The Gender Pay Gap in Ukraine: The Effects of Privatization

By Jamal Guliyev.

Submitted to
Central European University
Department of Economics

In partial fulfillment of the requirements for the Degree of Masters of Arts

Supervisor: Almos Telegdy

Budapest, Hungary
2007

Abstract

In this thesis I measure the gender pay gap in the Ukraine in two years, in the years 1986 and 2003. Using the data from the Ukrainian Longitudinal Monitoring survey I measure the gender pay gap in these two years and check the effect of the sector in which the individual works (private or state). To do so I use OLS and Juhn Murphy Prierce decomposition. The results of the estimations show that gender pay gap existed in both periods, but it decreased in 2003. I find that women working in the private sector earn 19% more than those working in the state-owned enterprises. I believe that the reason for this "private enterprise premium" is that the private enterprises have hard budget constraints and that their goal is to make maximum possible profits, and thus they are more eager to employ women who have the same skills as men but can accept lower wages (Gary S. Becker, 1957).

Acknowledgements

I would like to express my gratitude to all those people who helped me in the process of writing my thesis. I thank my supervisor professor Almos Telegdy for his guidance and valuable comments. I want to thank Reka Futasz for her help in improving the language and the structure of my thesis, my friends Irina Varabey, Giorgi Chanturia and Anton Novikov who provided feedback on my thesis – your advice and encouragement are very important to me. I am very grateful to my parents, who always supported me in all my undertakings. Last, but not least, I kindly thank George Soros for establishing the Central European University, truly international and multicultural University with equal opportunities for all.

Table of contents.

Introduction

In the communist countries the equality of men and women was claimed to be achieved and thus it was argued that no discrimination against women existed. Indeed, the policy of full employment obliged all men and women to work. In order to avoid evasion from work by any individual the wages and prices were set in such a way that if there was only one income in a family, this family was living almost in poverty. At the same time, if this evasion existed and became known to the authorities, the individual was sent to jail (Stepan Jurajda, 2003).

Another claimed advantage of the communist system was the gender equality, as pay differentiation based on gender was strictly prohibited. Wages depended only on industries and could vary only because of the difficulty of job and the individual's personal characteristics, such as work experience, education, but not gender or location (Munich, Daniel, Jan Svejnar, Katherine Terrell, 1995). Nevertheless, gender pay gap was present in the former USSR, especially given the low wage dispersion (Atkinson, Anton B. and John Micklewright, 1992). The main sources of this gender gap were discriminatory promotion practices and the segregation of women into low-paying occupation (Ham, John, Jan Svejnar, Katherine Terrell, 1995).

In general, wage differences between men and women can come about by several discriminatory mechanisms (apart from the personal characteristics of the individuals). There are three major sources of discrimination (Petersen, Trond, Vemund Snartland, Lars-Erik Becken, Karen Modesta Olsen, 1997):

1. The first type of discrimination is called "allocative discrimination": women and men may be differently allocated to occupations and establishments that differ in

the wages they pay. This involves discrimination in the matching process at the point of hire, in subsequent promotions, and in firing.

2. The second type of discrimination may be the result of the fact that women receive lower wages than men within the same occupation or within the same establishment or both. This type of discrimination is called “within - job wage discrimination”.

3. The last type of discrimination is connected to the fact that occupations held primarily by women may be paid less than occupations held primarily by men, even though they might require similar skills and education. This type of discrimination is called “valuative discrimination”.

The first two types of discrimination are prohibited by law in most countries in Europe, North America, and Australia. But the situation is not very clear in the case of valuative discrimination – the problem is that this type of discrimination is aimed not against individuals, but some specific occupations albeit these are mainly occupied by women, which makes discrimination harder to find.

In a study Petersen and Morgan (1995) find that within-job discrimination is small in the United States: on average women earn 3.1 percent less than men in the same industry. Since the gender pay gap is still present in the USA, within-job discrimination is not its main source, one should look at the two other possible sources of discrimination. However, in other countries within-job discrimination might still be a major source of wage differentiation.

A similar study has been carried out in Norway, by Petersen et al (1997). In this study they have found that the within-occupation gaps are relatively small, accounting for less than 10% within each sector. This result is similar to the result of Petersen and Morgan (1995), who also found that within occupations wage levels are quite uniform across firms. This means that all men and women working in the same industry, no matter in which firm they work, would get equal wages (holding all other factors constant). The conclusion is the same as in the US case – within-job discrimination is no longer a major source of the gender pay gap in Norway.

There are some other factors that might increase gender pay gap but are hard to measure:

- Women anticipate shorter and more discontinuous work lives they invest less in their on-the-job training and thus reduce their competitiveness with men (Weiss, Yoram and Reuben Gronau, 1981)
- Women anticipate that employers would prefer men, (in terms of promotion, on-the-job trainings, etc) they might make less effort than men on the work, which creates a problem of discouragement.
- Women spend more time working at home (doing housework), this may reduce their productivity at work (Gary S. Becker**,** 1985)
- Potential pregnancies that employers anticipate.

