

DIFFERENCES IN MEN'S AND WOMEN'S WAGES IN THE EDUCATION SECTOR IN THE BALTIC SEA REGION STATES

Aleksandra Matuszewska-Janica, Ph.D.

Warsaw University of Life Sciences – SGGW
Faculty of Applied Informatics and Mathematics
Department of Econometrics and Statistics
Nowoursynowska 159, 02-766 Warszawa
e-mail: aleksandra_matuszewska@sggw.pl

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Abstract

In the presented study, we analyse the men and women wage differences in the education sector and in the group of people employed as professional teachers in the Baltic Sea Region countries. For the analysis, we have applied one-equation econometric models and the Oaxaca-Blinder decomposition technique in the expansion proposed by Oaxaca and Ransom. The data are taken from the EU Structure of Earnings Survey of 2014. The obtained results show that the men and women wage gap for the analysed groups varies considerably among the analysed countries. We can also note that the GPG ratios in the education sector are usually lower than those at a national level. In addition, we can remark that in the states where remuneration systems are more transparent (Germany, Sweden), the level of explanation of 'raw' wage gaps is much higher than in other countries.

Keywords: labour market, education sector, men and women wages differences, Oaxaca-Blinder decomposition

JEL classification: J31, C20

Introduction

Eurostat's statistics show that in the European Union (28 states, EU28), women earned 16.3% less than men in 2014 based on average hourly earnings. Many researchers have pointed out that the men and women wage gap (GPG – Gender Pay Gap) is influenced by many factors. The substantial variety of such factors has caused the GPG rate to be characterised, among others, by a considerable diversity in relation to the region or to the enterprises' economic activity (see e.g. Arulampalam, Booth, Bryan, 2007; Majchrowska, Strawinski, 2016; Barón, Cobb-Clark, 2008, Matuszewska-Janica, Hozer-Koćmiel, 2015). As a result of these studies, two questions arise: (1) whether in the groups of workers who are homogeneous to some extent such disparities may be smaller, and (2) whether the degree of the explanation of these disparities can be greater in this situation? One of the sectors that offers quite a homogeneous range of services which require similar qualifications is education.

In the presented study, we have examined the differences between the wages of men and women working in the education sector in the Baltic Sea Region (BSR) states. Additional analyses were carried out for the specified employees of this sector employed as teaching professionals. In Poland, for instance, most of the institutions from this sector remain under public control (they operate under the Act on the Education System). As a result, there are regulated wages (see e.g. Teacher's Charter). Therefore, we are expecting a smaller gender wage gap, especially in the group of teaching professionals. These BSR states are a specific macroregion of the EU for which separate strategies and financial support programs are developed (e.g. the EU Strategy for the Baltic Sea Region, the Baltic Sea Region Program). In turn, Germany as well as the Scandinavian countries are the economic leaders of the region, and a global benchmark in the policy of equality (see e.g. Hozer-Koćmiel, 2007).

One-equation econometric models and the Oaxaca-Blinder decomposition method are used as the analytical tools. The data used in the analysis are individual data from the Eurostat's Structure of Earnings Survey (SES) conducted in 2014.

1. Men and women wage disparities

There is a broad discussion in the literature on the position of women in the labour market (see e.g. Meulders, Plasman, Stricht, 1993; Tzannatos, 1999; Blau, Ferber, Winkler, 2010, Blau 2012; Kotowska, Sztanderska, Wóycicka, 2007; Kotowska, 2009). Two main research fields relevant to women's situation in the labour market refer to the women's economic activity as well as to the men and women wage differences. Numerous analyses show that the

women's economic activity as well as the men and women wage differences are closely related. Researchers have tried to explain the obtained regularity (in both fields) basing mainly on three theories: (1) human capital theory (see Schultz, 1961, 1971; Becker, 1962, 1964; Mincer, 1974), (2) discrimination theory (see Becker, 1957), and (3) preferences theory (see Charles, Grusky, 2004; Hakim, 2004, 2006; Jacobs, Gerson, 2004).¹

