gaps 2007/2003	1.571	1.432	1.495	0.847	0.922	0.801	0.911	0.518	0.175
Women										
	Ratio counterfactual 1a/ Actual gap 2003	2.872	1.304	1.427	0.885	0.867	0.976	1.037	0.716	0.492
	Ratio counterfactual 1b/ Actual gap 2003	17.498	5.701	5.215	3.074	2.910	3.216	3.532	3.085	3.106

Table 14 Analysis of the change in the gender wage gap by decile in the period 2003-2007 – Specification 3 *(Continued)*

Men										
	Ratio counterfactual 2a/ Actual gap 2003	3.422	1.412	1.373	0.856	0.876	1.023	1.126	0.913	0.823
	Ratio counterfactual 2b/ Actual gap 2003	-13.178	-3.470	-2.764	-1.410	-1.227	-1.289	-1.426	-1.354	-1.516

Source: ULMS. Specification 3 - Adding to specification 1 job variables and sectoral dummies: part time, type of occupation (from managerial to elementary positions), industry, services, agriculture, hunting and fishing and public administration.

[a] the actual gap is the coefficient on the female dummy in the quantile regressions without covariates.

Counterfactuals: 1a $\left[Q^{\theta}\left(X^{f03}\hat{\beta}^{f07}\right)-Q^{\theta}\left(X^{m07}\,\hat{\beta}^{m07}\right)\right]$ 1b $\left[Q^{\theta}\left(X^{f07}\hat{\beta}^{f03}\right)-Q^{\theta}\left(X^{m07}\,\hat{\beta}^{m07}\right)\right]$ 2a $\left[Q^{\theta}\left(X^{f07}\hat{\beta}^{f07}\right)-Q^{\theta}\left(X^{m03}\,\hat{\beta}^{m07}\right)\right]$ 2b $\left[Q^{\theta}\left(X^{f07}\hat{\beta}^{f07}\right)-Q^{\theta}\left(X^{m07}\,\hat{\beta}^{m03}\right)\right]$.

The changes that occurred in the period 2003–2007 are much more evident when we consider the second counterfactual, assuming women had 2007 characteristics but were remunerated according to 2003 prices. In this case the gap would explode across the distribution, mostly at the bottom. The remuneration of women's characteristics in 2003 was apparently much lower than in 2007, especially in the lower parts of the distribution. This already gives an indication about another potential cause leading to a reduction of the wage gap: the generalized increase in the remuneration of women's characteristics relative to men's. This is consistent with the decomposition of the changes at the mean, where the change in observed and unobserved prices was the strongest component pushing towards a reduction of the gender wage gap.

When I perform the same counterfactual analysis for men I find that, having the same characteristics in 2007 as they had in 2003, men would have been worse off and the wage gap would have been smaller everywhere but in the proximity of the top of the distribution. On the other hand, had men the same characteristics of 2007 with 2003 prices, the wage gap would be reversed and women would earn more than men. This testifies the dramatic increase in remuneration of men's and women's individual characteristics between 2003 and 2007.

The analysis at a more disaggregated level confirms these main impressions. Remuneration of men's and women's characteristics increased substantially in the period 2003–2007 in most parts of the Ukrainian labor market. In the same period, men's observable characteristics seem to have improved with respect to 2003 relative to women's, more so at the top. This is reflected by the generalized tendency to lower counterfactual gaps when I attribute to men 2003 characteristics at 2007 prices.

