

Gender Wage Differentials and the Occupational Injury Risk: Evidence from Germany and the US*

Preliminary Results - please do not quote

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Abstract

Numerous studies, in particular for the US, have shown that individuals in occupations with high injury risk are compensated for that risk by corresponding bonus payments. At the same time, male workers are overrepresented in the most dangerous occupations like scaffolders or miners, while females typically work in relatively safe occupations with respect to occupational injuries. It is therefore remarkable that almost all studies analyzing the gender wage gap have disregarded different occupational injury risks as a potential explanatory variable for observed gender wage differentials. By merging data on occupational injury risks to German and US panel data on individual workers, this study analyzes gender wage differentials in Germany and the US considering fatal occupational injury risk. The Blinder-Oaxaca method is used to decompose the gender wage gap with and without consideration of the fatal injury risk. Our results indicate that the compensating wage differentials for risky jobs are reflected in the resulting gender wage gap, which is caused by the unequal distribution of occupational injury risks among men and women.

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1 Introduction

In this paper we investigate gender wage differentials by using the occupational injury risk as explanatory variable. The gender earnings differential is an issue that has received enormous attention in labor economics. However, existing studies analyzing this differential usually disregard the occupational injury risk as a potential explanatory variable.

Many studies estimating the value of a statistical life with labor market data (for a summary see Viscusi & Aldy, 2003) have shown that compensating wage differentials for occupational injury risks exist. Adding to this evidence, it appears obvious that male and female workers differ in their occupational injury risk: While typical male jobs (such as miners, sailors, . . .) are associated with high injury risks typical female jobs are relatively secure. If compensating wage differentials for high injury risks exist for both genders and the distribution of the occupational risks differs between male and female workers, part of the gender pay gap can be explained by the differences in the injury risks men and women experience.

While the results of Groshen (1991) indicate that sex segregation into occupations, industries and establishments can explain almost the entire wage gap. In contrast the study of Bayard, Hellerstein, Neumark, and Troske (1999) suggests that only a fraction of the gender pay gap is accounted for by the segregation where a substantial part of the gender pay gap remains. This is align with the findings of Black, Kunze, and Salvanes (2004) using Norwegian employer-employee data.

In their study DeLeire and Levy (2001) suggest that the sex segregation into occupations is dependent on different features of the occupations like the fatal and nonfatal occupational injury risks. The results suggest that women choose safer jobs. If the occu-

pational injury risk account for the sex segregation into occupations and the segregation explains a part of the gender pay gap it can be concluded that the unequal distribution of occupational injury risks causes a part of the gender pay gap.

As far as we know the only time that the occupational injury risk was considered in the explanation of the gender pay gap was in Lorenz and Wagner (1989). They use the first wave of the German socioeconomic panel and data from the statutory accident insurance organizations. The results do not confirm the assumption that the involving of the risk reduces the unexplained gender pay gap. In accordance with US studies (for an overview see (Viscusi & Aldy, 2003)), more recent German studies find compensating wage differentials for occupational injury risks. (Bellmann, 1994, Spengler, 2004, Schaffner & Spengler, 2005)

In the present study two German datasets and one US dataset is used. The panel data on individual workers cover the years 1995 – 2001 and are merged to data on occupational injuries in Germany and the US, respectively. By adopting the human capital model (Becker, 1971) we use demographic training and occupational factors to explain the gender pay gap. The decomposition method by Blinder (1973) and Oaxaca (1973) is used to decompose the gender pay gap into a part caused by differentiation in the human capital and the occupational settings and into an unexplained surplus.

On the basis of our data we document a substantial wage gap of about 21.6–26.5 percent for full-time workers can be documented. By using the decomposition method a small part of the gender pay gap can be explained. This part increases by using the occupational injury risk as an explanatory variable.

The paper is structured as follows: In section 2, we describe the data and the empirical

specification. The empirical results follow in section 3, and section 4 concludes .

2 Data and empirical specification

In order to decompose the gender wage gap it is in need of micro-data with sufficient variables and data about the injury risks. Latter are data from the association of commercial and industrial workers' compensation insurance carriers. Two different micro-data-sets are used: the IAB employment subsample and the German socioeconomic panel. Both data sets are panel sets with sufficient variables for human capital and occupation.

The **IAB Employment Subsample (IABS)** is a 2% random sample of the data stored by the *Federal Employment Service - Germany* (Bundesanstalt für Arbeit) since 1973 of all employees registered by the German social insurance system. Supplementary information on establishments and on unemployment periods in which a claimant received benefits was added to the sample.