Studies that are presented in the literature point to several specific characteristics of women's activity in the labour market. Firstly, women are more likely to work in the public sector (see e.g. Barón, Cobb-Clark, 2008; Anghel, Rica, Dolado, 2011). Secondly, women are more likely to undertake part-time work (see e.g. Cooke, Gash, 2010; Bardasi, Gornick, 2000; Elias, 1990). Thirdly, women are more likely than men to work in certain positions, such as e.g. officials, office workers, service workers, and in specific economic sectors, such as education, health, and social services (see e.g. np. Banerjee, 2014). It is necessary to mention that the last problem is connected with the issue of feminisation – women's overrepresentation in certain group of employees (Anker, 1998; England, Allison, Wu, 2007; Perales, 2010).

There are many factors that affect women's economic activity. They mostly result in men and women being very diverse groups in the labour market. This, in turn, results in that the pay gap may be caused largely due to the differences in the characteristics of these groups. Those factors can be divided into three groups:

1. Individual characteristics of an employee (age, sex, job seniority, the type and level of education, occupation, full- or part-time job, type of job contract, family, social and economic status, preferences).
2. Enterprise characteristics (type of industry, public or private sector, size of the enterprise, activity of the trade unions).
3. Characteristics of the environment (economic situation in the region or in the country, structure of the labour market, family policy).

As a consequence, it is necessary to divide the 'raw' wage gap into explained as well as unexplained parts of the gap. The most popular method is the Oaxaca-Blinder decomposition (Oaxaca, 1973; Blinder, 1973) and its expansions (see e.g. Reimers, 1983; Cotton, 1988; Neumark, 1988; Oaxaca, Ransom, 1994). This method was applied for the Polish data in the study presented in Śliwicki and Ryczkowski (2014). Other decomposition methods have also been reported, among others, by Ńopo (2008) or Fortin, Lemieux and Firpo (2011).

¹ Theories related to compensation have been presented in a synthetic manner at work Kryńska, Kopycińska (2015).

2. Characteristics of the education sector

According to the statistical classification of economic activities in the European Community (NACE rev. 2), Eurostat distinguishes 21 sectors, and education is one of them. The education sector includes the following divisions: (85.1) Pre-primary education, (85.2) Primary education, (85.3) Secondary education, (85.4) Higher education, (85.5) Other education, and (85.6) Educational support activities. The role of the education sector in the economy cannot be overestimated. Above all, this sector contributes to the formation of human capital (see e.g. Shultz, 1971; Ashton, Green, 1996; Hanushek, Wößmann, 2007).

A large proportion of the working population finds employment in the education sector. In EU28, it is 8.7% in respect to the Labour Force Survey (LFS), and almost 11% in respect to the Structure of Earnings Survey (SES) (see Table 1). It should be noted that both the LFS and the SES differ considerably from one another. From the point of view of the present study, there are two significant differences. The first difference is the subject of the survey. In the LFS, the subjects are households, while in the SES, they are enterprises. The second difference is that the SES refers to people employed in the enterprises with at least 10 employees, whereas the LFS does not have such a limitation.

Employment in education is much higher in some countries. In Latvia, for instance, almost 20% of employees work in this sector according to the SES data (see Table 1). It is worth noting that a large part of the workforce is employed as professionals. In the analysed countries, in 2014, anywhere from 20% to more than 30% of the professionals employed at a national level, work in the education sector. The main workforce in education is made up of teaching professionals. According to the ISCO-08 classification (See *International Standard Classification of Occupations...* 2012), they are classified in the sub-major group no. 23 (this is a part of the major group no. 2 – Professionals). This group includes the following minor groups: (231) university and higher education teachers, (232) vocational education teachers, (233) secondary education teachers, (234) primary school and early childhood teachers, and (235) other teaching professionals.