The public sector stands out as it is the only one in which women's characteristics across the distribution and especially at the top appears to have improved from 2003 to 2007, therefore contributing to the reduction of the wage gap. Another interesting result characterizing the public sector is that, attributing to men 2003 characteristics while maintaining 2007 prices the gap increases substantially, especially at the bottom and at the very top of the distribution, indicating a deterioration in men's observable characteristics from 2003 to 2007. This phenomenon could be justified by the movement of men from the public sector to the booming private sector in search for better remuneration and career opportunities. Indeed, when we look at the simple probit regressions predicting the probability to move from the public to the private sector (Table 15) we see that men are much more likely to move, especially if they are very experienced. Data show that almost 40% of men working in the public sector 2003 were working in the private sector in 2007 while only about 20% of women did the same. This disproportionate movement of men to the private sector might have been encouraged by the stricter enforcement of gender-equalizing legislation in the public sector or simply by the increased opportunities in the private sector. In any case, considering that the most likely movers are those with higher tenure, these results confirm how the substantial reduction in the wage gap in the public sector in the period 2003–2007 is due to the combined effect of the deterioration in the attributes of men working in that sector and of a more equitable remuneration of women's characteristics.

The counterfactual analysis performed using the less parsimonious results (Table 14) leads exactly to the identification of the same patterns.

Table 15 Probit regressions – probability to move from the public to the private sector in the period 2003-2007

	Complete sample	Only men
Male	0.321	
	(0.068)***	
Age	−0.006	−0.005
	(0.004)	(0.005)
University and higher	−0.106	−0.112
	(0.110)	(0.150)
Secondary education	−0.003	0.014
	(0.091)	(0.113)
Tenure	0.038	0.037
	(0.004)***	(0.006)***
Married	−0.147	−0.162
	(0.087)*	(0.136)
Number of children with age below 18	0.035	0.029
	(0.045)	(0.060)
Center and North	0.229	0.236
	(0.174)	(0.256)
South	0.290	0.225
	(0.181)	(0.263)
East	0.401	0.349
	(0.168)**	(0.249)
West	0.252	0.283
	(0.180)	(0.263)
Constant	−1.379	−1.048
	(0.233)	(0.306)***
Obs.	1981	959

Source: ULMS Robust standard errors in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.
Default categories are: Female, Elementary and less, Not married, Kyiv City.

Summarizing, the counterfactual analysis confirms the findings I discussed in the previous sections. In the period 2003–2007 a number of forces were at work. These forces not only have dramatically increased the remuneration of individual characteristics in general, but have contributed narrowing the distance between the remuneration of the same characteristics for men and women, especially at the top of the distribution. This appears to be the factor that, most of all, has contributed to the reduction in the gender wage gap, despite the relative deterioration of women's observable characteristics at the top of the distribution (outside the public sector) and the persistence of vertical and horizontal segregation.

7. Conclusions

In this paper I have analyzed the evolution of the gender wage gap in Ukraine during the years 2003–2007.

In the period under analysis women's individual characteristics have been deteriorating relative to men's in the private sector of the economy. This deterioration took place mostly at the top of the distribution, pushing towards an enlargement of the gender

wage gap. Fortunately, at the same time (possibly also thanks to the efforts of the government to reduce discrimination in the labor market) the differences between the remuneration of observable characteristics for men and women shrunk. These two effects were at work simultaneously, pulling in two opposite directions and leading to the overall stability (or possibly a slight reduction) of the gender wage gap over the period under analysis.

This aggregate result hides very different outcomes in the public sector, where the gap decreased thanks to the improvement in women's characteristics and to the reduction in differences of remuneration, and in the private sector, where the gap increased (especially among the informally employed).

Another factor preventing a larger reduction in the gender wage gap seems to have been the segregation of women in certain occupations and in certain sectors. Because of segregation, women – contrary to men – seem not to have always been able to reap fully the benefit of strong economic growth. This is evident by looking at the change in the contribution of observable characteristics to the gender wage gap when occupational and sectoral variables are introduced (from positive to insignificant or from insignificant to negative).

