PERSISTENCE OF THE GENDER PAY DIFFERENTIAL IN A TRANSITION ECONOMY

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ABSTRACT

The primary objective of this paper is to assess the relative economic welfare of women during the transition process. In order to answer this question we provide a detailed account of the male-female wage differential and its dynamics in Poland over the period 1993-1997. We investigate which factors influence this wage gap and the extent to which this gap may be attributed to differences in observable characteristics and to differences in returns to the same characteristics. Regardless of the methodology used or the specification estimated we find that (i) there is almost no change in the extent of the gender wage gap at the mean or at different percentiles of the earnings distribution, (ii) most of the explained portion of the wage gap may be attributed to industrial and occupational segregation, and (iii) a substantial portion of the wage gap remains unexplained. In the final section of the paper we examine the underlying factors that may drive the results.

JEL Codes: J31, Wage differentials, P2 Labor markets in transition economies
Keywords: Poland, Gender differentials, Wages

1. INTRODUCTION

The relative economic welfare of women is one of the measures of a nation's well-being. However, this issue is often overlooked while measuring the success of economic transformation in post-communist countries. While it is well known that by 1998, after several years of economic turmoil, Poland finally achieved macro-economic stabilization and surpassed its pre-transition level of output, it is not clear whether the economic situation of Polish women has improved along with the positive economic performance of the country.

There are several indicators that may be examined in order to assess the economic situation of women. Wages are probably among the most important determinants of economic well-being and of personal success. In particular, the male-female pay differential affects the position of women in the labor market as well as the status and power of women within the household. So far relatively little academic attention has been devoted to a systematic examination of how gender earnings differentials have evolved during the transition process in Poland [1] as well as in other post-communist economies.[2] Despite the limited academic attention, the popular press and non-governmental organizations have often raised the importance of analyzing pay differences across genders in the labor market.[3] An assessment of this sort is important as relatively lower wage rates for women may generate a wide spectrum of negative consequences.

First, lower wage rates for women may increase the economic dependence of women on their male partners, which in turn may increase their susceptibility to domestic violence.[4] Violence against women at home has long-term negative implica-

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[1] Pailhe (2000) uses 1992 data from several Central European countries including Poland to examine gender wage gaps. In addition, one section in the UNICEF (1999) project provides an overview of gender wage differentials in all post-communist countries.

2 Reilly (1999) and Ogloblin (1999) examine the gender wage gap in Russia between 1992 and 1996. Paternostro and Sahn (1999) examine this issue using 1994 data from Romania.

3 For example, Warsaw Voice, an English language newspaper published in Warsaw, frequently contains stories on gender issues. Furthemore, the Polish Women's Rights Center, Center for the Advancement of Women and the Center for Social Research, focus specifically on the position of women in society.

4 Nowakowska (2000) reports that 18 (62) percent of married (divorced) Polish women polled by the Public Opinion Research Center admitted to being victims of domestic violence, of which 9 (41) percent were repeatedly beaten by their husbands, and the other 9 (21) percent were beaten sporadically during the relationship. According to Nowakowska's estimates, almost half of all Polish women know personally or have heard of women who are beaten by their husbands, and approximately one in six Polish women live in an abusive environment. The author also reports that domestic violence occurs more frequently in low-income families.

tions on their health as well as work performance. Moreover, women in lower-paid and lower-status jobs (especially in the gray economy where working conditions are unmonitored and unregulated) are more likely to be exposed to sexual harassment in the workplace.[5]

Second, about 11 percent of Polish women are single mothers and are the sole wage earners in their families. According to a UNICEF project, the general divorce rate [6] in Poland increased from 13.4 in 1993 to 20.8 in 1997; and the number of children involved in divorce rose from 28.4 thousand to 44.6 thousand, respectively (UNICEF, 1999, p.129). While, compared to other countries in transition, Poland exhibits moderate divorce rates, a large number of children involved in divorce indicates that the likelihood of divorce is greater for couples with more children. Also, the UNICEF project reports that in Poland "the number of children living in single-parent families rose by more than 100,000 between 1988 and 1995, with almost 12 percent of children living with single mothers (while only 1 percent were living with single fathers)" (p.49). For single mothers, adverse labor market outcomes combined with less accessible childcare are likely to enhance the probability that their families live in poverty.

Third, gender differences at the work place are transformed into inequality after retirement. While the methods for computing the retirement payments are the same for men and women[7], shorter employment periods[8] and lower earnings of women during their working life lead to lower retirement payments. Since, on average, women live longer than men [9], they are more likely to fall into poverty in their old age.

Motivated, in part, by the reasons outlined above, the primary objective of the paper is to assess the relative economic welfare of women during the transition process. In order to answer this question we provide a detailed account of the male-female

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5 The surveys show that on average 1-2 percent (Chappell and Di Martino, 1998) to 4-6 percent (Nowakowska, 2000) of Polish women were victims of sexual incidents at workplace. However, it is possible that these figures do not reflect the real number of sexual harassment incidents in Poland.

6 Number of divorces per hundred marriages.

7 The method used to compute the level of retirement payments is the same for men and women. It is based on the total number of months worked and the salary of the individual.

8 The retirement age in Poland is 60 for women and 65 for men. Wóycicka and Dominiczak (2000) cite the findings reported in "Nowe Ubezpeczenia" (New Insurance) in January 1999 that because of this five-year difference in the retirement age a woman earning the same salary as her male counterpart will receive about 62 percent of his pension.

9 Female life expectancy at birth in Poland is about 77 years for women and about 67 years for men.

wage differential and its dynamics in Poland over the period 1993-1997. We investigate which factors influence this wage gap and the extent to which this gap may be attributed to differences in observable characteristics and to differences in returns to the same characteristics.[10]

The paper is organized as follows. Section 2 discusses gender related institutional and wage setting issues for the Polish labor market. Section 3 contains a short description of the data set that we use. Section 4 provides a descriptive account of gender wage differentials. Section 5 outlines our methodology. We present our findings in section 6, Section 7 contains a discussion of the results, and the final section concludes the paper.

2. THE INSTITUTIONAL SETTING

This section reviews various institutional features of the Polish labor market that may have a bearing on the male-female wage differential. In particular, the discussion focuses on equal opportunity laws and wage setting institutions.

2.1. Legal Framework

Based on Marxian theories of women's emancipation, state socialism postulated that a necessary and sufficient condition for women's emancipation and consequent economic independence from men lay in participation in social production (Einhorn, 1993). To support this ideological principle, like other former socialist countries, the Soviet-era Polish constitution contained numerous provisions that were geared towards promoting equal rights for women. For instance, Article 67 guaranteed equal rights to all Polish citizens and Article 78 specifically stated that "women have equal rights with men in all spheres of state, political, economic, social and cultural life." Among others, the guarantees for women's equality were based upon the equal with men right to work and to remuneration – "equal pay for equal work."

The new Polish Constitution adopted in 1997 reinforced the guarantees of equality between men and women. The new constitution states that "men and women have equal rights, in particular, regarding education, employment and promotion, and

[10] Pailhe's (2000) work on gender wage gaps in Poland focuses on a single year, 1992, and uses a different source of data. As pointed out by the author "further research seems indispensable in order to analyse the evolution of discrimination during the transition". Our work is geared mainly towards this issue.

have the right to equal pay for work of equal value" (Part 2 of Article 33). Poland's new Labor Code also addresses gender-specific issues and states that "all employees equally performing the same job have equal rights; this concerns especially the equal treatment of women and men" (Article 11.2) and that "any discrimination in employment based on gender … is prohibited" (Article 11.3). To further strengthen equal-opportunity and anti-discrimination laws, Poland has ratified numerous ILO conventions, including Numbers 100 and 110, and all UN and European Human Rights Treaties, including the Convention on the Elimination of All Forms of Discrimination against Women.

2.2. Wage Setting Institutions

One of the most noticeable changes in the Polish labor market has been the emergence of the private sector. Currently the private sector's share in total output and employment is about 60 percent. While the evolution of the private sector has created new job opportunities and new services, it has also raised new issues. The emergence of the private sector has led to the creation of a decentralized wage-setting system which has replaced the previous centralized system where wages were set at the level of the industry and were determined by negotiations between the government and trade unions[11]. Regardless of its merits or demerits there are several reasons why a centralized system of wage setting is likely to be associated with lower gender differentials in wages (see Blau and Kahn, 1996b).

First, a substantial part of the gender wage gap often stems from inter-industry or inter-firm variation in wages (e.g., Groshen, 1991). Hence, centralized systems that reduce wage variation across industries and firms are more likely to be associated with lower gender gaps. Second, it is probably easier to implement and monitor minimum-wage policies as well as gender specific-policies in a more centralized wage setting environment. Since the wage distribution of females is usually below the male wage distribution, proper implementation of minimum wage policies is likely to be associated with lower gender gaps. Finally, decentralized wage systems are usually associated with higher levels of wage inequality. To the extent that higher wage inequality contributes to gender wage gaps (as shown by Blau and Kahn, 1996a,

11 In the early years of the transition the government continued to impose wage controls (an excess wage tax) on private and public enterprises. However, in 1991 private enterprises were exempted from such a tax and in 1994 wage controls were suspended.

1996b) the emergence of a decentralized wage setting system may be expected to lead to higher gender wage gaps. Thus, for a variety of reasons the emergence of the private sector with a decentralized system of wage setting may be expected to be associated with an increase in gender wage differentials.

3. DATA

The data used in this paper are drawn from quarterly labor forces surveys conducted by the Polish Central Statistical Office and span the years 1993-1997. These surveys constitute the primary labor market data collection effort of the Polish government and are designed to provide nationally representative samples. [12] Except for 1993, where we use the February wave, surveys conducted in May of each year form the basis for our analysis. [13] We restrict our attention to workers who are not full-time students, are not handicapped, are aged between 18-64 (men) and 18-59 (women), and are full-time hired employees. These different age restrictions correspond to the different retirement ages for men and women. The last restriction is caused by the fact that in the Polish Labor Force Survey only full-time hired employees answer a question about their net monthly earnings at the main workplace, while self-employed individuals, assisting members in the family business and part-time hired employees do not answer this question.[14] For each year we have samples of between 13,500-14,500 full-time hired individuals.

While the available micro data provide us with samples of fairly large size and permit a comparison over time, they also suffer from some drawbacks. For some of the years, in particular 1993 and 1997, the surveys do not provide information on years of actual work experience. Similar to other studies in this area we use potential experience as a proxy for actual experience.[15] Another drawback of the data is that for 1993 there is no information on the occupational affiliation of respondents, tenure at

12 The first of these surveys was conducted in May 1992. However, the initial surveys (May 92-November 1992) are not usable due to limited information on some key variables. Differences in the questionnaire used for these early surveys and surveys conducted in later years also limit comparability.

13 We are forced to use data for February 1993 as the data for May 1993 are unavailable.

14 In Section 6.6 we try to control for the possibility of selection bias and examine how this bias may affect our findings.

15 In Section 6.3 we examine whether the use of potential instead of actual experience significantly affects our results.

the current workplace, and firm size. This missing information, for 1993, does hinder comparability over time.

4. WOMEN'S RELATIVE WAGES

Several authors provide estimates of wage differentials between men and women for Central and East European countries prior to the transition. For instance, Kertesi and Kovai (1986, p.225) report that in 1980 women earned 20-25 percent less than males in the same occupations. Fong and Paul (1993, pp.228-229) find that in 1988 women earned 8-44 percent less than males in the same economic sectors and 18-28 less for the same levels of education.

As suggested in the previous sections there are several forces that may exert an impact on the direction of wage differentials during the transition period. For instance, the emergence of the private sector and decentralized wage setting may be associated with higher gender wage differentials. Moreover, relatively higher unemployment rates[16] and the apparent increase in relative labor force participation rates amongst females[17] may exert a downward pressure on female wages. On the other hand the higher educational endowment as well as the more general nature of their education[18] may provide them with a relative advantage over men. The overall impact of these forces on wage differentials is difficult to disentangle.

Evidence on post-transition gender wage differentials is available from Nowakowska and Swędrowska (2000) who report that in Poland in 1998 the national average salary for a woman was only 82 percent of that of a man. Among those with lower than average salaries 75 percent were women and only 25 percent were men, while among those with highest salaries 80 percent were men and only 20 percent were women. The largest wage gaps were observed in the mining industry (where women earn 63 percent of men's salaries) and in trade, repairs, and financial intermediaries

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[16] According to OECD (1998) statistics, the ratio of women to men's unemployment rate was 123.8 percent in 1993 and rose to 137.8 percent in 1997. Based on our calculations, the gap is even more pronounced rising from 120.6 percent in 1993 to 143.6 percent in 1997. While overall unemployment rate falls from 14.4 to 11.5 percent during this period, the increase in relative unemployment rates indicates that the decline clearly favors men.

[17] See Footnote 24.

[18] In Poland, emphasis was placed on acquiring vocational education. This was especially true for men who were encouraged to acquire basic vocational skills and enter the industrial and productive sphere of the labor market. On the other hand, women were more likely to acquire general and higher levels of education and enter the service sector. The higher educational attainment of women may be expected to confer an advantage to women in the new labor market (see Białecki and Heyns, 1993).

(where women earn on average 74 percent of men's salaries). A report by the Center for Social Research (1996) states that 37 percent of polled women felt they were not paid as well as men; and many women did not expect to be at the highest salary levels at all.