Education is a highly feminised sector. In EU28, more than 70% of employees are women. Among the analysed states, the highest proportions of women in the education workforce are noted in Estonia and Latvia (more than 80%). Several reasons for such a situation are mentioned in the literature. Firstly, it is often associated with the choice of the education path. Secondly, many job positions in the education sector can be attractive for women due to flexible working

time. In turn, this helps them to reconcile their family life as well as their working life (see Firlit-Fesnak, 2008).

Table 1. Employment and wages in education section in 2014 – selected characteristics (%)

Region/State*	Employment in education – total		Employment in education – professionals	Participation of women in employment in the education sector	
	SES	LFS		SES	LFS
EU28	10.9	8.7	26.1	70.1	71.5
Poland	14.2	9.7	28.1	77.2	78.5
Germany	7.7	7.2	21.3	69.8	70.0
Estonia	15.1	9.9	31.0	80.3	82.5
Lithuania	15.2	11.5	26.5	76.2	79.3
Latvia	19.9	11.2	30.0	82.6	81.3
Finland	9.3	8.1	22.9	68.0	67.8
Sweden	11.3	12.3	27.9	72.6	72.5

* Formally, in the EU-BSR states, Denmark is also included. However, due to the lack of appropriate data, it was omitted in our study.

Source: author's own calculation based on Eurostat's data.

3. Data and methodology

We have conducted the study based on the EU Structure of Earnings Survey (SES) individual data (microdata) of 2014. The statistics of the SES refer to the enterprises with at least 10 employees. It is necessary to mention that the information included in the SES databases is pulled from the enterprises' registers. The presented analysis is divided into two stages. In the first step, the parameters of linear econometric models are estimated using the generalised least squares method with heteroskedasticity correction. In the second step, we decompose the wage gap by applying the Oaxaca-Blinder method (see Oaxaca, 1973; Blinder, 1973) in the expansion proposed by Oaxaca and Ransom (1994). The study includes seven countries belonging to both the BSR group and the EU: Poland, Germany, Estonia, Lithuania, Latvia, Finland, and Sweden. We analyse two types of samples, as previously mentioned. The individuals working in the education sector are included in the first sample type (Edu). The second sample type, in turn, consists of the individuals employed as teaching professionals in the reference sector (Nau). Based on each of the samples, we estimate the parameters of the three types of models: with information on all individuals (model type p , see formula 1), with information only on female individuals (model type f , see formula 2), and with information only on male individuals (model

type m , see formula 3). The explanatory variables used in the models are listed in Table 2. The equations used in the presented analysis are as follows:

$$\ln W_{pi} = \beta_{p0} + \sum_{j=1}^k \beta_{jp} X_{jpi} + \gamma_p \ln Y_{pi} + \varepsilon_{pi} \quad (1)$$

$$\ln W_{fi} = \beta_{f0} + \sum_{j=1}^k \beta_{jf} X_{jfi} + \gamma_f \ln Y_{fi} + \varepsilon_{fi} \quad (2)$$

$$\ln W_{mi} = \beta_{m0} + \sum_{j=1}^k \beta_{mj} X_{jmi} + \gamma_m \ln Y_{mi} + \varepsilon_{mi} \quad (3)$$

where:

- W_{si} – gross wages per hour of i -th employee from s -th sample ($s = p, f, m$);
- X_{jsi} – j -th dummy explanatory variable for i -th employee from s -th sample;
- Y_{si} – quantitative explanatory variable for i -th employee from s -th sample.