The subsample contains a period of 27 years from 01.01.1975 till 31.12.2001 and daily flow information. Data are the results of announcements every employer has to do for the compulsory health, annuity and unemployment insurance.

Self-employed, family workers, judges, civil servants, conscripts, soldiers, employees in civilian service (Zivildienstleistende), marginal employees (geringfügig Beschäftigte) and students enrolled in higher education are not recorded in the IABS. In the year 1995 79,4% of all people in paid work in Western Germany were detected in the data (Bender, Haas, & Klose, 1999).

The profession/occupation is coded with the KldB75-code of the Federal Statistical

Office in 130 occupational codes. The IABS available for research is made anonymous in different ways.¹

The IABS is characterized by the legal obligation of the employers to report the data. This leads to a high reliability of data especially the data necessary for the social security system.² The measured earnings in the IABS are the mean daily earnings (gross earnings of the whole period divided by days in period). The decimal places are cut.³ The earnings are right-censored because all workers and employees who gain above the assessment threshold of the social insurance have an displayed earning at the respective threshold. This upper limit is by 2.800 DM in 1975 and 8.700 DM (West-Germany) and 7.300 DM (East-Germany) in 2001. The lower limit of the earnings is the threshold of marginal employment and lies between 350 DM (1975) and 580 DM (1995). Up to the year 1998 the marginal employments are no part of the IABS. Therefore the earnings are left-truncated in the older waves.

The **German Socioeconomic Panel (GSOEP)** is a representative survey of private households in Germany. Since 1984 each year the same persons and families are questioned. In the first wave (1984) 5.921 households with 12.245 persons were questioned. 3.915 of these persons were children.

Persons quit the sample if they die or go to abroad. By birth or another form of getting part of one questioned household persons get new in the GSOEP. New households develop if an old household get separated: at least one person becomes part of another household.

With up to 100 variables for the households and more than 250 variables for the

¹The whole procedure of making anonymous is described in Bender, Haas, and Klose (2000).

²That applies to earnings, sex, age and date. Other variables are collected for statistical evaluation.

³This leads to a maximum error of 0,99 €and 30,69 €per month.

individuals the GSOEP is enormous.

The data are collected at a due date and the earnings are those of the last month before this due date. To adapt the GSOEP to the IABS all marginal employees are eliminated for the following analysis and the earnings are calculated as daily wages.

Compared to the IABS the GSOEP has much more variables and much less observations. The GSOEP covers nearly every theme of the daily life whereas the IABS only covers employment, unemployment and the corresponding themes. On average in the GSOEP 4.500 households with 11.000 individuals (6.000 employed) are questioned each year. The IABS covers roughly 200.000 individuals. Therefore the number of covered employees is about 30 times as high as in the GSOEP.

The **Panel Study of Income Dynamics** has followed a core set of households since 1968 plus newly formed households as members of the core households have split off into new families. The PSID provides individual-level data on demographics, wages, industry and occupation. The interval between the interviews was not always one year. Thus we use the 1995 1997 1999 and 2001 waves of the PSID.

In the remainder study only full-time workers except marginal employed workers and apprentices are regarded.

The **Industrial Injury Data** are no part of these micro-data-sets and have to be received on other ways.

In Germany all occupational injuries, travel accidents and occupational diseases leads to lack of work for at least three days are reported to the accident insurance if the concerned person is insured. The insurance associations, association of commercial and industrial workers' compensation insurance carriers (Hauptverband der gewerblichen Beruf-

Table 1: Occupational injury risk severity of an fatal injury per 1.000 fulltime-man-years of each occupation, in Germany: the 20 occupations with the highest fatal injury risk (out of 241 occupations)