When one performs research on the post-Soviet countries regarding the wage pay gap, it is essential to look at the figures from the Soviet times in order to get a full picture. There has been extensive research on gender discrimination on labor market in the USSR, conducted by Bergson (1944), Kirsch (1972), Chapman (1979) and

Bergson (1984). Most of the studies show that regardless of the Soviet policy towards "equal pay", the gender pay gap was present, and its level was approximately equal to the European countries' levels. But the of lack of micro-economic data (the Soviet Statistical Agency gave out data only in an aggregate form, and the data itself was unreliable (Dmitrichev, 1992) did not make it possible to conduct full-scale research on the wages in the USSR.

In the year of my first observation, 1986, Ukraine's economy had many similarities with the economies of the FSU and CEE. It was characterized by big shares of agriculture and heavy industry (approximately 65% in total, according to EIU, 1994). As in other Soviet Republics, in Ukraine there was no official unemployment either, and wages were determined by some fixed tariffs.

After the break-up of the Soviet Union, Ukraine launched reforms aimed at convergence to a market-oriented economy. It chose the gradual rather than the "shock therapy" approach taken by many countries in the region. Price liberalization began in 1992, but was not completed until 1995; privatization also started in 1992, but is still not completed. In 1993 only 15% of the Ukrainian GDP was produced by the private sector, reaching only 60% by year 2000. From 1992-1994 over 1200 medium and large enterprises were privatized, but the mass privatization started only after1995. (Eloborgh-Woytek, Katrin and Mark Lewis, 2002; Ganguli, Ina and Katherine Terrell, 2005). In the World Bank's (1996) rating of the transitional countries with respect to the "extent of economic liberalization," Ukraine's rank was very low, among Belarus and most of the Central Asian Republics. Only after 1996 did the picture start to improve for Ukraine.

This study estimates changes in the gender pay gap in Ukraine between 1986 and 2003, and checks whether sector of the enterprise (private or state-owned) had

and effect on the gender pay gap. I analyze the Ukrainian Longitudinal Monitoring Survey (ULMS), a dataset containing over 8000 individuals and 4000 households. The survey was carried out in 2003 and contains the personal characteristics of the individuals, information about their current employment and retrospective questions regarding their past work experience.

Using OLS and decomposition, I find that the gender pay gap reduced in Ukraine after the break-up of the Soviet Union, and that there is a large premium for the women working in the private enterprises.

The remainder of the paper is organized in the following way: Section 2 describes the data and Section 3 explains my estimation methods. Section 4 presents the results of the research, and Section 5 contains my conclusions.

Chapter 1 - Data description

The data that I use is the first wave of the Ukrainian Longitudinal Monitoring Survey (ULMS), which was carried out in the year 2003, from April 11th till June 30th and was administered by the Kiev International Institute of Sociology. The dataset contains 4005 households and 8621 observations (with ages between 15 and 76 at the survey date). The survey contains demographical questions on each member of the household and retrospective questions regarding the jobs individuals held in 1986, 1991 and during 1997-2003. Among demographic characteristics are: the gender of the individual, age, marital status, number of children, education level, place of birth, and nationality.

For my research I use data from two years: 1986 and 2003. I restrict sample to only working individuals between ages 18 and 59 for the year 2003 (the reason for this is that the oldest individual in the sample is 76 years old, thus in 1986 he was 59 years old. Because returns to education and experience are different for different age groups I exclude people older than 59 from the 2003 sample. Another restriction is that I include only people working full time (in this case I consider people working more than 30 hours per week as "full-time workers" because for some occupations 30 hours is considered full time work.). If individuals worked less than 30 hours per week I did not include them in the sample. This lowered inequality since part-time workers usually get paid less than full-time workers, and usually people that are out of the labor market and thus do not report their wage tend to be at the lower end of the wage distribution.

I choose these years in order to capture the effects of the sector difference (state vs. private), since privatization started in and after the year 1991, and most of it had ended by the year 2003. The first reforms started after the year 1986 (the so-called "perestroika") and by the year 2003 most of the reforms (such as price liberalization, macroeconomic stabilization

and privatization) had been completed (and thus the economy can be considered now as a "market economy").

One of the most important variables of interest in my regressions is the "*female*" variable, which indicates the gender of the respondent: if the respondent is female, the variable "*female*" takes value 1, and if the respondent is male, then this variable takes the value of 0.

Another important characteristic is education. I divide it into 4 categories: higher education, professional education, vocational education and completed high school. Higher education includes everything above bachelor degree. Since in the Soviet Union different levels of education could require the same number of years of studies, I categorized them in the following way:

- High School – 11 years of education
- Vocational education – 12 years of education
- Professional education – 13 years of education
- Higher education – 16 years of education

There is no problem with estimating the number of years in High School, but assumptions are needed when calculating years required to finish vocational and professional education. In the Soviet Union (and in modern Ukraine), the lengths of vocational and professional educations are not fixed – some occupations require more years of education, some less. So I take the average years required to get a degree. These numbers of years of education needed to get a degree are the best approximates for calculating the potential experience, which indicates how many years of work experience an individual could have. To estimate this variable, I use the following formula:

$$potential\_experience = age - 6 - years\_of\_education$$

The variable "*married*" is used to indicate the marital status of the individual – if an individual was married in the year 2003, the value of the variable is 1 and 0 if not. I consider people in non-registered marriage as if they were officially married. For the year 1986, I generated variable "*mar_86*", which indicates if the individual was married in 1986.