The wage difference decomposition formula is as follows:

$$\ln \widehat{W}_m - \ln \widehat{W}_f = (\overline{X}_m - \overline{X}_f)^2 \hat{\beta}^* + \overline{X}_m^T (\hat{\beta}_m - \hat{\beta}^*) + \overline{X}_f^T (\hat{\beta}^* - \hat{\beta}_f) \quad (4)$$

where:

- $(\overline{X}_m - \overline{X}_f)^2 \hat{\beta}^*$ – ‘quantity effect’ – a component explained by the differences in employee group characteristics (men and women),
- $\overline{X}_m^T (\hat{\beta}_m - \hat{\beta}^*) + \overline{X}_f^T (\hat{\beta}^* - \hat{\beta}_f)$ – unexplained component; called the adjusted wage gap,
- $\overline{X}_m^T (\hat{\beta}_m - \hat{\beta}^*)$ – a bonus for belonging to a privileged group (‘positive discrimination’ of a privileged group),
- $\overline{X}_f^T (\hat{\beta}^* - \hat{\beta}_f)$ – a loss for belonging to a non-privileged group (‘negative discrimination’ of a non-privileged group),
- $\hat{\beta}^* = \hat{\beta}_p$ – a ‘non-discriminatory’ coefficient vector, estimated coefficients from regression 1 (see Neumark, 1988),
- $\hat{\beta}_f, \hat{\beta}_m$ – vectors of parameters are estimated based on (2) and (3) regression, respectively,
- $\ln \widehat{W}_f$ – average wages of women – an arithmetic mean of the theoretical values from the model (2),
- $\ln \widehat{W}_m$ – average wages of men – an arithmetic mean of the theoretical values from the model (3),

$\ln \widehat{W}_m - \ln \widehat{W}_f$ – an unadjusted men and women wage gap, called the ‘raw’ wage gap (GPG),

m – males – privileged group,

f – females – non-privileged group.

Table 2. List of explanatory variables

Sample		Variables (group of variables)	Variants	Reference variant
Edu	Nau			
v	v	Sex*	2	female
v	x	Occupation (major groups ISCO-08)	6	groups 6–9 (skilled manual workers and elementary occupations)
v	v	Size of the enterprise	3/2	10–49 employees
v	v	Collective pay agreement	3	no collective agreement exists
v	v	Form of economic and financial control of the enterprise	2	private control (private ownership is more than 50%)
v	v	Age group	5	aged 20–29
v	v	Highest educational level attained	3	Secondary education or basic education
v	v	Contractual working time (full-time or part-time)	2	full-time employees
v	v	Type of employment contract	3	indefinite duration
v	v	Length of service in the enterprise (in years)	x	quantity variable

* Only in the models estimated on the whole sample (p).

Source: author's own calculation.

4. Results

The estimated GPG ratios for the education sector (NACE rev. 2) and the results of their decomposition are presented in Table 3. The GPG ratios are greater than zero for all analysed states. This means that in these groups of employees, women earned on average less than men. The smallest differences in men's and women's wages in the education sector are in Poland (4.9%), Latvia (5%), and Lithuania (6.2%). In turn, the biggest differences occurred in Germany (23.9%). As was mentioned earlier, it is more important to explain the gap by the differences in the characteristics of the employee groups. This is shown in columns 2 and 3 of Table 3.

The differences in the employee characteristics included in the models (see Table 2) have allowed to explain the gap in Germany to the greatest extent (16.9 p.p. from 23.9%, which means that more than 70% of the ‘raw’ gap was explained). A large part of the gap has also been explained in Sweden (4.8 p.p. from 8.7%, more than 55% of the ‘raw’ gap). For the other

states, the effect is rather small. This means that the gap in those countries could be explained by a number of other features that could not be included in the model. An interesting situation occurred for Lithuania and Latvia. The values of the explained component have negative signs. This means that, taking into account current differences in the characteristics of both men and women, in the educational sector, women should on average earn 2.8% and 6.5% more than men in Latvia and Lithuania, respectively. It is worth mentioning that, in all the cases, the value of the unexplained component largely depends on the 'bonus' for belonging to a privileged group. Thus, it can be assumed that the features which were not included in the models are better assessed in the male group (privileged group).