In our study, we calculated the ratio of women to men's average net monthly earnings for full-time employees. During 1993-1997 this ratio remains quite stable and ranges between 78.3 to 79.6 percent. This difference appears to be similar to wage differences that existed during the pre-transition period. In terms of international comparisons the status of Polish women seems to be quite favorable. Blau and Kahn (1996b) report gender earnings ratios ranging from to 61.4 percent for the United Kingdom to 77.3 percent for Sweden.

We also calculated an additional statistic defined as the mean percentile ranking of women in the male wage distribution. Throughout the period this number remains steady and indicates that the average woman is at the 31-32 percentile of the male earnings distribution. The statistic indicates that in setting wages the labor market skills of an average woman are considered similar to the skills of a man at the 31-32 percentile of the male earnings distribution. Once again, compared to other countries, Polish women seem to be treated relatively fairly. According to Blau and Kahn (1996b) this statistic ranges from 19.6 percent for Norway to 33.6 percent for Italy.

A key fact emerging from the preceding discussion is that despite the sharp political and economic changes that have taken place in Poland, the gender wage gap seems to be quite stable over time. Thus, in the following sections, in addition to identifying the factors underlying the gender wage gap we also try to examine why the gender wage gap does not exhibit much change over time.

5. METHODOLOGY

Differences in wages between males and females may arise due to differences in observable productivity related characteristics and due to differences in the returns to these characteristics. The standard way of decomposing these wage differences is to use the Blinder (1973) - Oaxaca (1973) methodology. The traditional semi-log earnings function may be expressed as

$$\ln W_i = X_i \beta + \varepsilon_i \qquad (1)$$

where $\ln W_i$ is the natural logarithm of monthly earnings of a full-time employee *i*, X_i is a vector of observed characteristics, β is a conformable coefficient vector to be estimated and ε_i is an error term assumed to be $N(0,\sigma_\varepsilon)$. With suitable data in hand, separate wage equations for males and females (male – *m*, female – *f*) may be estimated and the mean log wage difference may be expressed as

$$\overline{\ln W_m} - \overline{\ln W_f} = \overline{X}_m \hat{\beta}_m - \overline{X}_f \hat{\beta}_f , \tag{2}$$

where $\overline{\ln W_m}$ and $\overline{\ln W_f}$ are mean log earnings, $\overline{X_m}$ and $\overline{X_f}$ represent the means of observed characteristics and $\hat{\beta}_m$ and $\hat{\beta}_f$ are estimated coefficients. This wage difference (2) may be decomposed as

$$\overline{\ln W_m} - \overline{\ln W_f} = (\overline{X}_m - \overline{X}_f)\hat{\beta}_m + (\hat{\beta}_m - \hat{\beta}_f)\overline{X}_f , \tag{3}$$

or as

$$\overline{\ln W_m} - \overline{\ln W_f} = (\overline{X}_m - \overline{X}_f)\hat{\beta}_f + (\hat{\beta}_m - \hat{\beta}_f)\overline{X}_m . \tag{4}$$

The first component on the right hand side of (3) and (4) is the portion of the wage gap explained by differences in observable characteristics, while the second component is the portion explained by differences in returns to these characteristics. This term also includes differences in the intercept term. Although it is not beyond reproach, the wage gap that persists after controlling for differences in observed characteristics is treated as a measure of discrimination.[19]

A well known problem associated with using the decompositions represented in (3) and (4) is that they yield different results. In (3) it is assumed that the male wage structure prevails in the absence of discrimination while in (4) it is assumed that the female wage structure prevails in the absence of discrimination. One way of resolving this problem is to assume that the wage structure in the absence of discrimination may be approximated by equally weighting the parameters obtained from the male and female wage regressions (see Reimers, 1984; Bedi and Garg, 2000), i.e.,

$$\overline{\ln W_m} - \overline{\ln W_f} = (\overline{X}_m - \overline{X}_f)[0.5(\hat{\beta}_m + \hat{\beta}_f)] + (\hat{\beta}_m - \hat{\beta}_f)[0.5(\overline{X}_m + \overline{X}_f)] . \tag{5}$$

While this is a possibility, Neumark (1988) suggests a more general method and proposes a wage decomposition represented by

[19] This term may exaggerate the extent of discrimination as it also includes the influence of gender differences in unobserved characteristics on earnings.

$$\overline{\ln W_m} - \overline{\ln W_f} = (\overline{X}_m - \overline{X}_f)\hat{\beta}_p + \overline{X}_m(\hat{\beta}_m - \hat{\beta}_p) + \overline{X}_f(\hat{\beta}_p - \hat{\beta}_f) \ , \qquad (6)$$

where $\hat{\beta}_p$ is the estimated non-discriminatory wage structure. Neumark shows that under certain conditions the appropriate non-discriminatory wage structure can be obtained by estimating a regression over the pooled male-female sample. Following this approach, the observed log wage differential may be decomposed into three components: (i) due to differences in average characteristics of males and females; (ii) due to differences between the estimated parameters of the male wage regression and the pooled wage regression – a male advantage or a favoritism component; (iii) due to differences between the estimated parameters of the pooled wage equation and the female wage equation-a female disadvantage or a pure discrimination component.[20] A priori, it may appear that the decomposition based on (6) is most appropriate. However, our approach is more cautious and for all years we decompose wage differentials into their components on the basis of all four decomposition methods.

A final issue that bears discussion is that we estimate our regressions using samples of men and women who participate in the labor force and are full-time hired employees. The implicit assumptions underlying our regressions are that participating in the labor force and working full time are randomly determined. These assumptions, especially for women, are not likely to be correct. If women are positively selected into the labor force and into a full-time job, then estimates that do not account for this possibility may underestimate the extent of the gender wage gap. While the selection issue is potentially important in terms of assessing the extent of the wage gap, it may not be as important in terms of comparing wage gaps over time. If the unobserved characteristics of men and women who are labor force participants and full time employees does not change sharply during the period that we investigate then ignoring selection effects should not have a substantial effect on our estimates. Nevertheless,

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20 Oaxaca and Ransom (1994) show that all decompositions may be expressed as $\overline{\ln W_m} - \overline{\ln W_f} = (\overline{X}_m - \overline{X}_f)\hat{\beta}_* + \overline{X}_m(\hat{\beta}_m - \hat{\beta}_*) + \overline{X}_f(\hat{\beta}_* - \hat{\beta}_f)$ where $\hat{\beta}_*$ is the estimated nondiscriminatory wage structure. Thus, $\hat{\beta}_* = \hat{\beta}_m$ in (3) and $\hat{\beta}_* = \hat{\beta}_f$ in (4); $\hat{\beta}_* = (\hat{\beta}_m + \hat{\beta}_f)/2$ in (5); $\hat{\beta}_* = \hat{\beta}_p$ in (6). Consequently, the results of the decomposition may be quite sensitive to the choice of $\hat{\beta}_*$. Although we present estimates which decompose the unexplained differential into favoritism and pure discrimination, in general, we interpret the total unexplained differential as a measure of discrimination.

in the next section we present the methodology and estimate specifications that account for selection effects.

6. DECOMPOSITION OF THE WAGE GAP

6.1. Specification of the Earnings Equation

In order to facilitate comparison over time, our initial specification of the earnings equation is a parsimonious one limited by what is available to us for all years in our analysis. We start with a basic set of regressors which includes conventional human capital characteristics (education, potential experience), personal characteristics (marital status, head of the household) as well as variables that capture regional labor market conditions (region, city/town size or village). We refer to this specification of the earnings equation as Specification A.

We do not include any current job characteristics (such as, industrial affiliation, occupation, firm size, private or public sector) in specification A. The inclusion of job characteristics in an earnings specification may be criticized on several grounds. For instance, a number of these job characteristics may be endogenous; also, it is not clear whether different job characteristics of men and women reflect employment discrimination or differences in their tastes and preferences or both.[21] Notwithstanding these caveats, we take a cue from the literature and add a full set of job characteristics to our specification of the earnings equation. We follow convention and treat these job characteristics as factors explaining the wage gap between men and women rather than a manifestation of employment discrimination. We refer to this extended specification as Specification B.

First, in order to control for employer specific human capital, we include tenure which reflects years of work experience with the current employer. Second, in order to distinguish between high-paying and low-paying branches of the economy, we introduce controls for 14 industries. Third, in order to account for the role of occupational differences in explaining the wage gap we introduce a set of 8 occupational indicators. Fourth, several studies have reported that wages and firm size are positively

[21] Some authors insist that any supply-side variable that may affect wages should be included in the wage equation and, thus, use job characteristics as proxies of the employee's tastes and preferences as well as their elasticity of supply. According to this point of view, the human capital specification of the wage equation could overestimate the extent of gender discrimination. On the other hand, others argue that the job-related differences may reflect discrimination and demand-side barriers to entry; and the inclusion of job characteristics into the earnings equation could underestimate gender discrimination.

correlated (e.g., Oi, 1990). If men tend to work in larger firms then a part of the wage gap may be attributed to firm size. In addition, according to Joshi and Paci (1998), it is more difficult to achieve full information on individual productivity in larger firms, therefore, the firm size may be used as a proxy for the extent to which an employer operates internal market. To allow for this we include a set of four firm-size variables. Fifth, wages in Poland may vary across the public and private sectors (see Adamchik and Bedi, 2000). If women are more likely to work in the public sector then a part of the wage gap may be explained by sector affiliation rather than gender. To allow for this we include an indicator for the public sector of work. This dummy may also serve as a control for the lower degree of flexibility in the pay structure in this sector (Joshi and Paci, 1998).

A list of the variables used in the earnings equations is presented in Table A1. Also, Table A1 shows the means of the explanatory variables and the regression results for one of the years in our study (1997, Specification B).

6.2. Comparing Different Decomposition Schemes

As column 1 in Table 1 shows, over the period 1993-1997 the mean log wage gap remains in a narrow band between 0.218 and 0.230. Decomposition of the mean log wage differential carried out on the basis of all four methods discussed in the previous section for both specifications of the earnings equation is summarized in Table 1 and Charts 1 and 2.

There are several clear patterns that are discernible from these results. First, although the explained portion varies across methods, the percentage of the wage gap that is explained by differences in observed characteristics is quite limited. Second, looking across the various decomposition methods we see that for each year the explained portion of the wage gap is substantially higher for Method 4 as compared to the other methods.[22] For Specification A, a wage decomposition carried out on the basis of Methods 1-3 would attribute almost the entire wage differential to differences in returns to the same endowments, while Method 4 would attribute only 71-81 percent of the wage differential to differences in rewards. The inclusion of additional variables (Specification B) increases the explanatory power of the wage equation and,

[22] A similar relationship between different decomposition schemes is reported by Oaxaca and Ransom (1994) and Paternostro and Sahn (1999).

correspondingly, the explained portion of the wage gap increases for all four methods. Still, Method 4 produces the largest explained portion of the male-female wage differential, namely 53-60 percent.

Taking a conservative approach, we base our further discussion on the method with the largest explained portion of the male-female wage gap, that is, on Method 4. The summary of the decompositions based on Method 4 for Specifications A and B is presented in Table 2 and illustrated by Chart 3. The detailed decompositions are presented in Tables 3 and 4. Chart 4 helps visualize the relative impact of different components on the log wage differential for one of the years in our study (1997, Specification B).

6.3 Impact of Human Capital and Personal Characteristics

The decomposition results based on Specification A (see Tables 2, 3 and Chart 3) show that between 1993-1995 about 27-29 percent of the wage gap is explained by differences in human capital endowments and personal (mostly family) characteristics. This explained portion falls to around 24 percent in 1996 and to about 19 percent in1997. Across all years, most of the observed differences in the wage gap may be attributed to family characteristics. In fact, marital status and whether an individual is head of the household are the only factors among the observed characteristics that favor men over women. Although their effect is small, all other characteristics such as education, potential experience, and regional distribution work towards reducing wage differences between men and women.

Different rewards for the same endowments appear to be responsible for a majority of the wage gap. The unexplained portion varies from 71-73 percent in 1993-1995 to about 76 percent in 1996 and to about 81 percent in 1997. Across these years, the portion of the wage difference that may be thought of as a male advantage (female disadvantage) remains stable at between 43-44 (55-56) percent. In terms of individual components women receive higher returns to education and experience. Thus, in addition to a wage advantage due to their higher educational attainment women reap higher rewards to their education. The overall effects of potential experience and being a household head also favors women. Looking across the years a consistent feature is that there are only two variables that seem to be associated with the

pronounced male wage advantage and female disadvantage – marital status and the intercept.[23]

As mentioned above, in order to achieve comparability over time, our specification of the earnings equation includes only those variables that are available for all years under examination. The questionnaire of the Labor Force Surveys as well as the classifications used changed between 1993 and 1997. For instance, between 1994 and 1996 respondents were asked about the total number of years they had worked during their lifetime. In 1993 this question was not in the survey, and, this question was eliminated from the Labor Force Survey in 1997. Due to lack of data on experience for the entire time period we use potential and not actual work experience. However, potential work experience may be a very inaccurately measured variables especially for women.

In order to examine the effect of using potential experience instead of actual experience we re-estimate our earnings equations and carry out wage decomposition for the years that we do have data on actual work experience (i.e. 1994-1996). These results are presented in Table A2. A comparison of actual and potential experience shows that the average actual experience of women is about 3 years shorter than their average potential experience, while for men the difference is about 2 years. The substitution of actual for potential experience marginally increases the explanatory power (R^2) of the earnings equation for women but for men it does not make any difference. Further, comparing Specification A and A-1, we observe that gender differences in actual experience is associated with widening the pay differential, while gender differences in potential experience work in the opposite direction. Despite this noticeable change, the substitution of actual for potential experience does not affect the overall decomposition and the explained and unexplained portions of the wage gaps are almost the same. Overall, while actual experience is a more precise measure of female

[23] The effect of other variables such as the location dummies appears to vary across time. For instance, in 1995 these variables seem to be associated with exacerbating wage differentials while in 1997 they seem to have the opposite effect.

work experience, given the strong labor force attachment of women in Poland [24], we may conclude that the use of potential experience does not have a substantial effect on the decomposition of male-female earnings differentials.