In post-soviet countries it is normal practice that in the capital of the country wages are higher than in the rest of the country, so following Ganguli and Terrell (2005), I include a "*kiev*" dummy into my regression, which indicates whether the individual works in Kiev (then the value of the variable is 1) or not (in this case the value of the variable is zero). Since the effect could be dependent not on the capital status of the city but on its size, I also use variable "*city_size*", which takes value 1 if the size of the city has more than 500,000 people and 0 if less.

Another variable I control for is the nationality of the respondents. In order to do so, I include variable "*rus*", which takes value of 1 if respondent is Russian and 0 vise versa. Since the number of people of other nationalities is very small and insignificant, I omit them from the sample.

At the same time, the survey contains a vast amount of information about the jobs held by the individuals, such as wages in different years, the enterprise sector (private or state owned enterprise), tenure and year of first job.

The variable "*union*" indicates if the individual is a member of a trade union, which takes value of 1 if respondent is a member of a trade union and 0 vise versa. I use this variable only in the regression determining the year 2003 wages, since in the Soviet Union membership in trade unions was mandatory, and they did not have any bargaining power. For

the same reason, I do not include variable "*sector*" into the 1986 regression because in the Soviet Union all enterprises were state-owned.

There are a few concerns regarding the dataset I analyze in my work. The two problems that are the most important for my research are the possibility of measurement error and the so-called "recall bias". Measurement error arises because workers might not know the ownership type of their firm, which is common for such surveys. But in the case of Ukraine it is not the case, since workers were actively involved in the privatization process. The other argument is that the questions in the questionnaire are constructed very carefully which decreases the possibility of the error. For example, less than 10 percent of the workers could not indicate type their enterprise (private or state-owned), while approximately 10 percent of the workers could not identify who was the main owner of the enterprise – the state or a private owner.

The second type of the measurement error that I am concerned about is the recall bias. It can be argued that people can not precisely indicate their wages they had 17 years ago (wages for 1986). But in my case I expect recall bias to be small because in 1986 there was a major event, the Chernobyl nuclear explosion, which most Ukrainians remember vividly. There are studies that respondents are more likely to give precise answers when there is some major event connected to that date. Another reason not to overestimate recall error is that wages were pretty much fixed and thus there is less space for error (Ganguli, 2005).

In 2003, 570 women (or 41% of total number of women in the sample) worked in the private sector, while for men this number was 709, which makes 53% of the male population. Thus both male-female distribution and private-state sectors are represented in the sample almost equally. Both in 1986 and 2003 most of the population (over 70%) considered themselves as Ukrainian, 17-21% as Russians and less than 6.5% claimed to be of other nationality. The percentage of people with no formal education decreased in 2003 for males

and females by 1.46% and 2.22%, respectively, compared to the year 1986. At the same, time there is an increase for males in vocational education – by 7.6%, while for females this number is almost zero. In higher education the percentage of males decreased by 2.75%, while for females it increased by 1.73%.

Looking at the means (Table 4, Appendix) one can see that there is sharp decrease in the number of children: if in 1986 for both genders there was 1.78 child per person in the sample, in 2003 this number dropped to 1.39.

A problem arises when one wants to compare wages in the two periods: since in 1986 wages were in Soviet Rubles and in 2003 in Hryvnas, it is hard to compare wages. In Table 4 I took the official exchange rate of the ruble and if one compares these rates (0.60 Rubles for 1 USD), it can be seen that there was a sharp fall in wages in 2003. But if one takes not the official but the "black market" exchange rate (which was approximately 3 Rubles in 1986) it can be seen that the wages are almost the same in both years, for males and females. The problem in this case is that it is hard to find a reliable "black market" exchange rate, so I prefer to use the official one.

Chapter 2 - Empirical model

1. OLS regressions. In the empirical part of my research I estimate the traditional human capital wage function. The model takes the following form:

$$\ln W_{it} = \beta_0 + \sum_i \beta_i X_{it} + u_{it}$$

where X_i are the different characteristics of the individuals and t stands for the year.

For both years 2003 and 1986 I calculate this equation, with the following exception: I do not include the "*sector"* and "*union"* variables into the 1986 regression (for the reasons explained earlier in Chapter 1). Since each year is taken separately, there is no need to compare wages between two years, so there is no need to convert them into a single currency (which could be a problem, since the official exchange rates in the Soviet Union were enforced by the government and did not reflect the real ones.