Table 3. GPG ratios in the education sector and the results of the decomposition (%)

Country	GPG (2 + 6)	Quantity effect	Explained part of GPG (2/1) × 100%	Unexplained part (5 + 6)	Privileged group – 'bonus'	Non-privileged group – 'loss'
	1	2	3	4	5	6
Poland	4.9	1.0	20	3.9	4.0	–0.1
Germany	23.9	16.9	71	7.0	6.5	0.5
Estonia	16.3	3.9	24	12.5	12.3	0.2
Lithuania	6.2	–2.8	---	9.0	9.1	–0.1
Latvia	5.0	–6.5	---	11.5	11.7	–0.2
Finland	15.8	5.0	32	10.7	10.5	0.2
Sweden	8.7	4.8	55	3.9	3.9	0.0

Source: author's own calculation.

The estimated wage gaps for teaching professionals and their decomposition are presented in Table 4. For Poland, the wage gap ratio has a negative sign. This means that in the analysed group of employees, women earned on average 2.3% more. But the explained component (which represents the quantity effect) indicates that women should on average earn 6.7% more. Thus, the adjusted wage gap is in fact 4.4%. The largest pay gap for teaching professionals is in Germany, as in the whole education sector – 10.3 p.p. from 19.1% is the quantity effect. Therefore, the differences in the characteristics of the two groups explain more than 50% of the 'raw' gap. In Sweden, the explained part of the GPG is also quite high – 43%. Hence, we can conclude that in the countries where remuneration systems are more transparent, we can expect a greater degree of explanation of the wage gap. In Finland and the Baltic countries, the wage gap is at a medium level in comparison with other countries. The quantity effect in Estonia and Latvia is positive, but for Lithuania and Finland, it is negative. In turn, by analysing the unexplained part, we see that it is smallest in Poland and Sweden – 5% or less. In other countries, it ranges from 8.5% to about 11%, which is quite significant.

Table 4. GPG ratios for teaching the education sector and the results of the decomposition (%)

Country	GPG (2 + 6)	Quantity effect	Explained part of GPG (2/1) × 100%	Unexplained part (5 + 6)	Privileged group – ‘bonus’	Non-privileged group – ‘loss’
	1	2	3	4	5	6
Poland	−2.3	−6.7	---	4.4	4.1	0.3
Germany	19.1	10.3	54	8.8	4.5	4.3
Estonia	11.7	3.2	27	8.5	7.3	1.2
Lithuania	7.8	−2.9	---	10.7	10.1	0.5
Latvia	10.5	1.6	15	8.9	8.8	0.1
Finland	9.7	−1.2	---	10.9	10.7	0.2
Sweden	8.9	3.8	43	5.0	4.9	0.1

Source: author's own calculation.

Conclusions

The presented results show that both unadjusted and adjusted gender wage gap ratios vary considerably among the analysed regions. We should also note that the estimated GPG ratios for the education sector are usually lower than those at a national level (see Table A1 in the appendix). The lowest values of ‘raw’ GPG ratios were obtained for Poland. In turn, the highest ones were obtained for Germany. However, in the case of Germany, we manage to explain the size of the unadjusted wage gap to a large extent using the analysed set of variables. A large part of the wage difference has also been explained in the case of Sweden. This leads to the conclusion that in the countries where remuneration systems are more transparent, we can expect that the genuine value gap will be much smaller than the ‘raw’ one.

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Appendix

Table A1. Eurostat's unadjusted GPG in BSR states (%)

Poland	Germany	Estonia	Lithuania	Latvia	Finland	Sweden
7.7	22.3	28.1	13.3	17.3	18.4	13.8

Source: Eurostat.