To conclude our discussion on the impact of human capital and personal characteristics, we turn to the wage decomposition based on Specification B (see Table 4 and Chart 4). The results show that the effect of these characteristics is similar to the results from our earlier Specification A. That is, among the observed characteristics, education, potential experience, and place of residence favor women over men. Overall, different rewards to education and experience favor women, while different rewards to marital status and position in the family tend to favor men.

6.4 Impact of Job Characteristics

The inclusion of the additional variables increases the explanatory power of the wage equation from approximately 30-35 percent to approximately 40-45 percent. Correspondingly, the explained portion of the wage gap increases (compared to Specification A) and constitutes about 40 percent in 1993 [25], about 60 percent in 1994 and 1995, and about 53 percent in 1996 and 1997. Although the unexplained portion of the wage gap falls it is still quite substantial.

Amongst the job characteristics, industrial affiliation followed by the occupational affiliation of women are the two main factors responsible for widening the wage gap. At the same time, the portion of the wage gap that may be attributed to differences in coefficients on the industry and occupations variables is small. Except for differences in the estimated coefficients on the baseline industry and occupation (captured by the intercept) it seems that despite the higher proportion of men in higher paying industries and occupations, within industries and occupations women may not experience lower wages.

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[24] Although there has been a decline in labor force participation (LFP) for both men and women in all transition countries, at least in Poland this reduction does not seem to have disproportionately affected women. In fact, according to Paukert (1995), between 1989 and 1994 women's labor force participation rates in Poland declined *less* than men's (respectively, 4.4 versus 7.8 percent). Consequently, the ratio of women to men's LFP rates seems to have increased from 76.7 percent (Wehmeyer, 1999) in the pre-transition period to around 81-83 percent in the post-transition period (OECD, 1998). Thus, during the period covered by our data it appears that the commitment of women to the labor force has not diminished.

[25] For 1993, the information on occupation, tenure, and firm size is not available in the Labor Force Survey.

A look at the estimated coefficients on the industry and occupational variables (Table A1) shows considerable heterogeneity across industries and occupations. Female workers in mining and the energy industry are particularly disadvantaged, while female workers in education, health care and the financial industry receive higher returns than men. In terms of occupational differences in rewards, women are at a disadvantage if they work as farmers or industrial workers but for almost all other occupations they seem to be as highly rewarded if not better rewarded than men.

The impact of the public or private sector affiliation on the wage differential is similar to that of industry and occupation: while more men work in the higher paying private sector, within each sector women seem to receive a higher reward. Other job characteristics included in the earnings equation, such as tenure and the firm size, tend to increase the male-female wage gap, however, their impacts are very small. [26]

6.5 Impact of the Choice of Reference Category

The results presented above show that a substantial portion of both male advantage and female disadvantage seem to be associated with the intercept. Ascribing wage differences to the intercept is clearly unsatisfactory, as it does not tell us which characteristics are responsible for the substantially higher returns to males. According to our specification, the intercept may be interpreted as the starting salary for a unmarried worker who does not head the household, has only elementary or incomplete elementary education, and who works as a manual worker in a small private manufacturing firm in the Warsaw region. The large intercept gap suggests that the wage gap between men and women may lie in differences between men and women who (a) have low education, or (b) work in the manufacturing sector, or (c) are manual workers, or (d) work in the private sector, or (e) work in a small firm, or (f) are not married, (g) do not head the household, or (h) live in the Warsaw region.

To identify the source of the intercept wage gap we re-estimate Specification B using different reference groups for 1997. For our first trial we sequentially replace primary educated individuals as our reference group with other education groups. The

[26] In 1997 the Labor Force Survey questionnaire was augmented with a question if a person completed a training program during the preceding three months. To assess the impact of this factor on earnings, we include a dummy variable as a proxy for the firm specific human capital and for the presence of some form of internal market (see Felstead, 1995, Joshi and Paci, 1998). However, according to our findings, the explanatory power of this factor is negligible with 0.000 contribution to the explained portion of the wage gap and –0.001 contributions to both male advantage and female disadvantage.

pattern of coefficients shows that, *ceteris paribus*, people with elementary or incomplete elementary education experience the smallest gender difference in earnings and this difference increases with education levels.

Returning to our original reference group (individuals with primary education) we experiment with the various industry indicators. We sequentially replace the manufacturing industry as our reference group with each of the fifteen industrial groups as references. The contribution of the intercept to the wage gap varies between 0.390 for the mining industry to 0.168 for agriculture as a reference. Next we experiment with the occupational dummies and sequentially replace manual workers as the reference category with each of the other occupational categories. Intercept differences using these alternative reference groups varies from 0.348 (for farmers as a reference) to 0.123 (for specialists as a reference). The range of these intercepts displays the substantial heterogeneity of wage gaps across industries and occupations. Furthermore, the pattern of coefficients on the basis of different reference categories shows that gender wage gaps in the manufacturing sector among manual workers is quite pronounced and is an important component of differences in the intercept. We also experimented with alternative reference categories for firm size, city size, and region. Without providing all the details, our experiments suggest that the wage gaps increase with firm size, are larger in cities, and are higher in the Warsaw region as compared to other areas.

6.6 Selection Bias

Although we have mentioned the possible effects of self-selection on our estimates we have not yet paid substantial attention to this problem. Our regressions and wage decompositions are estimated over samples of men and women who are full-time employed workers. The implicit assumptions underlying the application of ordinary least squares to such a sample are that selection into the labor force and into full-time work are randomly determined. These assumptions are unlikely to be true especially for women, and under such conditions OLS estimates of wage equations are likely to be biased.

To address this problem we resort to methods developed by Heckman (1979) and Vella (1993). Implementation of these methods requires the estimation of an equation that determines the labor market status of an individual. Estimates of such an equation are used to construct a selection correction term that may be included in

earnings regressions to obtain consistent estimates. Accordingly, individuals in our sample are divided into four labor market states and an ordered probit specification is used to estimate the probability of an individual's labor market status. The ordered probit is specified as,

$$L_i^* = D_i\omega + \varphi_i, \tag{7}$$

where L_i^* indicates the latent labor market status of an individual and L_i is the observed counterpart. If $L_i^* \le 0$, $L_i = 0$ (does not participate in the labor force); if $0 < L_i^* \le \mu_1$, $L_i = 1$ (unemployed); if $\mu_1 < L_i^* \le \mu_2$, $L_i = 2$ (part-time worker); and if $L_i^* > \mu_2$, $L_i = 3$ (full-time worker). D_i is a vector of observed characteristics; ω is a coefficient vector to be estimated, φ_i is assumed to be a $N(0, \sigma_\varphi)$ error term and the μ's are unknown parameters to be estimated with ω. Based on the assumption that the error terms in the earnings equation (1) and in the ordered probit equation (7) has a bivariate normal distribution with zero mean and correlation ρ a selection correction term,

$$\lambda_i = E(\varepsilon_i \mid L_i = 3) = \frac{\phi(\mu_2 - D_i\omega)}{1 - \Phi(\mu_2 - D_i\omega)}, \tag{8}$$

is constructed and included in our earnings regressions functions. Expected log earnings conditional on working full-time maybe expressed as,

$$E(\ln W_i \mid L_i = 3) = X_i\beta + \lambda_i\rho\sigma_\varepsilon = X_i\beta + \lambda_i\beta_\lambda, \tag{9}$$

where λ_i is the selection correction term and β_λ is the covariance between the error terms in the earnings and labor market status equations. This coefficient is a measure of the effect of the non-random sorting of individuals, while the sign indicates the nature of the selection. Depending on the nature of the selectivity bias the observed earnings differentials will over- or understate the differences in the selection corrected (offered) earnings. For instance, if there is positive selection of women into full-time work (and no selection effects for men) then the observed earnings differential will underestimate the differences in offered earnings between men and women.[27] The

[27] The selection corrected earnings differential is expressed as, $\overline{\ln W_m} - \overline{\ln W_f} - \overline{\lambda}_m\hat{\beta}_{\lambda m} + \overline{\lambda}_f\hat{\beta}_{\lambda f} = (\overline{X}_m - \overline{X}_f)\hat{\beta}_p + \overline{X}_m(\hat{\beta}_m - \hat{\beta}_p) + \overline{X}_f(\hat{\beta}_p - \hat{\beta}_f)$. If women are positively selected into full-time work and there is no (or a negative) selection effect for men then the selection corrected earnings gap will be larger than the observed earnings gap.

augmented wage equation (9) is estimated using OLS and a wage decomposition is carried out on the basis of these selection corrected earnings equation estimates.[28]

It is well known that procedures such as the one outlined here are sensitive to the distributional assumptions and the specification of both the selection and the wage equations (see Manski, 1989). In order to reduce this sensitivity, we would like to have several variables that influence the selection decision but do not influence earnings. At the very least, to achieve identification, we need at least one variable that influences labor market status but may be excluded from the wage equation. We estimate the labor market status equation using a specification that includes education, age, marital status, an indicator for head of household, variables indicating labor market conditions (macro geographical regions), place of residence (big city or rural), and our identifying variable - i.e., a dummy variable indicating whether an individual entered the labor market after 1989 (new regime).[29] The specification of the earnings equation includes all the variables from Specification B and the selection correction term, lambda. We refer to this specification as Specification C.

The ordered probit estimates (see Table A3 for results using the 1997 data) show that for both men and women the probability of participating in the labor force, and participating full-time, are positively associated with education. Marriage has a positive (negative) and significant effect on male (female) participation. Living in economically undeveloped regions, especially the north and the north-east, increases the chance of not being in the labor force; and it seems that there are more employment opportunities (especially for men) in big cities. The "new regime" variable is positive and statistically significant for both men and women. This suggests that more recent entrants into the labor force are more likely to belong to the labor force and are also more likely to be fully employed. The estimates of Specification C are not substantially different from those of Specification B; thus, we present only estimated co-

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[28] Rather than using a single ordered probit specification to estimate the labor market status of individuals we may use a sequential approach and estimate the probability of participating in the labor market (a probit specification) and subsequently the probability of working full-time, part-time or being unemployed (an ordered probit specification). The use of this two-step approach further complicates the identification problem. Nevertheless, we used identifying restrictions to estimate such a model. The selection effects using this approach are positive and statistically significant for both men and women. Similar to the results based on the one-step approach, the overall selection effect suggests that the observed wage gap underestimates the offered wage differential. Detailed results are available.

[29] The idea behind this variable is that individuals entering the labor market after 1989 faced a different set of labor market conditions that those who entered before 1989. Further details on the validity and identifying power of this variable may be found in Adamchik and Bedi (2000).

efficients on the selection term lambda (see Table 2). For both men and women, we find that the coefficient on the selection correction term is positive and statistically significant. The sign pattern indicates that both men and women are positively selected and have higher wage offers than those not working full-time.

Decomposition results for Specification C are summarized in Table 2 and Chart 3. The detailed results are presented in Table 5; and Chart 5 shows the relative contribution of each factor for one of the years in our study, 1997. The results show that for almost all years (except 1996) the selection effect works towards reducing the observed wage gap between men and women. This implies that in the absence of a selection correction the observed wage gap underestimates the true gender wage differential. Despite this change in the extent of the wage gap, our conclusions about the various factors influencing the wage gap, drawn from Specification B, remains largely unperturbed. The additional information yielded by the selection correction is that the observed wage gap for the sample of full-time hired employees may be viewed as a lower bound for the potential (offered) wage differential in the Polish labor market.

6.7 Distribution of Wage Gaps

It is clear that over time the wage gap has not changed. Not only is the overall wage gap stable, but the decomposition of the wage gap and the relative importance of the individual components remains stable throughout the period. Despite the apparent stability it is possible that gender wage gaps at different percentiles of the wage earnings distribution may have registered sharp changes while leaving the mean unchanged. To examine this potential heterogeneity we examine changes in the gender wage gap at various percentiles of the wage distribution as well as patterns of wage growth at all percentiles.

Table 6 presents a summary of the gender wage gap at different percentiles of the wage distribution. These results are obtained from OLS and quantile regressions of log wages on a constant and a male indicator variable and are estimated for all years. Looking across the various percentiles the estimates suggest that females at the lower end of the earnings distribution (at the 10^{th} and 25^{th} percentiles) face a smaller

wage gap as compared to those at the upper end.[30] This pattern prevails for all years. A comparison across years shows that except for a decline in the wage gap at the lowest percentiles (10th and the 25th percentile) there are no substantial changes at any of the other percentiles.[31]

The regressions we have estimated are at particular points of the wage distribution but do not provide information on movements in the wage gap between these percentiles. To get an idea of changes at all points of the wage distribution we examine wage growth for males and females at all percentiles. Chart 6 presents a graph of log wage growth at various percentiles. For males and females the pattern of wage growth is U-shaped. Earnings growth seems to be higher at the two ends of the distributions and less pronounced in the middle. We observe higher wage growth for females at the lower end (0-10th percentile) while at other percentiles, especially beyond the median there does not seem to be a clear pattern favoring either group.