The main variables of interest in regressions are the "*female*" and the "*sector*" variables (to find out if sector of the enterprise has an effect on the gender pay gap, I look at the coefficient at the interaction between the "*sector"* and the "*female"* variables). State of the enterprise (private or state-owned) can have different effect on wages – in some cases wages can rise, in other – fall. It can be the case that the wage for males would go down or stay constant but for females go up. The reasons for this could be that for example the new owners of the firm could cut wages in order to reduce costs. Or if the enterprise grows because of increased innovation and efficiency – then they could increase wages to attract more workers (John S. Earle, 2006). So in order to separately define the effect for the males and females I use both the "*sector"* dummy and its interaction with the "*female"* variable.

I estimate several alternative versions of this model. I add dummies to specify the occupations of the individuals, include the "*tenure*" variable, which stays for the number of years of work experience individual has. I also include "*city_size1*", "*city_size2*" and "*city_size3*" variables, which indicate the number of people living in the town where the individual lives. To check whether place of inhabitance has an effect on earnings I add dummies which indicate in which region the individual lives. Full list of these variables is available in Table 2.

Decomposing the Change in the Female-Male Wage Differential

In this section I follow Elizabeth Brainerd (2000) and decompose the change in the gender wage differentials into changes coming from the gender-specific factors (the observable skills and discrimination), and the changes coming from the widening of the wage structure. This technique was first introduced by Juhn, Murphy and Pierce (1991). I use this technique to check the role of the discrimination in the gender pay difference.

Following Blau and Kahn (1997) I decompose the gender wage differential into 4 factors affecting gender pay difference:

- Wage inequality
- Discrimination
- Difference in observed skills
- Difference in unobserved skills

First I write male wage equation in the following form:

$$W_{Mt} = X_{Mt}\beta_t + \sigma_t\theta_{Mt},$$

Where W_{Mt} is the log of monthly wages, X_{Mt} is a vector of explanatory variables, β_t is a vector of coefficients, σ_t is the standard deviation of the residual of the male wage equation,

and θ_{Mt} is the standardized residual of the male wage regression, with mean 0 and variance 1 ($\theta_{Mt} = e_{Mt} / \sigma_t$, where e_{Mt} is the residual from the male wage equation).

Here one can see two components that comprise the residual: the spread of the residual distribution σ_t and the percentile that the individual occupies in the residual distribution θ_{Mt}.

The male-female wage gap now can be written the following way:

$$D_t \equiv W_{Mt} - W_{Ft} = (X_{Mt} - X_{Ft})\beta_t + (\theta_{Mt} - \theta_{Ft})\sigma_t ,$$

where $\theta_{Ft} = (W_{Ft} - X_{Ft}) / \sigma_t$, which shows the wage women could get if her skills were valued same as man's skills (deflated by the male standardized residual). From this formula the gender wage gap in the period t consists of differences in observed skills between men and women, weighted by the return received by men to these skills, and an effect due to differences in the standardized residual, weighted by residual male inequality.

Thus the change in the gender pay gap between two periods after some calculations is identified by the following formula:

$$D_{t'} - D_t = [(X_{Mt'} - X_{Mt}) - (X_{Ft'} - X_{Ft})]\beta_{t'} + (X_{Mt} - X_{Ft})(\beta_{t'} - \beta_t) + [(\theta_{Mt'} - \theta_{Ft'}) -$$

$$-(\theta_{Mt} - \theta_{Ft})]\sigma_{t'} + (\theta_{Mt} - \theta_{Ft})(\sigma_{t'} - \sigma_t).$$

The first part of the equation indicates the "observed X's" effect, which shows changes in the gender wage gap which comes from the changes in male-female differences in observed variables, such as education, sector, number of children, etc. If the time horizon is small this term should be very small, since these variables take time for changes.

The second part, "the observed prices", shows how do the changes in the prices that the labor market attaches to observed skills of men affect the gender pay gap.

The third part, the so-called “Gap” effect, shows how much the changes in the relative position for women in the male residual wage distribution affect the gender gap. Women will move up in this distribution if their unobserved labor market skills improve relative to men’s, or if labor market discrimination against women declines.

The fourth part, the “Unobserved prices” effect, measures the change in the gender gap attributable to the widening (or narrowing) of the distribution of male wage residuals, holding constant the gap in male-female unmeasured skills (Brainerd, 2000).

Chapter 3 - Regression analysis of the structure of earnings

In this section I conduct a regression analysis of the structure of earnings to find out the real degree of gender-based discrimination. In Table 5 I present estimates of the standard human capital earnings function for the years 1986 and 2003.

The coefficients on the education dummies indicate that the importance of higher education dramatically rose (compared with the year 1986, in 2003 university diploma would add 8.5% to the wage), while the importance of a vocational, professional and high school diploma decreased. The reason for this could be the fact that compared to the soviet practice, in modern Ukraine (as in most post-communist countries) the role of the higher education is sharply rising because of many factors, such as:

- **Increased unemployment**: employers in 2003 had more candidates to choose from, so applicants with higher degrees had better chances of getting a better job.
- **Increased cost of education:** in the Soviet Union education was free, and stipends could cover most (if not) all of students' expenses, while after the collapse of the command economy education became less available: tuition fees were introduced in some universities, and the amount of the stipends sharply fell. Thus, the cost of education to the students rose, which forced employers to pay more for higher education.