These results indicate that efforts to introduce and enforce pro-gender equality measures have not been sufficient to eliminate women's segregation in the labor market, even though they seem to have led to its reduction in the public sector. This underlines the existing difficulties in changing deeply rooted attitudes concerning the types of occupations and sectors of activity perceived as "suitable" for women. Nevertheless, some reasons for optimism emerge. For example, when I decompose the change in the gender wage gap at the mean, changes in occupations and the sector of employment account for more than half of the reduction in the wage gap in the public sector and contributes to limit its increase (to a more limited extent) in the private sector. As enforcing pro-gender equality measures is more difficult in absence of written and registered contracts, it is unsurprising that this effect is not present among the informally employed, where most of the increase in the gap is indeed explained by changes in occupational and sectoral variables. It would seem that, starting from the public sector, horizontal and vertical segregation has starting being tackled, but there is still a long way to go.

On the other hand, enforcing equal remuneration of identical characteristics seems to have been relatively easier, especially at the top of the wage distribution, where competitive forces were very likely working in the same direction, with employers competing for the most skilled individuals of both genders.

To conclude, the condition of working women in Ukraine certainly improved, both in absolute and relative terms in the period 2003–2007. It is very plausible that at least part of this improvement is due to the efforts of the Ukrainian government to design and enforce policies to promote gender equality in the labor market. However, from this work it appears how the "quest for gender equality" in Ukraine is far from terminated and its successful conclusion will require a continued effort by future governments in this direction, particularly focusing on vertical and horizontal segregation, which appears to still be pervasive, especially in the private sector, even as the remuneration of individual characteristics seems to converge. Tackling this source of inequality might require a greater emphasis on well-structured policies to change the

deeply rooted perceptions of gender "roles" and "functions" in th7e labor market, rather than simple attempts to ensure "equal pay". More efforts should also be made to assure that gender legislation reaches the informal segment of the labor market, where the gender wage gap has been increasing the most.

Designing such policies will certainly require a substantial effort but this seems to be a crucial step to ensure greater gender equality in the Ukrainian labor market and better development perspectives for the Ukrainian economy.

Endnotes

[1]Among them: the UN Convention on the Elimination of All Forms of Discrimination against Women, the ILO Equal Remuneration Convention, 1951 (No. 100), the Discrimination (Employment and Occupation) Convention, 1958 (No.111) and the Workers with Family Responsibilities Convention, 1981 (No. 156). For a more comprehensive list, see (Kupets 2010)

[2]They compared the log wage gaps for Ukraine - respectively 0.4, 0.41 and 0.34 for 1986, 1991 and 2003 - with the log wage gaps estimated in the comparative paper written by (Blau and Kahn 2003) analyzing 21 countries – ranging from 0.14 (for Slovenia) to 0.48 (for Switzerland) and with an average value of 0.28

[3]Among them: Presidential Decree No. 1135 on Improvement of Activity of National and Regional Executive Power Bodies in Ensuring Equal Rights and Opportunities of Men and Women (signed on 26 July 2005); Law of Ukraine On Ensuring Equal Rights and Opportunities to Women and Men (in force since 1 January 2006); The State Programme for Ensuring Gender Equality in Ukrainian Society up to 2010 (approved by the Decree of the Cabinet of Ministers of Ukraine on 27 December 2006). For a more comprehensive list, see (Kupets 2010).

[4]At the beginning of 2010, Viktor Yanukovych was elected president of Ukraine. In October of the same year, the Constitutional Court of Ukraine http://www.ccu.gov.ua/en/index overturned the 2004 constitutional amendments, restoring the power of the president of the republic at the expense of the parliament. This was seen and described by many international and national commentators as "the end of the Orange revolution

[5]See (Standing 1989, 1999). More recently, (ILO 2012) and the (World Bank 2012) report the persistence of gender earning gaps, lower participation rates of women to the labor force, segregation of women in certain economic activities and a higher likelihood for women to be in vulnerable employment

[6]Occupational segregation, while undesirable in itself, in some case led to the improvement of women's relative conditions during the transition process. This happened in cases in which they were segregated in specific sectors of the economy (for example the service sector) that boomed after the collapse of the planned economy. See Orazem and Vodopivec's (1995) explanation for the improvement of women's relative wages in Slovenia.