References

- Anghel, B., De La Rica, S., Dolado, J.J. (2011). The effect of public sector employment on women's labour market outcomes. World Bank – Centre for Economic Policy Research, Discussion Paper, no. 8468.
- Anker, R. (1998). *Gender and Jobs: Sex Segregation of Occupations in the World*. Geneva: International Labor Office.
- Arulampalam, W., Booth, A.L., Bryan, M.L. (2007). Is there a glass ceiling over Europe? Exploring the gender pay gap across the wage distribution. *ILR Review*, 60 (2), 163–186. DOI: 10.1177/001979390706000201.
- Ashton, D.N., Green, F. (1996). *Education, training and the global economy*. Cheltenham: Edward Elgar.
- Banerjee, B. (2014). Occupational segregation and gender differentials in earnings in Macedonia. *IZA Journal of European Labor Studies*, 3 (1), 4. DOI: 10.1186/2193-9012-3-4.
- Bardasi, E., Gornick, J.C. (2000). Women and part-time employment: Workers' choices' and wage penalties in five industrialized countries (No. 223). LIS Working Paper Series.
- Barón, J.D., Cobb-Clark, D.A. (2010). Occupational segregation and the gender wage gap in private- and public-sector employment: a distributional analysis. *Economic Record*, 86 (273), 227–246. DOI: 10.1111/j.1475-4932.2009.00600.x.
- Becker, G.S. (1964). *Human Capital: A Theoretical and Empirical Analysis* (1993 edition), Chicago: The University of Chicago Press.
- Becker, G.S. (1957). *The economics of discrimination*. Chicago: The University of Chicago Press.
- Becker, G.S. (1962). Investment in human capital: A theoretical analysis. *Journal of Political Economy*, 70 (5/2), 9–49. DOI: 10.1086/258724.
- Blau, F.D. (2012). *Gender, Inequality, and Wages*. Eds. A.C. Gielen, K.F. Zimmermann, Oxford: Oxford University Press.
- Blau, F.D., Ferber, M.A., Winkler, A.E. (2010). *The economics of women, men and work*. 6th edition. Upper Saddle River – New Jersey: Pearson – Prentice Hall.
- Blinder, A. (1973). Wage Discrimination: Reduced Form and Structural Estimates. *The Journal of Human Resources*, VII (4), 436–55. DOI: 10.2307/144855.
- Charles, M., Grusky, D.B. (2004). *Occupational Ghettos: the Worldwide Segregation of Women and Men*. Stanford, CA: Stanford University Press.
- Cooke, L.P., Gash, V. (2010). Wives' part-time employment and marital stability in Great Britain, West Germany and the United States. *Sociology*, 44 (6), 1091–1108. DOI: 10.1177/0038038510381605.

- Cotton, J. (1988). On the decomposition of wage differentials. *The Review of Economics and Statistics*, 70 (2), 236–243. DOI: 10.2307/1928307.
- Elias, P. (1990). Part-time work and part-time workers: keeping women in or out. Keeping Woman In, Policy Studies Institute, London. In: S. McRae (ed.), *Keeping Women in: Strategies to Facilitate the Continuing Employment of Women in Higher Occupations* (pp. 67–81). London: Policy Studies Institute.
- England, P., Allison, P.D., Wu, Y. (2007). Does bad pay cause occupations to feminize, Does feminization reduce pay, and How can we tell with longitudinal data? *Social Science Research*, 36, 1237–1256. DOI: 10.1016/j.ssresearch.2006.08.003.
- Firlit-Fesnak, G. (ed.) (2008). *Wykształcenie i kwalifikacje kobiet a ich sytuacja na rynku pracy*. Warszawa: Oficyna Wydawnicza ASPRA-JR.
- Fortin, N., Lemieux, T., Firpo, S. (2011). Decomposition methods in economics. *Handbook of Labor Economics*, 4, 1–102.
- Hakim, C. (2004). *Key issues in women's work: Female diversity and the polarisation of women's employment* (2nd editopn). New York: Routledge.
- Hakim, C. (2006). Women, careers, and work-life preferences. *British Journal of Guidance & Counselling*, 34 (3), 279–294, DOI: 10.1080/03069880600769118.
- Hanushek, E.A., Wößmann, L. (2007). The role of education quality for economic growth. World Bank, Policy Research Working Papers, WPS4122. DOI: 10.1596/1813-9450-4122.
- Hozer-Koćmiel, M. (2007). *Gender Mainstreaming w ekonomii. Dystrybucja czasu i wartości pracy kobiet*. Szczecin: Instytut Analiz, Diagnoz i Prognoz Gospodarczych.
- International Standard Classification of Occupations Structure ISCO-08, group definitions and correspondence tables* (2012). Geneva: International Labour Organization. Retrieved from: <http://www.ilo.org/public/english/bureau/stat/isco>.
- Jacobs, J.A., Gerson, K. (2004). *The Time Divide: Work, Family, and Gender Equality*. Cambridge, MA: Harvard University Press.
- Kotowska, I. (ed.) (2009). *Strukturalne i kulturowe uwarunkowania aktywności zawodowej kobiet w Polsce*. Warszawa: Wydawnictwo Naukowe Scholar.
- Kotowska, I., Sztanderska, U., Wóycicka, I. (eds.) (2007). *Aktywność zawodowa i edukacyjna a obowiązki rodzinne w Polsce: w świetle badań empirycznych*. Warszawa: Wydawnictwo Naukowe Scholar.
- Kryńska, E., Kopycińska, D. (2015). Wages in Labour Market Theories. *Folia Oeconomica Stetinensia*, 15 (2), 177–190. DOI: 10.1515/fofi-2015-0044.
- Majchrowska, A., Strawiński, P. (2016). Regional Differences in Gender Wage Gaps in Poland: New Estimates Based on Harmonized Data for Wages. *Central European Journal of Economic Modelling and Econometrics*, 8 (2), 115–141.