The coefficients on vocational and professional education could fall because of the unemployment (it was greater among less-educated people, because people with higher education could retrain faster and then could switch to the areas where there was a shortage

of workforce, such as services). The results on the education coefficients I receive are consistent with the results of Gorecki (1994) and Keane et al (2006) on the Polish data.

An interesting question to look at with regards to returns to education is whether education received after the transition started is more "valuable" than education acquired before the collapse of the Soviet Union. I checked this hypothesis by including into my general equation a dummy which takes the value of zero if education was acquired before the transition (since I assumed that to receive a university degree it takes 5 years, as a cutoff point I take the year 1996) and 1 vise versa. The result is given in Table 7. One can see from the table that neither the coefficient on the dummy, nor on its interactions with the education dummies is significant. The results are consistent with the findings of Keane et al (2006). They also did not find any additional value on the education acquired after the transition in Polish case.

"Potential experience" is another variable which I include into my regression. It indicates how many years an individual could possibly work after his education was over. After accounting for regions in which the individual lives, "*potential_experience*" becomes insignificant. The variable "*tenure*", which indicates the actual number of years the individual worked, also proved to be insignificant. This finding is consistent with the findings of other researchers (Keane et al, 2006, Brainerd et al, 2000) and can be explained in the following way: after the transition, work experience acquired in the command economy became irrelevant and thus employers "do not want to pay" for it.

Surprisingly, nationality has a significant positive effect – Russians in 2003 received salaries higher than Ukrainians – by 10%. The reason for this fact could be that Russians have a choice – either to stay in Ukraine or immigrate to Russia, thus they are less likely to accept low-paid jobs. This was not the case in 1986, which could be explained by the following facts:

- Since Ukraine and Russia were part of one country, the Soviet Union back in 1986, people could move more freely from one country to another: in this case Ukrainians could move to Russia more easily. After break up of the Soviet Union, Russians still have this opportunity while Ukrainians do not.
- Wages were equalized among different parts of the Soviet Union, thus nationality did have an effect on wages.

The variable *"kiev"*, which indicates whether the individual works in Kiev, was insignificant in 1986 (again, because wages were standardized across the whole country), but in 2003, after wage liberalization had taken place, this variable becomes significant and indicates that an individual working in Kiev would earn almost 10% more than people living in the rest of the country. But when dummies for regions are included this variable again becomes insignificant. At the same time, the variable "*city_size1"*, which indicates if a city has a population greater than 500,000 people is insignificant, which means that in the rest of the country, the size of the settlement does not have a significant effect on the wage.

One of the main variables of interest in my research is the "*female*" variable, which indicates the gender of the respondent. It takes value 1 if the individual is female and 0 if the individual is man. Both in 1986 and 2003 this variable is significant at a 1% level. My findings are that the gender pay gap reduced from 44.7% in 1986 to 42.0% in 2003 – by 2.7%. This finding is similar to the result Keane et al (2006) got in their research on Poland.

Such a big gender gap present in 1986 wages can be surprising, since in the former Soviet Union wages were formally standardized, and there was a single wage tariff. But previous

studies on gender pay gap by Bergson (1944),. Kirsch (1972), Chapman (1979), and Bergson (1984) also show that a relatively big (approximately of the same size as in the Europe) gender gap was present in the former USSR. As it was mentioned before, the lack of micro economical data restricts analysis on wages in the former USSR.

In 2003 the gender gap reduces by 2.7% for women working in state-owned enterprises. This might seem not a very significant drop, but the coefficient on interaction between "*female*" and "*sector*" shows that women working in the private enterprises actually decrease the gap by 19%. There may be many reasons for this, but among the most convincing to me is the following: private enterprises have hard budget constraints and their goal is to make maximum possible profits, thus they are more eager to employ women who have the same skills as men but can accept lower wages (Gary S. Becker, 1957).

At the same time, variable "*sector*", which indicates whether enterprise is private or not, is insignificant even at 10% level, which means that privatization had a positive effect only on women's wages (the explanation for this could be that men are paid justified wages both in private and state enterprises, since it is easier for them to find a new job in case of discrimination).

Another variable which is significant is "*union*". I did not include this variable in the regression of the 1986 wages, since in the Soviet Union (and in Ukraine in particular) membership in unions was mandatory and they did not have any bargaining power. But after the transition took place, the unions also had to transform – and the result of the transformation can be seen in the regression. Membership in union increases wages by 7.4 percent and is significant at 1% level.

To check if region of inhabitance has an effect on the results I include dummies for 6 regions (I omit the north-east region from the regression in order to avoid singular matrix error). The results are in the Table 5. As one might expect, these dummies are significant

only in 2003, since in the Soviet Union, as mentioned earlier, wages were standardized and did not depend on the location of the job. The coefficient on the "*children*" variable is insignificant even at 10% level. The coefficient on "*center*" dummy indicates that the individual working in the central region of Ukraine would be earning 29.5% more than in the base region (north-east region), working in the eastern region would earn 17% more (both significant at 1% level). The individual working in the south-eastern region would earn 9% more (significant at 5% level) and in the western region 5% more (significant at 10% level).