[7]Probably the most famous example of this effect is the case of East Germany, (Hunt 2002), where 40% of the 10% point increase of female wages with respect to male wages is explained by the withdrawal of low wage earners from employment.

[8]Brainerd described these outcomes as a consequence of reforms. However, due to the limited length of the time span covered by the data, one might have some concerns about the capacity of capturing the true impact of the reforms on the labor markets. This is especially true in the case of Ukraine, as the main reforms happening in the first

part of the 1990s took place in 1994, the year that Brainerd defines as post-reform. It is hardly arguable that the reforms might have had the time to fully take effect.

[9]Sources: IMF country reports (2008a, 2008b, 2009)

[10]Consumer prices, period averages. Sources: IMF country reports (2008a, 2008b, 2009)

[11]ILO definition. IMF country reports (2008a, 2008b, 2009)

[12]Among them: the elimination of tax preferences (2004-2005), the review and amendment of business regulations (2005-2006) and the reduction of import tariffs (2005)

[13]In a few cases the number of monthly hours declared was unrealistically high or the monthly wage excessively low. In order to minimize the extent of potential measurement errors I set a conservative rule that excluded from the sample individuals whose hourly wage was below one half of the hourly minimum wage obtained dividing the monthly minimum wage by the maximum number of hour worked in a month allowed in the sample (330).

[14]Source: the State Statistics Service of Ukraine.

[15]Log hourly wages will be our dependent variable and the dummy variable female (with value 1 if the individual is female and zero if the individual is male) will be our only explanatory variable. With this specification, a negative coefficient will indicate lower wages for women

[16]Unfortunately, due to data limitations, decompositions of the gender wage differentials across the distribution cannot be performed for the informally employed. It will still be performed, however, for the complete sample, for the public and private sectors and for the formally employed.

[17]The "traditional" Blinder and Oaxaca (Oaxaca 1973, Blinder 1973) decomposition can be seen as a special case of this decomposition, in which to one of the two groups' coefficients is attributed a weight of one while to the other is attributed a weight of zero. Neumark (1988) suggests fitting a pooled model to derive the counterfactual coefficient vector

[18]These decompositions are performed using STATA routines developed by Benn Jann (2008).

[19]For a more complete description of the estimator and its statistical properties, see: (Chernozhukov, V., Fernandez-Val, I. and Melly 2009).

[20]For this purpose, the procedure written by Melly (rqdeco) used in this paper sets the default number of quantile regressions to be estimated to 100. Melly suggests that the default value should be appropriate for a wide range of applications. After a number of tests for the sensitivity of the results to change in the number of regressions – results where, anyway, quite stable – I decided to the number of regressions to 250.

[21]As the main patterns are identical across the sample with the exception of the informally employed we report only the descriptive statistics for the overall sample (Table 1) and for the informally employed (Table 2).

[22]Also in the other cases it is true than women with elementary education staying in the same sector and/or retaining the same contractual arrangement show a lower hourly wage than those who leave.

[23]This is confirmed if we look at the ratio between the average monthly wage and the minimum wage in 2003 and 2007 for women. In this period the ratio increased from 1.3 to 1.9 indicating that the minimum wage became less and less binding.

[24]This is consistent with the findings of (Pignatti 2011)

[25]The informally employed are excluded from this analysis due to data constraints that have not allowed implementing the decomposition techniques.

[26]Results relative to the second specification are available upon request.

Competing interests
The IZA Journal of Labor & Development is committed to the IZA Guiding Principles of Research Integrity. The author declares that he has observed these principles.

Acknowledgements
Responsible editor: Hartmut Lehmann

Received: 15 August 2012 Accepted: 27 November 2012
Published: 31 December 2012

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doi:10.1186/2193-9020-1-7
Cite this article as: Pignatti: **Gender wage gap dynamics in a changing Ukraine.** *IZA Journal of Labor & Development* 2012 **1**:7.