The regression results and the graph reveal the same story. They both show that there is some heterogeneity in patterns of wage growth and wage gaps across percentiles. However, except for the higher wage growth and the resulting decline in wage gaps at the lower tail, gender differences in wage growth and consequently changes in wage gaps across various percentiles are quite modest.

7. DISCUSSION

Our investigation of gender wage differentials during the 1990s has revealed three main empirical regularities. First, there seem to have been almost no change in the extent of the gender wage gap. Second, most of the explained wage gap may be attributed to industrial and occupational segregation. Third, despite the inclusion of human capital variables and job characteristics the unexplained portion of the wage gap remains between 40-50 percent. In this section we discuss each of these facts and speculate on the factors that underlie them.

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[30] For 1997, statistical tests show that there are no significant differences between the coefficients at the 50th, 75th and 90th percentiles. However, the coefficients at the 10th and the 25th percentile are significantly different from each other and from the coefficients at the other percentiles.

[31] A formal statistical test for differences between the coefficients at the 10th percentile in 1993 and 1997 has a *p*-value of 0.0017. A similar test for the coefficients at the 25th percentile has a *p*-value of 0.0244. For all other percentiles there appears to be no statistical difference between the 1993 and 1997 coefficients.

The stability of the gender wage gap, despite the sharp political and economic changes in Poland, suggests that these changes may have had a very small impact on factors that play a role in determining gender wage gaps. To provide support for this argument we examine the pattern of change in factors that we have identified as important associates of the gender wage gap.

According to our analysis gender differences in educational endowment work towards reducing wage gaps while gender differences in industrial and occupational affiliation exacerbate wage differentials. Considering educational endowment, it is well known and also corroborated by our data that women in Poland are generally better educated than men. This feature is largely a consequence of the policies of the previous era where men were encouraged to acquire vocational education and work in the productive (manufacturing) sector of the economy while women carried on to higher education levels and worked in the non-productive (services) sphere of the economy. In terms of temporal variation, between 1993 and 1997 (see Table 7) there are hardly any changes in the relative educational distribution of men and women and consequently the influence of this factor on gender pay gaps remains stable.[32]

Tables 8 and 9 present the occupational and industrial distribution by gender. Average wages in each occupation and industry are also provided. The tables show that there is crowding of women into certain industries and occupations. For example, in 1997 women were predominant (industries with a female-male ratio greater than 3) in the health care, education, hotel and restaurant business, and financial and insurance industry. Except for the financial industry (which employs a small fraction of the total population), average wages in industries dominated by women are far below the sample average. Jobs done mainly by women are office clerks and services workers. Almost 35 percent of females and only about 9 percent of males were in these occupations.

[32] Whether the trend of higher educational endowment among women will persist is open to debate. In recent years the Polish Catholic Church and the conservative parliamentary majority appear to be supporting a more traditional role for women (Wóycicka and Dominiczak, 2000). In part, as a result of these efforts, several recent surveys show that a substantial number of Poles believe in a more traditional role for women. Forty percent of the respondents believed that the principal area of women's activities should be the family and household (Domański, 1995); 70 percent of respondents felt that women can only achieve fulfillment as mothers and 33 percent felt that a university education is more important for men than for women (Siemieńska, 1998). Further, 80 percent of the polled considered housework as their exclusive duty (Dabic, 1994); and 40 percent of women believed that the wife must take care of the family while the husband must earn living (Domański, 1995).

As our results suggest and the table shows, "feminized" industries and occupations usually have lower than average wages and, hence, a large portion of the explained wage gap may be attributed to differences in industrial and occupational affiliation. We measure the extent of industrial and occupational segregation using an index that equals the percentage of men or women who would have to change jobs in order to equalize the industrial/occupational distribution. The industrial segregation index is computed across fifteen industries while the occupational segregation index is computed across nine occupational categories. The magnitude of these both indices remains very stable throughout the period under examination. The industrial segregation index remains between 33-35 percent while occupational segregation remains unchanged at around 46 percent.

Why are industrial and occupational distributions so stable? It is possible that industrial and occupational segregation reflects different preferences of men and women as well as different supply elasticities. In this case, women's strong preferences for particular jobs leads to crowding and leads them to accept a lower pay in a relatively small number of industries and occupations. However, it is quite likely that gender based education and specialization along with protective regulations are more important factors responsible for the rigid industrial and occupational distributions in Poland.

As our earlier discussion pointed out, men and women are encouraged to follow different educational tracks at an early age. The idea of different social roles for men and women seems to be a deeply rooted feature in Poland (see, for example, Firkowska-Mankiewicz, 1995, Białecki, 1997). These beliefs transform into sharply divergent educational tracks for men and women, which in turn shapes the industrial and occupational segregation that prevails in Poland. Wóycicka and Dominiczak (2000) report that the stereotyped gender biased specialization in Poland starts as early as the primary level (where educational programs are organized according to the traditional perception of what is "masculine" and "feminine") and continues at higher levels (where women's access to certain industries and occupations is limited by gender quotas)[33].

[33] According to the enrollment numbers reported by Wóycicka and Dominiczak (2000), the male-female ratio is about 3 in secondary technical schools and about 0.03 in secondary medical schools. In addition, secretarial, nurses, and teachers colleges are almost entirely dominated by women.

Furthermore, the Labor Code explicitly prohibits the employment of women in jobs particularly harmful to their health. Until September 1996 the Labor Code banned women from more than 90 occupations. Although this code was amended in September 1996 and eased the access of women to many occupations, the list of prohibited jobs still remains rather long. Whether the government should protect women's health and their reproductive functions or each woman should have the right to make her own decisions concerning her health is open to debate. However, it is clear that the protective regulations cause Polish women to be banned from a number of occupations and industries and promotes segregation.

Thus, it seems quite likely that crowding of women into certain industries and occupations may reflect not only their preferences but also both "pre-entry" discrimination (differential access to education and training) and "post-entry" discrimination (when women are restricted from entering certain occupations). While these distributions may eventually change it is clear that between the period 1993-1997 the industrial and occupational structures were inert and are probably similar to the distributions that prevailed in the pre-transition era. Overall, given that there has been virtually no change in the education, industrial or occupational distribution across genders it is not surprising that the explained portion of the wage gap remains stable.

We now turn to the "unexplained" portion of the wage gap. It is quite large and also remains stable during this period. Since we have taken into account the effects of differences in observed characteristics, this "unexplained" portion of the wage gap may reflect a pure "taste for discrimination" in the Polish labor market. There were two main factors that showed sharply differing returns (i.e. the coefficients) across genders: the intercept and marital status.

As indicated in Section 6.5, the intercept represents a mixture of reference characteristics. The exercise in the previous section showed that the intercept wage gap may not be attributed to gender differences in starting wages amongst those with low educational levels but is associated with differences in starting wages for manual workers in large manufacturing firms in urban areas. These gender differences in starting wages may reflect a "taste for discrimination" or may be due to unobserved qualities that increase the suitability of men for jobs in such sectors (e.g. physical strength). While the exact source of these differences is not clear, what is clear is that the factors that underlie these differences in stating wages do not change during the period that we investigate.

Marital status appears to be an important factor associated with the higher male wage, *ceteris paribus*.[34] Throughout the period under examination, married men seem to be earning a large wage premium as compared to married women.[35] What explains the differential marriage premium across genders? There might be several explanations for this finding.

First, earnings differentials may arise due to productivity differences (Becker, 1985, Hakim, 1996). According to this rather literal view, marriage increases the productivity of men. The basic idea is that marriage is associated with increased responsibilities in terms of supporting a family and motivates men to work harder and boosts productivity. For women, marriage is associated with a rising burden of domestic duties and child-care and may reduce the level of effort that they are able to put into paid jobs. If prospective employers perceive that family responsibilities (especially child care) lower the productivity of women or increase its variability around a common average, then they may offer married women lower wages leading to statistical discrimination.

The increased child-care and family responsibilities that a woman's marital status signals are accentuated by existing legislation. There are a variety of maternity leave and child care provisions in Poland. Under the Polish Labor Code, a pregnant woman cannot be fired and she should be transferred to another position if her regular job is in any way harmful. She has the right to paid leave in order to undergo medical check-ups. A woman who gives birth or adopts a baby has the right to paid (100 percent of her salary) maternity leave for 16 to 26 weeks. [36] Moreover, maternity leave is obligatory and an employer is punishable if a new mother returns to work earlier than regulations allow. Once the maternity period ends, a mother[37] is entitled to a 3-year

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[34] This result and the pattern of estimated coefficients on the marital status variable are similar to findings based on data from other countries. For example, Korenman and Neumark (1991) report that marriage premiums appear slowly after marriage and result from faster wage growth for married men as compared to never-married men. While their study supports the idea that marriage enhances productivity, the mechanism linking marriage to productivity is not clear.

[35] For instance, based on a review of research using data from the United States, Korenman and Neumark (1991) report that the marital status coefficient for men is usually large and positive while for women the coefficient is usually close to zero. Paternostro and Sahn (1999) report a similar result in their paper that uses 1994 data from Romania.

[36] It is worth noting that in September 1999, the Polish parliament (Seim and Senate) amended regulations and extended maternity leave to 6 months. While this information is irrelevant to the period under consideration in our study, it shows that the protective regulations in Poland are generous.

[37] Although, men rarely make use of the right, since 1996 both parents, if employed, are equally entitled to the childcare leave.

child care leave. During this period her employment cannot be dissolved, and when a woman returns from such a leave her employer is obliged to provide her with an equivalent position and a salary that cannot be lower than before the leave. Finally, a woman is entitled to 2 paid days of childcare leave per year till her children are 14 as well as to paid sick child care leave.

Such an extensive list of provisions in the Polish Labor Code is likely to have an adverse effect on the employment and salary prospects of married women. The possibility of a half-year absence from work and multiple child care leaves thereafter, reduces the attractiveness of hiring married women. Job offers in Poland are often gender and age specific; and even if a job offer is gender-neutral, employers ask women about their age, marital status, plans for the future and request a non-pregnancy certificate or a declaration that a woman will not become pregnant for some time (Nowakowska and Swędrowska, 2000). Since these regulations may make it more difficult for married women to get a job, they may be willing to accept lower paid positions.

Second, lower wages of married women may also be explained by the lower elasticity of supply of married women because domestic responsibilities usually reduce mobility, increase the cost of potential job search, and may motivate women to trade wages for a more convenient working schedule. Third, marital status and earnings may be endogenous. Unobserved characteristics that determine martial status may be correlated with unobserved characteristics that determine wages. Nakosteen and Zimmer (1987) and Rupert and Cornwell (1997) provide some evidence to support this theory. Fourth, the marriage premium may be motivated by norms or unwritten institutional considerations. It is possible that post-marriage, firms/employers raise wages for men so that they are able to raise a family.

While any one or a combination of the possibilities mentioned above could apply to the Polish case, the most likely explanation is that a women's marital status is interpreted as a signal of increased family responsibilities, limited flexibility and lower productivity by employers. This feature combined with the high costs that are imposed by protective legislation (maternity and child care leave) reduces the em-

ployment prospects of married women and reduces the level of wages that they can command.[38]

8. CONCLUDING REMARKS

In this paper we examined the gender wage gap in Poland during the 1990s. The empirical analysis showed that during this period the mean gender wage gap remained unchanged and except for a reduction at the lower tail remained stable throughout the wage distribution. The mean gender wage gap of about 21-22 percent is in the same range as indicated by the pre-transition literature.

Depending on the year, a wage gap decomposition showed that between 40 to 60 percent of the wage differential could be explained by differences in observed characteristics across genders. Most of these differences were attributed to household position and the industrial and occupational affiliation of women. The stereotypical perception of women having a specific role in the labor market persists and this view determines the type of education that women acquire and the occupations and industries that they enter. This perception is echoed and/or supported by labor legislation which prevents women from working in occupations and sectors which are considered inimical to their health. Although the effect of industrial and occupational segregation on wages forms part of the so-called explained portion of the wage gap, it may be more appropriately viewed as a consequence of pre- and post-labor market discrimination based on gender stereotyping.

The large unexplained portion of the wage gap is attributed to gender differences in starting salaries and in returns to marital status. Although the unexplained part of the wage gap is conventionally thought to measure gender discrimination, it is possible that differences in starting wages may be associated with unobserved gender differences in attributes that the labor market values (such as motivation, physical strength). While unobserved characteristics may be responsible for a portion of the unexplained gap, once again, gender differences in returns to marital status seem to be associated with gender stereotyping and statistical discrimination.

Despite sharp changes in the political, economic and institutional arrangements in Poland, the male-female wage gap remained rather stable in terms of its

[38] Pailhe (2000) provides support for this statistical discrimination story from a variety of Central and Eastern European countries, including Poland.

magnitude and the impact of each of the individual components. This suggests that factors responsible for determining wage gaps between men and women or more generally determining the labor market status of women have not changed. The sterotypical perception of women belonging to certain educational, occupational and industrial streams persists. The view that women are primarily responsible for child-care and that this responsibility lowers their job-performance also appears to persist. Thus, it seems that stereotypes about women are very deeply ingrained and have not been influenced, at least till now, by the systemic changes in the political and economic system in Poland.

REFERENCES

Adamchik, Vera, and Arjun Bedi, 2000. Wage Differentials between the Public and the Private Sectors: Evidence From an Economy in Transition, *Labour Economics* 7, pp. 203-224.

Becker, G., 1985, Human Capital, Effort, and The Sexual Division of Labor, *Journal of Labor Economics* 3, pp. 553-558.

Bedi, Arjun S. and Ashish Garg, 2000. The Effectiveness of Private Versus Public Schools: The Case of Indonesia, *Journal of Development Economics* 61, pp. 463-494.