- Matuszewska-Janica, A., Hozer-Koćmiel, M. (2015). Struktura zatrudnienia oraz wynagrodzenia kobiet i mężczyzn a przedmiotowa struktura gospodarcza w państwach UE. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, 385, 178–186. DOI: 10.15611/pn.2015.385.19.
- Meulders, D., Plasman, R., Stricht, V.V. (1993). Position of women on the labour market in the European Community. *Labour*, 7 (3), 48–48. DOI: 10.1111/j.1467-9914.1993.tb00205.x.
- Mincer, J.A. (1974). The human capital earnings function. In: *Schooling, Experience, and Earnings* (pp. 83–96). NBER.
- Neumark, D. (1988). Employers' Discriminatory Behavior and the Estimation of Wage Discrimination. *Journal of Human Resources*, 23 (3), 279–295. DOI: 10.2307/145830.
- Ñopo, H. (2008). Matching as a tool to decompose wage gaps. *The Review of Economics and Statistics*, 90 (2), 290–299. DOI: 10.1162/rest.90.2.290.
- Oaxaca, R. (1973). Male-Female Wage Differentials in Urban Labor Market. *International Economic Review*, 14 (3), 693–709. DOI: 10.2307/2525981.
- Oaxaca, R.L., Ransom, M.R. (1994). On discrimination and the decomposition of wage differentials. *Journal of Econometrics*, 61 (1), 5–21. DOI: 10.1016/0304-4076(94)90074-4.
- Perales, F. (2010). Occupational Feminization, Specialized Human Capital and Wages: Evidence from the British Labour Market. ISER Working Paper Series: 2010-31.
- Reimers, C.W. (1983). Labor market discrimination against Hispanic and black men. *The Review of Economics and Statistics*, 65 (4), 570–579. DOI: 10.2307/1935925.
- Schultz, T.W. (1961). Investment in human capital. *The American Economic Review*, 51 (1), 1–17. DOI: 10.1086/260106.
- Schultz, T.W. (1971). *Investment in Human Capital. The Role of Education and of Research*. New York: The Free Press.
- Śliwicki, D., Ryczkowski, M. (2014). Gender Pay Gap in the micro level – case of Poland. *Quantitative Methods in Economics*, XV (1), 159–173.
- Tzannatos, Z. (1999). Women and labor market changes in the global economy: Growth helps, inequalities hurt and public policy matters. *World Development*, 27 (3), 551–569.