My findings are consistent with the ones described in Ganguli and Terell (2005). They also find that the gender pay gap decreased in Ukraine after the transition and that the gender pay gap in the private sector is much lower than in the state-owned enterprises. In their paper they claim that gender pay gap decreased by almost 6% (from 40% to 34%), while I claim that gender pay gap fell from 44.7% to 42%, by almost 3%.

Decomposition

The results of the decomposition are presented in Table 6. Positive numbers indicate factors that have decreased female wages relative to male wages over time; negative numbers indicate factors that have improved female relative wages. The changes in returns to observable skills (column 2) and relative gains in the mean female rank in the male residual distribution (column 3) contributed to improvement in female wages relative to male wages. This positive effect offsets large negative effect which comes from the widening of the wage distribution (column 4).

Widening of the wage structure against women was common for Easter Europe (Brainerd, 2000), but this effect was offset by women moving up in the residual male wage distribution (column 3). In the case of Ukraine this change was big enough to decrease gender pay. This can mean that either there is less discrimination on the market than in 1986, or that

women have improved their unobserved labor market skills relative to men. Other reason could be that supply and demand shifts have adversely affected men relative to women.

Change in prices that the labor market attaches to observed skills of men has also decreased the gap, but by very small amount. This positive effect is almost offset by changes in male-female differences in observed labor market skills. Thus greatest role in the decreased gender pay gap in Ukraine was due to women's improved unobserved skills relative to men's skills.

Conclusion

This paper has analyzed the gender pay gap in Ukraine and the effect of privatization on the gender pay gap. This work contributes to the existing literature on the gender pay gap in transitional countries by investigating the case of Ukraine. Two years were selected to represent pre and post-transition periods: 1986 and 2003. These years were selected since they were the best to represent these periods: the reforms, the so-called "perestroika", started after 1986, while by 2003 most of the reforms had been completed and approximately 60% of the enterprises were privatized.

As it was expected, I found that the gender pay gap decreased in Ukraine after the break-up of the Soviet Union. Even though it did not decrease by much, only by 2.7%, in the private sector the decrease was more substantial – by an additional 19%. This result is also proven by variance decomposition, which shows that switching from state-owned enterprises to private enterprises was generously remunerated.

My results show that as in other transitional countries, education premiums grew substantially during the transition, but mainly for higher education. But contrary to education, the experience premium dramatically decreased and became insignificant in 2003. The reason for this could be that the experience earned during the command economy became less valuable in the market economy environment.

Another change that I found is that the membership in worker unions became significant and brought about a 7.5% of raise in wages in 2003, while in the former Soviet Union this variable was insignificant. Possible reasons for this could be that while in the former Soviet Union membership in worker unions was mandatory, although unions themselves did not have much bargaining power over wages. After the transition, however, unions had to become active players on the labor markets in order to keep the old members and attract new ones.

Finally, I found that privatization had a significant positive effect on female earnings – women working in private enterprises earned 19% more than those working in state enterprises. This finding is also supported by variance decomposition, which showed similar results.

Appendix

Table 1
Variable description

Variable	Description
russian	Indicates if individual is russian
married	Indicates if individual is married
kiev	Indicates if individual lives in Kiev
female	Indicates if individual is female
potential experience	Indicates number of years individual could have worked
High School education	Indicates if individual has high school education
Vocational education	Indicates if individual has vocational education
Professional education	Indicates if individual has professional education
Higher education	Indicates if individual has university degree
children	Indicates the number of children individual has
union	Indicates if individual is a member of a workers' union
sector	
Indicates if individual is employed in private or state sector	
west	Indicates if individual inhabits in the western region
south-east	Indicates if individual inhabits in the south-eastern region
south	Indicates if individual inhabits in the southern region
north-west	Indicates if individual inhabits in the north-western region
east	Indicates if individual inhabits in the eastern region
center	Indicates if individual inhabits in the central region

Table 2
Regions

Region	**Oblast**
Center	Kiev, Kievskaya oblast, Cherkasskaya oblast and Chernigovskaya oblast
North-west	Vinnickaya oblast, Volinskaya oblast, Zhitomirskaya oblast, Rovenskaya oblast and Hmelnickaya oblast
South-east	Dnepropetrovskaya oblast, Zaporozhskaja oblast and Kirovogradskaja oblast
North-east	Poltavskaja oblast, Sumskaja oblast and Harkovskaja oblast
West	Zakarpatskaja oblast, Ivano-Frankovskaja oblast, Lvovskaja oblast, Ternopolskaja oblast and Chernovickaja oblast
East	Doneckaja oblast and Luganskaja oblast
South	Vinnickaya oblast, Volinskaya oblast, Zhitomirskaya oblast, Rovenskaya oblast and Hmelnickaya oblast