Białecki, I, and Heyns, B., 1993, Educational Attainment, the Status of Women, and the Private School Movement in Poland. In V.M. Moghadam, ed., *Democratic Reform and the Position of Women in Transitional Economies*, Oxford: Clarendon Press.

Białecki, I., 1997, Nierówności w Dostępie do Kształcenia w Polsce Powojennej. In *Wokół Zawodowego Równouprewenia Kobiet i Mężczyzn*, Warszawa: Wydawnictwo Naukowe SCHOLAR.

Blau Francine D. and Lawrence M. Kahn, 1996a, International Differences in Male Wage Inequality: Institutions versus Market Forces, *Journal of Political Economy* 104, pp. 791-837.

Blau Francine D. and Lawrence M. Kahn, 1996b, Wage structure and gender earnings differentials: An international comparison, *Economica*, 1996, S29-S62.

Blinder, A.S, 1973, Wage Discrimination: Reduced Form and Structural Estimates, *Journal of Human Resources* 8, pp. 436-455.

Center for Social Research, 1996, *Gender Equality in Professional Life*, Report, Warsaw.

Chappell, Duncan, and Di Martino, Vittorio, 1998, *Violence at Work*, Geneva: ILO.

Dabic, Milena, 1994, Women and Academic Careers in Poland. In *Equality and Partnership Towards Higher Education, Employment, Entrepreneurship and Environmental Management in Central and Eastern European Countries. Future Strategic Goals and Objectives*, Conference Proceedings, Wolfheze, Holland.

Domański, Henryk, 1995, Równouprawnenie. Stereotyp Tradycyjnego Podziału Ról. In Anna Titkow and Henryk Domański, eds., *Co To Znaczy Być Kobietą w Polsce*, Warszwa: Polska Academia Nauk, Instytut Filizofii i Socjologii.

Einhorn, B., 1993, *Cinderella Goes to Market: Citizenship, Gender and Women's Movements in East Central Europe*. London: Verso.

Felstead, A., 1995, The Gender Implications of Creating a Training Market: Alleviating or Reinforcing Inequality of Access? In J. Humphreys and J. Rubery, eds., *The Economics of Equal Opportunities*, Manchester: Equal Opportunities Commission.

Firkowska-Mankiewicz, Anna, 1995, Czy Tak Samo Wychowujemy Dzieci? In Anna Titkow and Henryk Domański, eds., *Co To Znaczy Być Kobietą w Polsce*, Warszwa: Polska Academia Nauk, Instytut Filizofii i Socjologii.

Fong M, and Paul, G., 1993, Women's Economic Status in the Restructuring of Eastern Europe. In V.M. Moghadam, ed., *Democratic Reform and the Position of Women in Transitional Economies*, Oxford: Clarendon Press.

Groshen, Erica, 1991, The Structure of the Female/Male Wage Differential, *Journal of Human Resources* 26, pp. 457-472.

Hakim, C., 1996, *Key Issues in Women's Work: Female Heterogeneity and the Polarization of Women's Employment*, London and Atlantic Heights, NJ: Athlone.

Heckman J., 1979, Sample Selection as a Specification Error, *Econometrica* 47, pp. 153-161.

Joshi, Heather, and Pierella Paci, 1998, *Unequal Pay for Women and Men: Evidence from the British Birth Cohort Studies*, Cambridge, Massachusetts: The MIT Press.

Kertesi, G., and Kovai, G., 1986, Real Wages in Eastern Europe, mimeo, Budapest.

Korenman S., and David Neumark, 1991, Does Marriage Really Male Men More Productive, *Journal of Human Resources* 26, pp. 282-307.

Manski, Charles, 1989, Anatomy of the Selection Problem, *Journal of Human Resources* 24, pp. 343-360.

Nakosteen, Robert and Michael Zimmer, 1987, Marital Status and Earnings of Young Men, *Journal of Human Resources* 23, 279-295.

Neumark, David, 1988, Employer's Discriminatory Behavior and the Estimation of Wage Discrimination, *Journal of Human Resources* 23, pp. 279-295.

Nowakowska, Urszula, 2000, Violence Against Women. In *Polish Women in the 90's*, Report, Warsaw: Women's Rights Center.

Nowakowska, Urszula, and Anna Swędrowska, 2000, Women in the Labor Market. In *Polish Women in the 90's*, Report, Warsaw: Women's Rights Center.

Oaxaca Ronald L. and Michael R. Ransom, 1994, On Discrimination and the Decomposition of Wage Differentials, *Journal of Econometrics* 61, pp. 5-21.

Oaxaca, Ronald L., 1973, Male-Female Wage Differentials In Urban Labor Markets, *International Economic Review* 9, pp. 693-709.

OECD, 1998, Employment outlook.

Ogloblin, Constantin, 1999, The Gender Earnings Differential in the Russian Transition Economy, *Industrial and Labor Relations Review*, 52, pp. 602-627.

Oi, Walter Y., 1990, Employment Relations in Dual Labor Markets ("It's Nice Work If You Can Get It"), *Journal of Labor Economics* 8, n1 (Part 2), pp. 124-149.

Pailhe, Ariane, 2000, Gender Discrimination in Central Europe during the Systemic Transition, *Economics of Transition* 8, pp. 505-535.

Paternostro, Stefan, and David E. Sahn, 1999, Wage Determination and Gender Discrimination in a Transition Economy: The Case of Romania. Mimeo.

Paukert L., 1995, Economic Transition and Women's Employment in Four Central European Countries, 1989-1994, Labour Market Papers No. 7, Geneva: ILO.

Reilly Barry, 1999, The Gender Pay Gap in Russia During the Transition, 1992-1996, *Economics of Transition* 7, pp. 245-264.

Reimers, Cordelia W., 1984, Labor Market Discrimination against Hispanic and Black Men. *Review of Economics and Statistics* 65, pp. 570-579.

Rupert, Peter, and Christopher Cornwell, 1997, Unobservable Individual Effects, Marriage and the Earnings of Young Men, *Economic Inquiry* 35, pp. 285-294.

Rutkowski Jan, 1996, High Skills Pay Off: The Changing Wage Structure during Economic Transition in Poland, *Economics of Transition* 4, pp. 89-112.

Siemieńska, Renata, 1998, In Barriers to Reconciling Private and Public Lives, *Conference Proceedings*.

UNICEF, 1999, Women in Transition, The MONEE Project, Regional Monitoring Report, No. 6.

Vella, Frank, 1993, A Simple Estimator for Simultaneous Models with Censored Endogenous Regressors, *International Economic Review* 34, pp. 441-457.

Wehmeyer, W., 1999, The Status of Women's Employment in Poland. In S. Abizadeh and A. Mills, eds, *The Return of Mitteleuropa: Socio-Economic Transition in Post-Communist Central Europe*, Commack, NY: Nova Science Publishers, Inc.

Wóycicka, Joanna, and Andrzej Dominiczak, 2000, Education of Women. In *Polish Women in the 90's*, Report, Warsaw: Women's Rights Center.

Table 1. Different decompositions of the male-female wage differential
(standard errors in parentheses)[a)]

Year	Mean Log Wage Gap	Method 1		Method 2		**Method 3**		Method 4		
		$(X_m-X_f)*\beta_m$	$(\beta_m-\beta_f)*X_f$	$(X_m-X_f)*\beta_f$	$(\beta_m-\beta_f)*X_m$	$\mathbf{(X_m-X_f)*}$ $(\beta_m+\beta_f)/2$	$\mathbf{(\beta_m-\beta_f)*}$ $(X_m+X_f)/2$	$(X_m-X_f)*\beta_p$	$(\beta_m-\beta_p)*X_m$	$(\beta_p-\beta_f)*X_f$
(A)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Specification A. Human capital and personal characteristics										
1993	0.226	0.014	0.213	-0.030	0.256	-0.008	0.234	0.062	0.072	0.092
	(0.007)	(0.006)	(0.009)	(0.005)	(0.010)	(0.005)	(0.009)	(0.003)	(0.002)	(0.003)
1994	0.230	0.018	0.211	-0.023	0.253	-0.003	0.232	0.066	0.071	0.093
	(0.006)	(0.005)	(0.009)	(0.005)	(0.009)	(0.005)	(0.009)	(0.003)	(0.002)	(0.003)
1995	0.220	0.009	0.211	-0.020	0.240	-0.006	0.225	0.060	0.070	0.090
	(0.006)	(0.005)	(0.009)	(0.005)	(0.009)	(0.005)	(0.009)	(0.003)	(0.002)	(0.003)
1996	0.223	-0.001	0.224	-0.025	0.248	-0.013	0.236	0.054	0.075	0.095
	(0.006)	(0.005)	(0.009)	(0.004)	(0.009)	(0.005)	(0.009)	(0.003)	(0.002)	(0.003)
1997	0.218	-0.005	0.223	-0.041	0.259	-0.023	0.241	0.041	0.077	0.100
	(0.007)	(0.005)	(0.009)	(0.004)	(0.009)	(0.005)	(0.009)	(0.003)	(0.002)	(0.003)
Specification B. Specification A plus job characteristics										
1993 [b)]	0.226	0.038	0.188	-0.021	0.247	0.009	0.218	0.091	0.059	0.076
	(0.007)	(0.004)	(0.005)	(0.003)	(0.006)	(0.003)	(0.006)	(0.004)	(0.001)	(0.002)
1994	0.230	0.083	0.147	0.027	0.203	0.055	0.175	0.139	0.039	0.052
	(0.006)	(0.007)	(0.010)	(0.008)	(0.010)	(0.007)	(0.010)	(0.004)	(0.001)	(0.004)
1995	0.220	0.064	0.156	0.036	0.184	0.050	0.170	0.128	0.040	0.052
	(0.006)	(0.007)	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)	(0.004)	(0.001)	(0.002)
1996	0.223	0.061	0.162	0.013	0.210	0.037	0.186	0.119	0.046	0.058
	(0.006)	(0.003)	(0.008)	(0.003)	(0.010)	(0.003)	(0.009)	(0.001)	(0.003)	(0.008)
1997	0.218	0.068	0.150	0.010	0.208	0.039	0.179	0.115	0.044	0.058
	(0.007)	(0.007)	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)	(0.004)	(0.002)	(0.002)

Notes: [a)] The delta method was used to compute approximate standard errors. [b)] Specification B in 1993 does not include occupation, tenure, and firm size.

Table 2. Decomposition of the male-female wage differential, 1993-1997:
Summary, all specifications, method 4 [a)]

Year	1993	1994	1995	1996	1997
Mean log wage gap	0.226	0.230	0.220	0.223	0.218
	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)
WAGE GAP DECOMPOSITION BASED ON SPECIFICATION A					
Explained	0.062	0.066	0.060	0.054	0.041
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Unexplained: male advantage	0.072	0.071	0.070	0.075	0.077
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Unexplained: female disadvantage	0.092	0.093	0.090	0.095	0.100
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Wage gap decomposition based on Specification B					
Explained	0.091	0.139	0.128	0.119	0.115
	(0.004)	(0.004)	(0.004)	(0.001)	(0.004)
Unexplained: male advantage	0.059	0.039	0.040	0.046	0.044
	(0.001)	(0.001)	(0.001)	(0.003)	(0.002)
Unexplained: female disadvantage	0.076	0.052	0.052	0.058	0.058
	(0.002)	(0.004)	(0.002)	(0.008)	(0.002)
Wage gap decomposition based on Specification C					
Explained	0.117	0.161	0.145	0.135	0.137
	(0.007)	(0.011)	(0.010)	(0.009)	(0.007)
Unexplained: male advantage	0.096	0.094	0.072	0.069	0.090
	(0.002)	(0.005)	(0.004)	(0.003)	(0.002)
Unexplained: female disadvantage	0.066	0.033	0.027	0.018	0.036
	(0.002)	(0.007)	(0.008)	(0.008)	(0.002)
Total mean log wage differential adjusted for selection	0.278	0.289	0.244	0.221	0.263
Selection effect $\bar{\lambda}_m \hat{\beta}_{\lambda m} - \bar{\lambda}_f \hat{\beta}_{\lambda f}$	-0.052	-0.059	-0.024	0.002	-0.045
$\hat{\beta}_\lambda$ for men (std.err.)	0.230	0.086	0.139	0.155	0.190
	(0.073)	(0.056)	(0.054)	(0.046)	(0.053)
$\hat{\beta}_\lambda$ for women (std.err)	0.233	0.148	0.125	0.092	0.183
	(0.050)	(0.038)	(0.036)	(0.034)	(0.045)

Notes: [a)] Standard errors in parentheses. The delta method was used to compute standard errors for the wage decomposition coefficients.

Table 3. Decomposition of the male-female wage differential, 1993-1997,
based upon Specification A of the earnings equation (human capital and personal characteristics)

Year	1993			1994			1995			1996			1997		
Components of the male-female wage differential	explained	unexplained		explained	unexplained		explained	unexplained		explained	unexplained		explained	unexplained	
		male advantage	female disadvantage		male advantage	female disadvantage		male advantage	female disadvantage		male advantage	female disadvantage		male advantage	female disadvantage
(A)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Education	-0.017	-0.037	-0.043	-0.022	-0.018	-0.037	-0.020	-0.023	-0.044	-0.022	-0.013	-0.026	-0.028	0.003	-0.011
Potential experience	-0.001	0.032	-0.123	-0.001	0.030	-0.102	-0.001	0.035	-0.101	-0.001	0.056	-0.091	-0.001	0.031	-0.098
Married	0.005	0.010	0.045	0.004	0.018	0.044	0.003	0.024	0.042	0.003	0.008	0.038	0.002	0.005	0.028
Head of household	0.077	-0.064	0.040	0.085	-0.069	0.040	0.081	-0.068	0.034	0.077	-0.061	0.036	0.073	-0.053	0.037
Region/city/rural	-0.001	0.005	-0.004	0.000	0.004	0.000	-0.001	0.033	0.046	-0.004	0.011	0.014	-0.004	-0.029	-0.014
Constant	0.000	0.127	0.178	0.000	0.107	0.149	0.000	0.070	0.113	0.000	0.076	0.124	0.000	0.119	0.159
Total	0.062	0.072	0.092	0.066	0.071	0.093	0.060	0.070	0.090	0.054	0.075	0.095	0.041	0.077	0.100
Additional informat.		Men	Women		Men	Women		Men	Women		Men	Women		Men	Women
N obs.		7554	5911		8501	6440		8555	6690		8220	6488		8249	6320
R^2, percent		32.1	34.5		32.9	33.0		28.7	29.3		34.2	31.7		32.0	33.4

Table 4. Decomposition of the male-female wage differential, 1993-1997,
based upon Specification B of the earnings equation (human capital, personal characteristics, and job characteristics)

Year	1993			1994			1995			1996			1997		
Components of the male-female wage differential	explained	unexplained		explained	unexplained		explained	unexplained		explained	unexplained		explained	unexplained	
		male advan-tage	female dis-advantage		male advan-tage	female dis-advantage		male advan-tage	female dis-advantage		male advan-tage	female dis-advantage		male advan-tage	female dis-advantage
(A)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Education	-0.018	-0.042	-0.036	-0.018	-0.019	-0.012	-0.014	-0.011	0.001	-0.014	-0.011	0.002	-0.023	0.001	0.023
Potential experience	-0.001	0.034	-0.117	-0.001	0.009	-0.068	-0.001	0.013	-0.069	-0.001	0.035	-0.059	-0.001	0.008	-0.078
Married	0.005	0.006	0.044	0.003	0.014	0.033	0.002	0.023	0.032	0.003	0.008	0.027	0.001	0.010	0.023
Head of household	0.069	-0.047	0.036	0.058	-0.035	0.025	0.053	-0.041	0.018	0.053	-0.038	0.021	0.050	-0.030	0.023
Region/city/rural	-0.001	0.006	-0.023	-0.001	-0.014	-0.029	-0.004	0.021	0.024	-0.005	0.012	0.014	-0.005	-0.026	-0.023
Industry	0.038	-0.007	-0.048	0.059	-0.012	0.014	0.061	-0.011	0.002	0.053	-0.014	-0.004	0.065	-0.014	-0.001
Occupation				0.033	-0.005	0.014	0.024	-0.044	-0.024	0.023	-0.014	0.002	0.024	-0.014	-0.014
Sector	0.000	0.000	0.014	0.001	-0.014	-0.004	0.001	-0.015	-0.001	0.002	-0.011	0.001	0.003	-0.007	0.005
Tenure				0.000	0.012	0.004	0.000	0.013	0.000	-0.001	0.008	-0.007	-0.002	0.006	-0.001
Firm size				0.005	0.004	0.008	0.005	0.002	0.010	0.006	0.010	0.021	0.003	-0.003	0.009
Constant	0.000	0.109	0.206	0.000	0.102	0.066	0.000	0.092	0.059	0.000	0.060	0.040	0.000	0.113	0.090
Total	0.091	0.059	0.076	0.139	0.039	0.052	0.128	0.040	0.052	0.119	0.046	0.058	0.115	0.044	0.058
Additional informat.		Men	Women		Men	Women		Men	Women		Men	Women		Men	Women
N obs.		7554	5911		8501	6440		8555	6690		8220	6488		8249	6320
R^2, percent		36.5	38.0		43.1	42.7		38.8	39.3		45.0	41.3		40.8	43.0

Table 5. Decomposition of the male-female wage differential, 1993-1997,
based upon Specification C of the earnings equation (human capital, personal characteristics, job characteristics, and selection effect)

Year	1993			1994			1995			1996			1997		
Components of the male-female wage differential	explained	unexplained		explained	unexplained		explained	unexplained		explained	unexplained		explained	unexplained	
		male advantage	female disadvantage		male advantage	female disadvantage		male advantage	female disadvantage		male advantage	female disadvantage		male advantage	female disadvantage
(A)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Education	-0.021	-0.062	-0.043	-0.021	-0.043	-0.015	-0.018	-0.029	0.002	-0.017	-0.027	0.009	-0.027	-0.025	0.021
Potential experience	-0.006	-0.010	-0.138	-0.004	-0.042	-0.076	-0.003	-0.022	-0.069	-0.003	0.008	-0.042	-0.002	-0.028	-0.086
Married	0.003	0.048	0.066	0.002	0.034	0.044	0.002	0.048	0.040	0.002	0.034	0.031	0.001	0.040	0.035
Head of household	0.104	-0.077	0.052	0.088	-0.068	0.037	0.077	-0.061	0.030	0.073	-0.053	0.033	0.078	-0.055	0.037
Region/city/rural	-0.001	0.015	-0.017	-0.001	-0.009	-0.025	-0.005	0.028	0.025	-0.005	0.018	0.015	-0.005	-0.025	-0.023
Industry	0.037	-0.007	-0.048	0.059	-0.013	0.015	0.060	-0.011	0.002	0.053	-0.014	-0.003	0.064	-0.015	0.001
Occupation				0.034	-0.005	0.016	0.025	-0.043	-0.022	0.024	-0.013	0.002	0.025	-0.013	-0.012
Sector	0.000	-0.001	0.014	0.001	-0.014	-0.004	0.001	-0.015	-0.001	0.002	-0.011	0.001	0.003	-0.007	0.005
Tenure				0.000	0.011	0.005	0.000	0.013	0.001	-0.001	0.009	-0.006	-0.003	0.006	0.000
Firm size				0.005	0.003	0.009	0.006	0.001	0.009	0.006	0.010	0.022	0.003	-0.002	0.010
Constant	0.000	0.189	0.181	0.000	0.239	0.030	0.000	0.164	0.009	0.000	0.108	-0.044	0.000	0.215	0.048
Total	0.117	0.096	0.066	0.161	0.094	0.033	0.145	0.072	0.027	0.135	0.069	0.018	0.137	0.090	0.036
Selection effect [a)]	-0.052			-0.059			-0.024			0.002			-0.045		
Additional informat.		Men	Women		Men	Women		Men	Women		Men	Women		Men	Women
N obs. (earnings eqn.)		7554	5911		8501	6440		8555	6690		8220	6488		8249	6320
N obs. (probit eqn.)		11125	11854		12650	13460		12682	13550		12469	13395		12468	13151
R^2, percent		36.6	38.5		43.1	42.9		38.8	39.5		45.1	41.4		41.0	43.2

Note: [a)] Selection effect was calculated as $\overline{\lambda}_m \hat{\beta}_{\lambda m} - \overline{\lambda}_f \hat{\beta}_{\lambda f}$.

Table 6. Gender wage differentials at various points of the log wage distribution
(standard errors in parentheses)

Year	OLS Mean	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
1993	0.226	0.182	0.193	0.234	0.256	0.255
	(0.007)	(0.003)	(0.005)	(0.003)	(0.015)	(0.009)
1994	0.230	0.163	0.223	0.182	0.255	0.318
	(0.006)	(0.002)	(0.001)	(0.002)	(0.013)	(0.008)
1995	0.220	0.122	0.138	0.223	0.318	0.306
	(0.006)	(0.008)	(0.016)	(0.005)	(0.002)	(0.021)
1996	0.223	0.154	0.134	0.218	0.297	0.305
	(0.006)	(0.004)	(0.003)	(0.020)	(0.005)	(0.014)
1997	0.218	0.127	0.174	0.262	0.256	0.276
	(0.007)	(0.010)	(0.005)	(0.005)	(0.020)	(0.026)

Notes: The numbers in the table are the coefficients on an indicator variable for males from OLS and quantile regressions (at the indicated percentiles) of log earnings on a constant and the dummy variable.

Table 7. Educational distribution in 1993 and 1997

Completed level of education	1993			1997		
	men, %	Women, %	women to men ratio	men, %	women, %	women to men ratio
University	9.8	8.5	0.7	9.1	9.4	0.8
Post-secondary	1.3	6.8	4.0	1.3	6.3	3.7
Secondary vocational	23.4	30.6	1.0	24.6	34.4	1.1
Secondary general	2.8	12.7	3.5	2.8	12.0	3.2
Basic vocational	45.8	24.9	0.4	49.2	25.9	0.4
Elementary	16.7	16.3	0.8	12.9	12.0	0.7
Incomplete elementary	0.2	0.2	0.9	0.0	0.1	1.7
Total	100.0	100.0	0.8	100.0	100.0	0.8
N obs., persons	7554	5911		8249	6320	

Table 8. Occupational distribution and average wages in 1997

Categories	Employment					Wages, zlotys (std.dev)		
	persons		percent		women to men ratio	men	women	women to men ratio
	men	women	men	women				
Top managers	428	252	5.2	4.0	0.6	1255.5 (762.2)	942.8 (470.3)	0.75
Specialists	430	582	5.2	9.2	1.4	1166.2 (733.9)	864.2 (478.3)	0.74
Technicians	940	1418	11.4	22.4	1.5	910.6 (468.0)	637.8 (265.8)	0.70
Office employees	373	1230	4.5	19.5	3.3	670.7 (314.8)	606.2 (228.0)	0.90
Services	394	930	4.8	14.7	2.4	657.8 (299.0)	458.2 (141.1)	0.70
Farmers	113	32	1.4	0.5	0.3	577.6 (284.5)	438.0 (127.4)	0.76
Industrial workers	3354	715	40.7	11.3	0.2	683.9 (361.9)	490.3 (145.8)	0.72
Machinists	1538	239	18.6	3.8	0.2	695.0 (347.6)	588.6 (177.5)	0.85
Manual workers	679	922	8.2	14.6	1.4	535.9 (187.0)	446.6 (110.0)	0.83
Total	8249	6320	100.0	100.0	0.8	751.1 (451.6)	590.8 (288.8)	0.79

Table 9. Industrial distribution and average wages in 1997

Categories	Employment					Wages, zlotys (std.dev)		
	persons		percent		women to men ratio	men	women	women to men ratio
	men	women	men	women				
Agriculture and hunting	367	106	4.4	1.7	0.3	614.3 (303.5)	560.7 (246.8)	0.91
Fishing	14	1	0.2	0.0	0.1	625.2 (195.8)	650.0	1.04
Mining	418	52	5.1	0.8	0.1	1022.8 (443.0)	653.6 (215.8)	0.64
Manufacturing	2809	1666	34.1	26.4	0.6	711.1 (347.8)	572.7 (260.5)	0.81
Energy supply	333	81	4.0	1.3	0.2	892.3 (649.4)	683.8 (225.0)	0.77
Construction	1077	90	13.1	1.4	0.1	680.1 (419.1)	734.5 (404.6)	1.08
Trade	708	939	8.6	14.9	1.3	702.4 (421.2)	539.2 (300.6)	0.77
Hotel	60	150	0.7	2.4	2.5	664.6 (377.8)	482.5 (123.9)	0.73
Transportation	830	394	10.1	6.2	0.5	753.0 (587.9)	626.2 (260.3)	0.83
Finance	115	267	1.4	4.2	2.3	928.8 (643.9)	755.4 (387.8)	0.81
Real estate	212	186	2.6	2.9	0.9	885.4 (642.5)	720.6 (484.9)	0.81
Public administration	637	481	7.7	7.6	0.8	899.9 (458.5)	730.4 (391.5)	0.81
Education	147	446	1.8	7.1	3.0	738.1 (324.9)	545.0 (198.0)	0.74
Health care	217	1202	2.6	19.0	5.5	645.0 (341.9)	545.1 (201.6)	0.85
Social services	239	235	2.9	3.7	1.0	723.4 (576.5)	588.3 (264.9)	0.81
Others	66	24	0.8	0.4	0.4	842.5 (339.7)	628.6 (271.9)	0.75
Total	8249	6320	100.0	100.0	0.8	751.1 (451.6)	590.8 (288.8)	0.79

Chart 1. Different decomposition methods (Specification A)