Changes in the Characteristics of Men and Women Working Full-Time
Table 3

	Males					Females				
	1986		2003-1986	2003		1986		2003-1986	2003	
	%	obs	Δ%	%	obs	%	obs	Δ%	%	obs
Age										
18-29	44.71	245	-19.50	25.21	338	55.58	269	-37.74	17.84	246
30-39	39.78	218	-15.62	24.16	324	36.36	176	-10.62	25.74	355
40-49	13.69	75	15.69	29.38	394	7.02	34	28.44	35.46	489
50-59	1.82	10	19.43	21.25	285	1.03	5	19.92	20.96	289
Nationality										
Ukrainian	71.90	394	4.91	76.81	1030	73.76	357	5.35	79.12	1091
Russian	21.72	119	-3.15	18.57	249	22.11	107	-4.41	17.69	244
Other nationality	6.39	35	-1.76	4.62	62	4.13	20	-0.94	3.19	44
Education Levels										
Less than High School	11.68	64	-1.46	10.22	137	10.12	49	-2.22	7.90	109
High School	23.91	131	-3.17	20.73	278	19.21	93	-2.10	17.11	236
Vocational	25.73	141	7.60	33.33	447	19.21	93	0.29	19.51	269
Secondary professional	19.16	105	-0.22	18.94	254	29.75	144	2.30	32.05	442
Higher Education	19.53	107	-2.75	16.78	225	21.69	105	1.73	23.42	323
Marital status										
Single	22.45	123	-0.75	21.70	291	39.26	190	-6.19	33.07	456
Married	77.55	425	0.75	78.30	1050	60.74	294	6.19	66.93	923
Location										
Kiev	10.40	57	-1.97	8.43	113	10.33	50	-0.69	9.64	133
Other	89.60	491	1.97	91.57	1228	89.67	434	0.69	90.36	1246

Table 4
Mean values

	Total		Male		Female	
	1986	**2003**	**1986**	**2003**	**1986**	**2003**
Children	1.78	1.39	1.84	1.35	1.72	1.44
Age	47.54	39.63	48.65	39.03	46.29	40.20
Higher education	0.21	0.20	0.20	0.17	0.22	0.23
Professional education	0.24	0.26	0.19	0.19	0.30	0.32
Vocational education	0.23	0.26	0.26	0.33	0.19	0.20
High School education	0.22	0.19	0.24	0.21	0.19	0.17
Female	0.47	0.51	0.00	0.00	1.00	1.00
Kiev	0.10	0.09	0.10	0.08	0.10	0.10
Married	0.70	0.73	0.78	0.78	0.61	0.67
Russian	0.22	0.18	0.22	0.19	0.22	0.18
Ukrainian	0.73	0.78	0.72	0.77	0.74	0.79
Wage*	317.6	63.64	389	75.22	236.8	52.38

Table 5
OLS earnings regressions

	1986	2003 (1)	2003 (2)	2003 (3)
russian	0.041		0.13*	0.102069*
	(-0.035)		(0.028)	(0.030513)
married	-0.023	0.018	0.031***	0.029986
	(-0.038)	(0.028)	(0.028)	(0.028532)
kiev	0.06		0.099*	-0.063177
	(-0.047)		(0.038)	(0.046348)
female	-0.447*	-0.327	-0.407*	-0.420736*
	(0.03)	(0.023)	(0.031)	(0.031502)
potential experience	0.01	0.019	0.019*	0.003641
	(0.01)	(0.004)	(0.004)	(0.008134)
potential experience^2	0	0	0	-0.000134
	(0)	0	0	(0.000100)
High School education	0.045	-0.043	-0.033	-0.015212
	(0.062)	(0.046)	(0.048)	(0.064198)
Vocational education	0.153**	0.038	0.042	0.032531
	(0.064)	(0.046)	(0.047)	(0.065885)
Professional education	0.123***	0.091	0.081***	0.085666
	(0.063)	(0.046)	(0.047)	(0.066773)
Higher education	0.206*	0.299	0.279*	0.290506*
	(0.065)	(0.047)	(0.049)	(0.073088)
children	-0.006	-0.038	-0.03**	-0.025132
	(0.018)	(0.015)	(0.015)	(0.015904)
union			0.083*	0.074439*
			(0.026)	(0.027103)
sector			0	0.003902
			0	(0.033202)
sector*female			0.195*	0.190413*
			(0.045)	(0.045339)
west				0.075133***
				(0.043907)
south-east				0.090141**
				(0.043237)
south				0.047586
				(0.042858)
north-west				-0.059449
				(0.045310)
east				0.169697*
				(0.040414)
center				0.295254*
				(0.047700)

Table 6
Decomposition of the change in the Gender Wage Differential

Observed change in Gender Gap	Of which: Observed X's	Observed Prices	Gap	Unobserved prices	Sum Gender Specific	Sum Wage Structure	Explained	Un-Explained
(Log Wages)	(1)	(2)	(3)	(4)	(1+3)	(2+4)	(1+2)	(3+4)
-0.136	0.013	-0.021	-0.253	0.124	-0.240	0.104	-0.008	-0.129

References

Adamchik, Vera and Arjun Bedi. 2000. "Wage differentials between the Public and Private Sectors: Evidence from and Economy in Transition." *Labor Economics, Vol. 7, 203-224.*