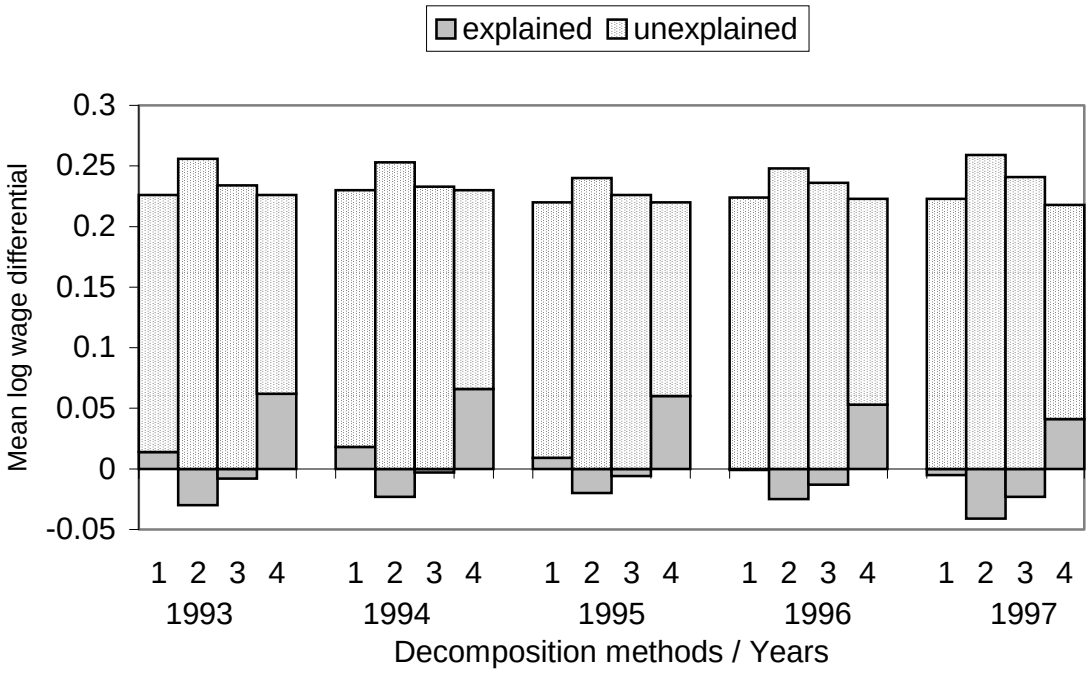

Chart 2. Different decomposition methods (Specification B)

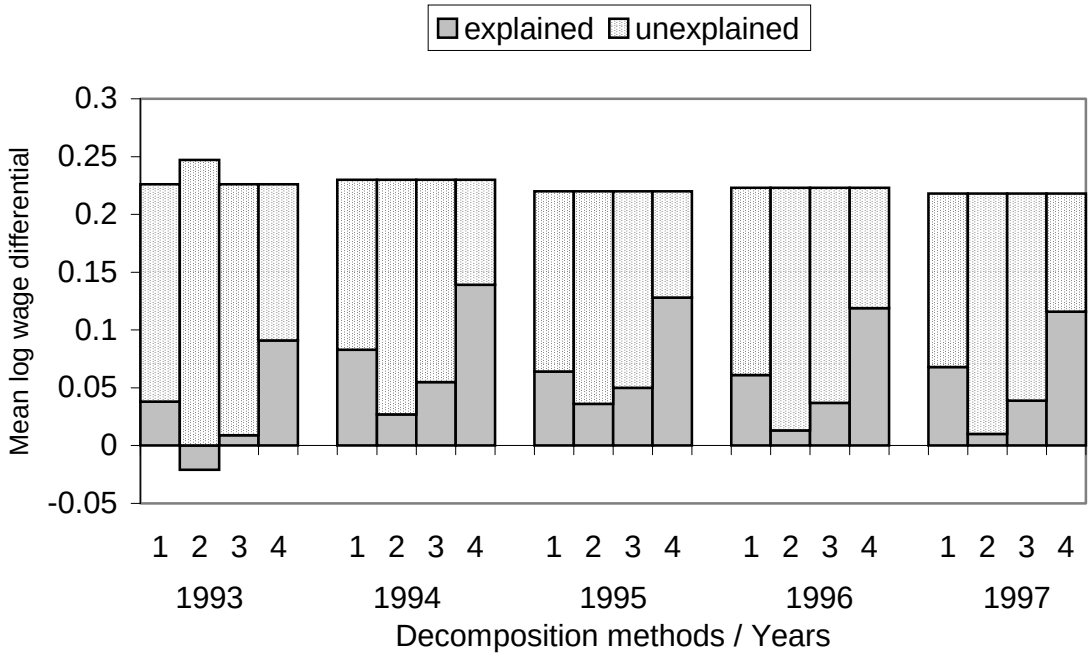

Chart 3. Wage gap decompositions (Method 4, Specifications A, B, and C)

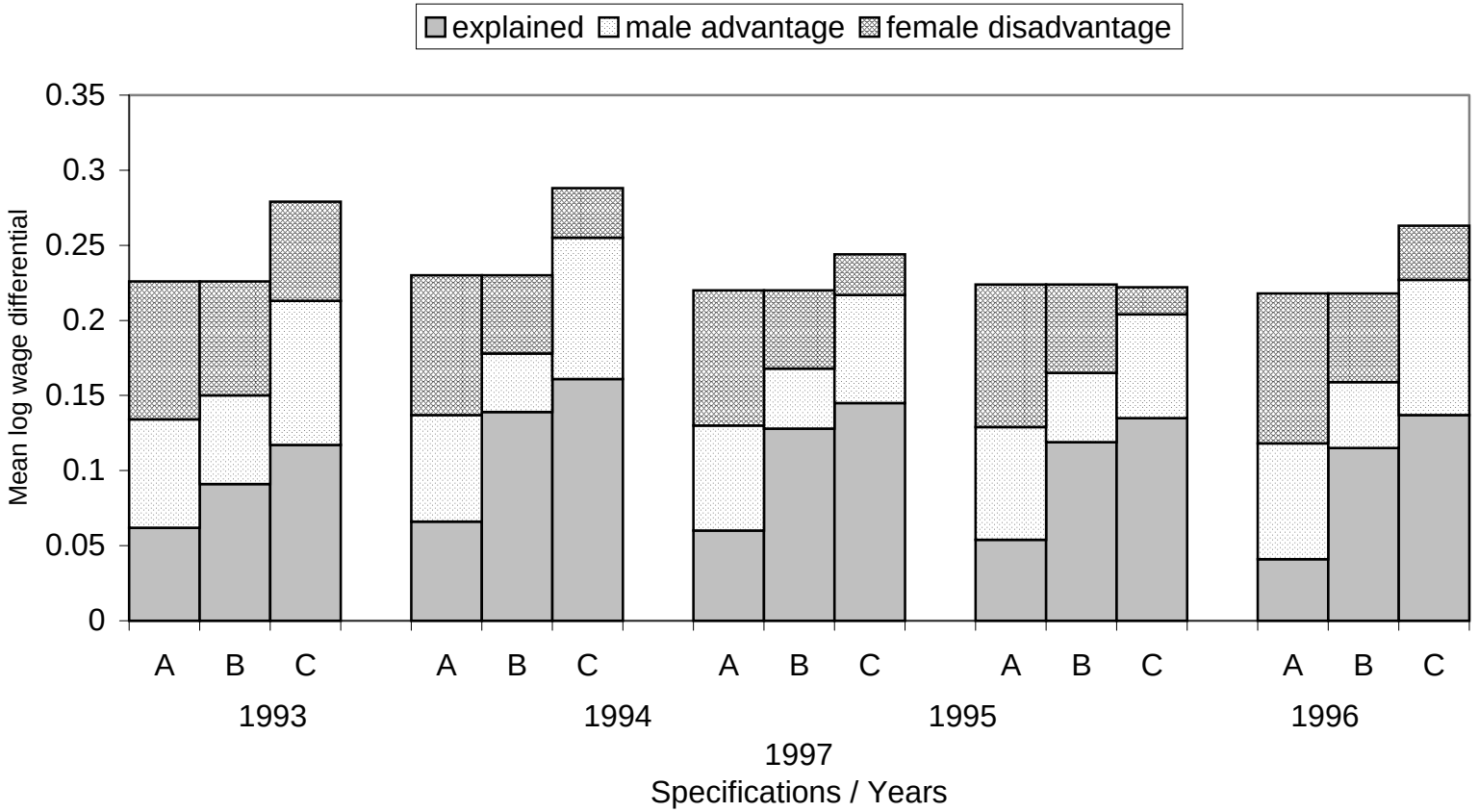

Chart 4. Components of the mean log wage differential in 1997 (Method 4, Specification B)

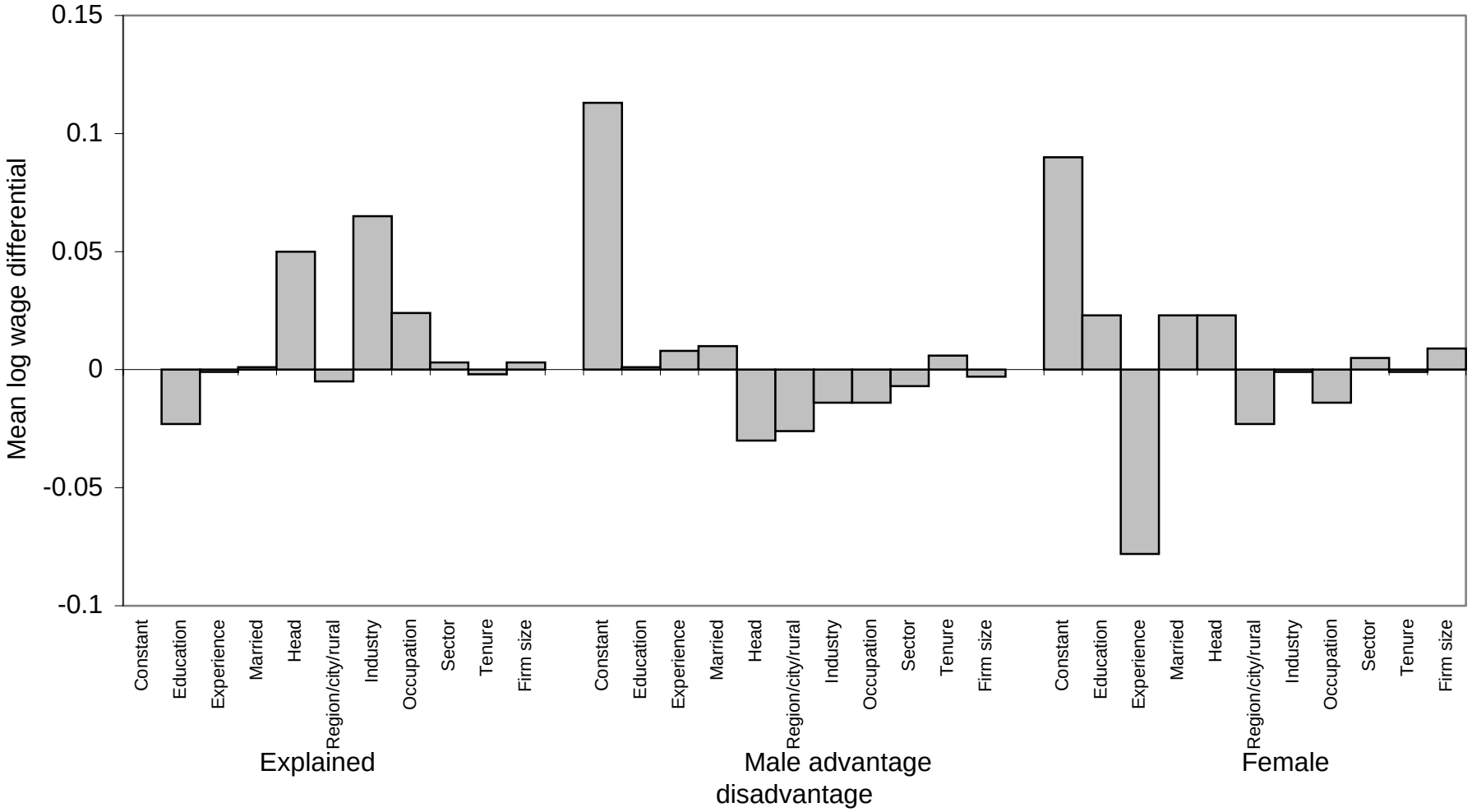

Chart 5. Components of the mean log wage differential in 1997 (Method 4, Specification C)

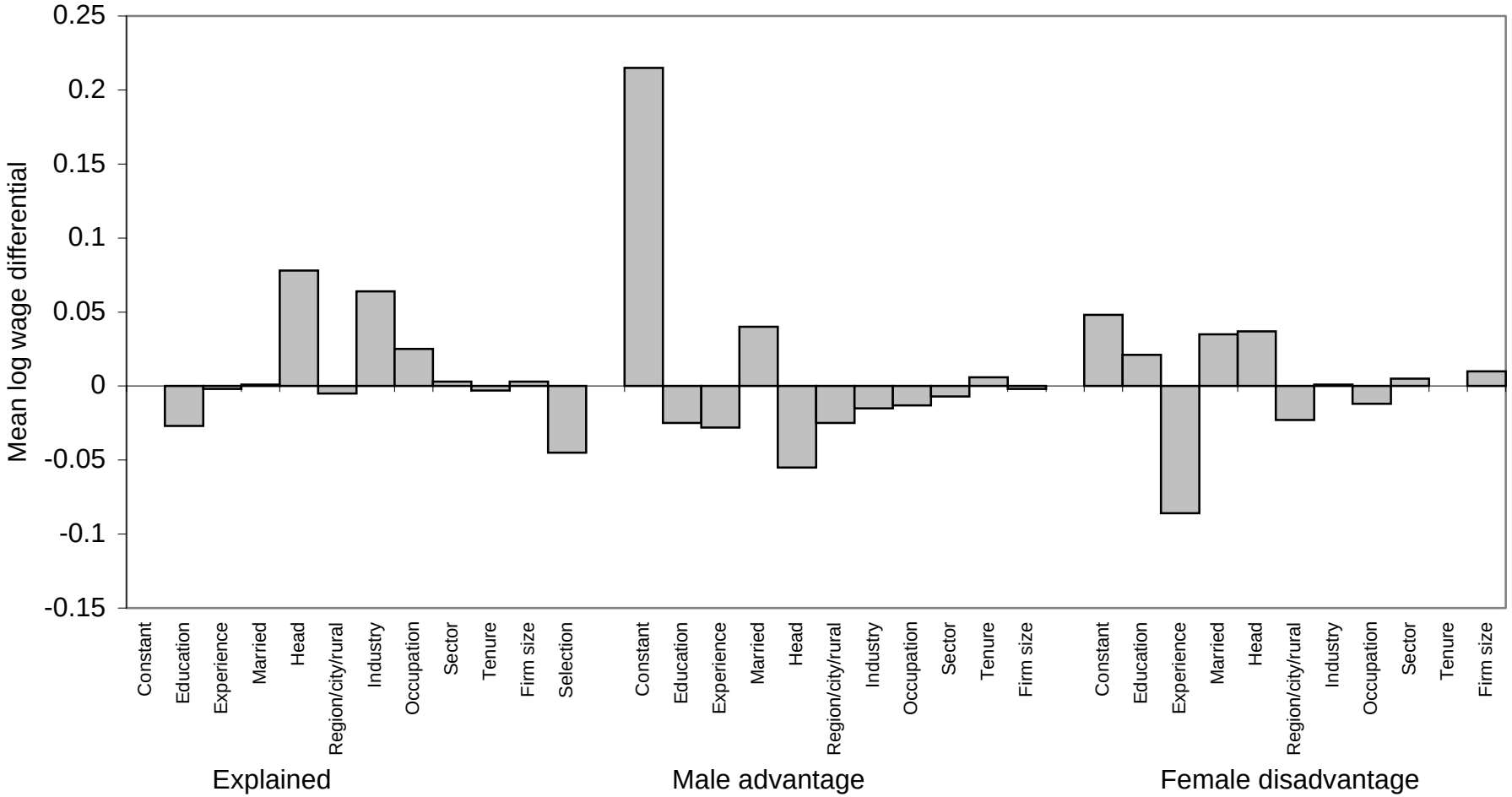

Chart 6. Changes in real log wages between 1993 and 1997

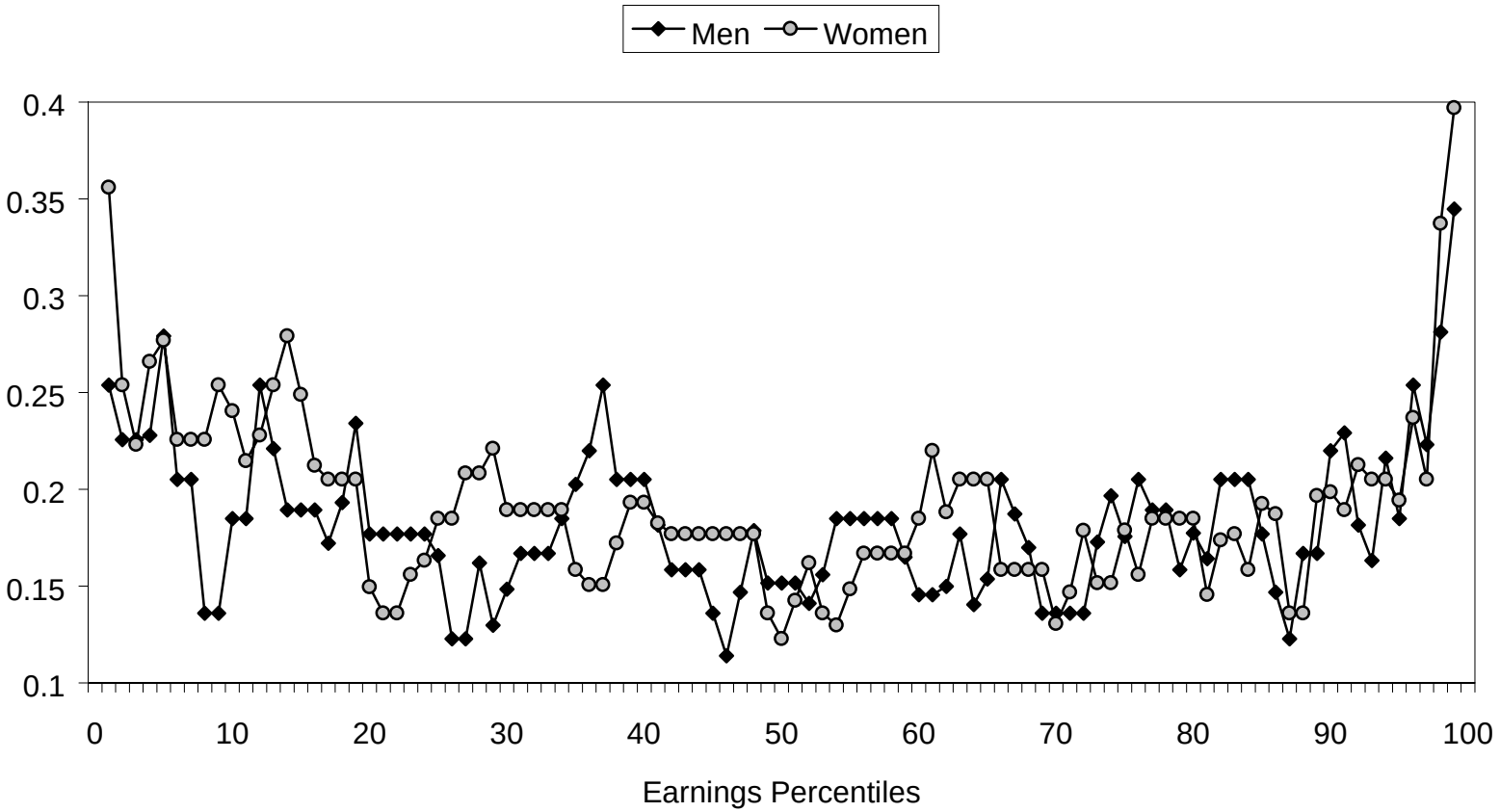

Table A1. Earnings equation estimates for 1997 (Specification B)

Variables	Mean		Men		Women	
	men	women	coeff.	std.err.	coeff.	std.err.
University	0.091	0.094	0.474	(0.024)	0.439	(0.023)
Post-secondary	0.013	0.063	0.266	(0.035)	0.172	(0.022)
Secondary vocational	0.246	0.344	0.178	(0.015)	0.147	(0.016)
Secondary general	0.028	0.120	0.178	(0.025)	0.160	(0.018)
Basic vocational	0.492	0.259	0.086	(0.012)	0.055	(0.014)
Pot. experience, years	20.073	20.267	0.009	(0.002)	0.011	(0.002)
Pot. experience squared	507.877	510.322	0.000	(0.000)	0.000	(0.000)
Married	0.773	0.739	0.051	(0.011)	0.007	(0.009)
Head of household	0.655	0.270	0.084	(0.010)	0.045	(0.009)
48 regional dummies			Yes		Yes	
City (>100,000 resid.)	0.275	0.319	0.034	(0.028)	0.057	(0.027)
City (50,000-100,000)	0.113	0.114	-0.005	(0.029)	-0.008	(0.028)
City (20,000-50,000)	0.124	0.134	-0.014	(0.029)	-0.018	(0.028)
City (10,000-20,000)	0.080	0.087	-0.033	(0.030)	-0.010	(0.029)
City (5,000-10,000)	0.038	0.044	-0.052	(0.033)	0.001	(0.031)
Rural	0.352	0.281	-0.033	(0.027)	-0.015	(0.027)
Agriculture, hunting	0.044	0.017	-0.098	(0.021)	-0.037	(0.034)
Fishing	0.002	0.000	-0.015	(0.091)	0.079	(0.283)
Mining	0.051	0.008	0.288	(0.020)	0.090	(0.041)
Energy supply	0.040	0.013	0.163	(0.019)	0.109	(0.033)
Construction	0.131	0.014	0.025	(0.012)	0.050	(0.031)
Trade	0.086	0.149	-0.013	(0.015)	-0.049	(0.016)
Hotel and restaurants	0.007	0.024	-0.047	(0.044)	-0.038	(0.026)
Transportation	0.101	0.062	0.010	(0.014)	0.011	(0.018)
Financial intermediary	0.014	0.042	0.019	(0.032)	0.087	(0.020)
Real estate	0.026	0.029	0.000	(0.024)	-0.024	(0.023)
Public administration	0.077	0.076	0.064	(0.017)	0.047	(0.017)
Education	0.018	0.071	-0.218	(0.029)	-0.136	(0.018)
Health care	0.026	0.190	-0.183	(0.024)	-0.126	(0.014)
Social welfare	0.029	0.037	-0.026	(0.023)	-0.067	(0.021)
Top manager	0.052	0.040	0.370	(0.024)	0.395	(0.023)
Specialist	0.052	0.092	0.227	(0.028)	0.267	(0.021)
Technician	0.114	0.224	0.221	(0.019)	0.212	(0.016)
Office clerk	0.045	0.195	0.056	(0.022)	0.136	(0.015)
Services	0.048	0.147	0.085	(0.022)	0.044	(0.016)
Farmer	0.014	0.005	0.111	(0.038)	-0.034	(0.059)
Industrial worker	0.407	0.113	0.094	(0.014)	0.034	(0.016)
Machinist	0.186	0.038	0.134	(0.016)	0.170	(0.022)
Public sector	0.538	0.616	-0.051	(0.010)	-0.047	(0.011)
Tenure at the current workplace, years	9.716	10.426	0.004	(0.001)	0.006	(0.001)
Tenure squared	187.602	194.211	0.000	(0.000)	0.000	(0.000)
Firm size (6-20 empl.)	0.176	0.172	0.013	(0.014)	0.044	(0.014)
Firm size (21-50)	0.145	0.166	0.058	(0.015)	0.085	(0.014)
Firm size (50-100)	0.111	0.117	0.050	(0.016)	0.077	(0.016)
Firm size (>100)	0.458	0.417	0.134	(0.014)	0.089	(0.014)
Constant			6.172	(0.038)	5.968	(0.038)
N obs.			8249		6320	
R^2, percent			40.8		43.0	

Table A2. Decomposition of the male-female wage differential, 1994-1996, based upon Specification A-1 of the earnings equation (human capital and personal characteristics, actual experience substituted for potential experience)

Year	1994			1995			1996		
Components of the male-female wage differential	explained	unexplained		explained	unexplained		explained	unexplained	
		male advan-tage	female dis-advan-tage		male advan-tage	female dis-advan-tage		male advan-tage	female dis-advan-tage
(A)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Education	-0.021	-0.019	-0.012	-0.020	-0.024	-0.016	-0.022	-0.014	0.001
Actual experience	0.004	0.011	-0.062	0.004	0.015	-0.062	0.004	0.023	-0.067
Married	0.003	0.019	0.033	0.002	0.026	0.033	0.003	0.012	0.031
Head of household	0.081	-0.064	0.037	0.076	-0.063	0.032	0.073	-0.056	0.034
Region/city/rural	0.001	0.004	0.004	-0.001	0.032	0.047	-0.003	0.008	0.016
Constant	0.000	0.118	0.091	0.000	0.084	0.056	0.000	0.102	0.079
Total	0.068	0.070	0.092	0.061	0.070	0.089	0.055	0.074	0.094
Additional information		Men	Women		Men	Women		Men	Women
N obs.		8501	6440		8555	6690		8220	6488
R^2, percent		32.9	33.8		28.8	30.4		34.3	33.1
Mean potential experience, years (std.dev.)		20.3 (10.0)	20.2 (9.6)		20.2 (10.1)	20.4 (9.8)		20.3 (10.2)	20.6 (9.8)
Mean actual experience, years (std.dev.)		18.1 (9.9)	16.7 (9.1)		18.1 (10.2)	16.9 (9.3)		18.2 (10.2)	17.1 (9.4)

Table A3. Ordered probit estimates for 1997

Variables	Mean		Men		Women	
	men	women	coeff.	std.err.	coeff.	std.err.
Constant			-3.255	(0.233)	-5.382	(0.225)
Age, years	38.560	37.903	0.243	(0.011)	0.309	(0.011)
Age squared	1624.060	1549.930	-0.003	(0.000)	-0.004	(0.000)
Married	0.727	0.752	0.271	(0.034)	-0.385	(0.031)
Head of household	0.602	0.223	0.490	(0.032)	0.229	(0.032)
University	0.093	0.104	0.930	(0.058)	1.265	(0.051)
Post-secondary	0.014	0.058	0.380	(0.116)	0.868	(0.056)
Secondary vocational	0.226	0.280	0.416	(0.041)	0.626	(0.034)
Secondary general	0.031	0.109	0.250	(0.071)	0.502	(0.042)
Basic vocational	0.464	0.274	0.307	(0.035)	0.294	(0.033)
City (>100,000 resid.)	0.271	0.297	0.128	(0.033)	0.025	(0.027)
Rural	0.353	0.320	0.040	(0.030)	-0.087	(0.027)
North	0.104	0.106	-0.170	(0.054)	-0.098	(0.046)
North-east	0.055	0.056	-0.269	(0.065)	-0.018	(0.059)
South	0.196	0.194	-0.047	(0.048)	-0.076	(0.041)
Central	0.084	0.085	-0.083	(0.058)	0.012	(0.049)
South-west	0.115	0.117	-0.157	(0.052)	-0.045	(0.045)
South-east	0.151	0.135	-0.093	(0.049)	0.119	(0.045)
Central-west	0.147	0.151	-0.060	(0.051)	0.005	(0.043)
Central-east	0.041	0.043	-0.292	(0.069)	0.041	(0.061)
Regime	0.190	0.199	0.365	(0.063)	0.581	(0.050)
Mu(1)			0.576	(0.015)	0.412	(0.009)
Mu(2)			0.689	(0.016)	0.524	(0.010)
N observations			12468		13151	