Andren, Daniela, John S. Earle, and Dana Sapatoru. 2005. "The Wage Effects of Schooling under Socialism and in Transition: Evidence from Romania, 1950-2000." *Journal of Comparative Economics, Vol. 33(2), June 2005: 300-323*

Atkinson, Anton B. and John Micklewright. 1992. "Economic Transformation in Eastern Europe and the Distribution of Income." *Cambridge: Cambridge University Press.*

Becker, Gary S. 1957. "The Economics of Discrimination," *Chicago: University of Chicago Press, 1957.*

Becker, Gary S. 1985. "Human Capital, Effort, and the Sexual Division Labor." *Journal of Labor Economics. 3:1 Supp., pp. S33-S58.*

Bergson, Abram. 1944. "The Structure of Soviet Wages: A Study in Socialist Economics." *Cambridge, MA: Harvard University Press, 1944*

Bergson, Abram. 1984. "Income Inequality Under Soviet Socialism." *Journal of Economic Literature, Septermber 1984, 22(3), pp. 1052-99.*

Brainerd, Elizabeth. 2000. "Women in Transition: Changes in Gender Wage Differentials in Eastern Europe and the Former Soviet Union." *Industrial and Labor Relations Review, Vol. 54, No 1, October 138-162.*

Brainerd, Elizabeth. 2002. "Five years after: the impact of mass privatization on wages in Russia, 1993-1998." *Journal of Comparative Economics 30, 160-190.*

Brown, J. David, John S. Earle, Almos Telegdy. 2005. "Does privatization hurt workers: evidence from comprehensive manufacturing firm data in four countries." Upjohn Institute Working Paper, November 2005.

Brown, David, Earle, and VladimirVakhitov. 2006. "Wages, Layoffs, and Privatization: Evidence from Ukraine." *Discussion Paper 2006/01.*

Chapman, Janet G. 1979. "Earnings Distribution in the USSR, 1968-1976: Comments on the Notes of Nove and McAuley." *Soviet Studies © 1983 University of Glasgow, 1979.*

Dmitrichev, I.I. 1992. "The family budget as a basis for understanding the standard of living of the population." *Moscow: Goskomstat, 1992.*

Earle, John S. 2006. "Employment and Wage Effects of Privatization. Evidence from Transition Countries." *W.E. Upjohn Institute, 2006.*

Eloborgh-Woytek, Katrin and Mark Lewis. 2002. "Privatization in Ukraine: Challenges of Assessment and Coverage in Fund Conditionality." *IMF Policy Discussion Paper PDP/02/7, May*.

Frydman, Roman, Andrzej Rapaczynski and John S. Earle. 1993. "The privatization process in Russia, Ukraine, and the Baltic states." *London, CEU Press, 1993.*

Ganguli, Ina and Katherine Terrell. 2005. "Institutions, Markets and Men's and Women's Wage Inequality: Evidence from Ukraine." *IZA Discussion Papers 1724, Institute for the Study of Labor (IZA).*

Ganguli, Ina and Katherine Terrell. 2005. "Wage Ceilings and Floors: The Gender Pay Gap in Ukraine's Transition." *IZA DP No. 1776, 2005*.

Ham, John, Jan Svejnar, Katherine Terrell. 1995. "The Czech and Slovak labor markets during the transition." *The World Bank, Washington, DC, pp. 91-146.*

Juhn, Chinhui, Kevin Murphy and Brooks Pierce. 1993. "Wage inequality and the rise in returns to skil." *Journal of Political Economy, Vol. 101: 410-41*.

Jurajda, Stepan. 2003. "Gender wage gap and segregation in enterprises and the public sector in late transition countries." *Journal of Comparative Economics 31 (2003) 199-222.*

Keane, Michael and Eswar S. Prasad. 2006. "Changes in the Structure of Earnings During the Polish Transition." *Journal of Development Economics, Vol. 80, 2006: 389-427.*

Kirsch, Leonard J. 1972. "Soviet Wages: Changes in Structure and Administration since 1956." *Cambridge, Mass.: M.I.T. Press, 1972.*

Munich, Daniel, Jan Svejnar, Katherine Terrell. 2005. "Is women's capital valued more by the markets than planners?" *Journal of Comparative Economics 33, 278-299*

Petersen, Trond, Laurie A. Morgan. 1995. "Separate and Unequal: Occupation-Establishment Sex Segregation and the Gender Wage Gap." *The University of Chicago Press: The American Journal of Sociology, 1995*

Petersen, Trond, Vemund Snartland, Lars-Erik Becken, Karen Modesta Olsen. 1997. "Within-Job Wage Discrimination and the Gender Wage Gap: The Case of Norway." European Sociological Review, 1997

Rosholm, Michael and Nina Smith. 1996. "The Danish Gender Gap in the 1908s: A Panel Data Study." *Oxford Economics Papers, New Series, Vol. 2 (Apr. 1996), pp. 254-279*.

Weiss, Yoram and Reuben Gronau. 1981. "Expected interruptions in Labor Force Participation and sex related differences in earnings growth." *Review of Economic Studies 48(4): 607-19.*