| occupation | <i>rk.</i> | mean | std. | min. | max. |
|--|------------|-------|-------|-------|-------|
| Scaffolders | 1 | 0.924 | 0.429 | 0.212 | 1.861 |
| Inland waters navigator, sundry waterways occupations | 2 | 0.851 | 0.309 | 0.400 | 1.350 |
| Deckhands | 3 | 0.819 | 0.522 | 0.170 | 1.691 |
| Nautical navigators | 4 | 0.638 | 0.403 | 0.171 | 1.362 |
| Roofers, slaters | 5 | 0.484 | 0.151 | 0.202 | 0.712 |
| Miners | 6 | 0.424 | 0.152 | 0.173 | 0.750 |
| Machine, electrical and shot colliers | 7 | 0.389 | 0.289 | 0.000 | 1.080 |
| Air traffic occupations | 8 | 0.359 | 0.286 | 0.000 | 0.937 |
| Blasters , sundry civil engineering occupations | 9 | 0.324 | 0.082 | 0.144 | 0.475 |
| Quarrymen, mineral oil and gas extractors, Earth, pyrite and sand excavators | 10 | 0.320 | 0.166 | 0.000 | 0.596 |
| Excavator drivers | 11 | 0.316 | 0.117 | 0.131 | 0.479 |
| Mineral processors | 12 | 0.289 | 0.635 | 0.000 | 2.180 |
| Carpenters | 13 | 0.283 | 0.070 | 0.198 | 0.425 |
| Motor vehicle drivers, coachman | 14 | 0.283 | 0.023 | 0.245 | 0.314 |
| Crane driver | 15 | 0.257 | 0.115 | 0.000 | 0.415 |
| Railtrack constructors | 16 | 0.243 | 0.226 | 0.000 | 0.725 |
| Brick and concrete makers | 17 | 0.240 | 0.135 | 0.000 | 0.406 |
| Concrete constructors | 18 | 0.234 | 0.072 | 0.147 | 0.328 |
| Excavators, building labourer (non-specified) | 19 | 0.226 | 0.040 | 0.145 | 0.286 |
| Stage, film and sound technicians | 20 | 0.220 | 0.377 | 0.000 | 1.250 |

sgenossenschaften, HVBG), the Federal Association of Accident Insurers (Bundesverband der Unfallkassen, BUK)⁴ and the association of agricultural workers' compensation insurance carriers (Bundesverband der landwirtschaftlichen Berufsgenossenschaften, LSV)⁵, collect all these data about work accidents. All employed persons who are not member in an insurance of the LSV or BUK are insured at the HVBG. Self-employed persons can voluntary (in contrary to the employees) decide to get member of a HVBG insurance. Only self-employed agriculturalists cannot decide. They have to be insured at a insurance of the LSV. Especially mercantilists of handicraft enterprizes in the small business sector are voluntary insured because they often work together with their employees and therefore have an increased injury risk. The collected data from the associations are the sums of accidents each year in each occupation. The occupations are allocated to a three-digit

⁴In the workers' compensation insurance of the public authority public servants are insured. But the biggest group are the children and students of schools and universities

⁵agriculturalists, gardeners, family workers and any employees in agriculture are insured here.

code of the code list KldB75. To approximate the occupational injury risk out of the measured sum of injuries each year it is necessary to know the whole number of insurants in each occupation. But this information is not available. Not even the insurers themselves know these numbers. They only have come to know the occupation of an insurant if he has an injury and a notice of accident was made. The only way to get the number of insurants is to extrapolate the number of employees in each occupation. Therefor exist two possibilities: the first is to extrapolate with the microcensus which is collected every two years. The other possibility is to choose the already described IABS for extrapolating.

The microcensus is a random sample of all working people, while the IABS is a random sample of all employees registered by the social insurance system. In the insurance data are the same groups of working people included as in the IABS. Additional insured self-employed persons and marginal employees are part of this. On the other hand the microcensus includes all self-employed persons also the not-insured. Both approximations are deficient in the assumption and it is hard to say what is the dimension of the made errors. The decisive factor for using the IABS is the possibility of counting full-time-man-years worked in each occupation. This is not even important for part-time work. Also there exist many seasonal work especially in occupations with increased injury risk. Dependent on the factors like the weather are for example jobs in the building sector. In summer more jobs exist as in winter. But the measured number of injuries is for the whole year. With the the daily information in the IABS it is possible to approximate how many full-time-man-years are worked in each year in each occupation. Spengler (2004) yet used the microcensus for extrapolating. His computations leads to differences especially in the high-risk occupations compared to the received risks by using the IABS in present study. These risks are partially illustrated in table 1 which shows the 50 chanciest occu-

pations. Not all available occupations are part of the statistics and the following analysis. Occupations mainly fulfilled by civil servants and employees (firemen, ...), agricultural occupations and occupations mainly fulfilled by self-employed (publicans, entrepreneurs, ...) are not considered because they are not included (or only a few members) in the IABS: The calculated risk would be very biased. Gardeners are also excluded because the LSV do not distinguish the different occupations in their injury data. On this account the injury risk of gardeners cannot be measured.

To gain the US fatality risk we use U.S. Bureau of Labor Statistics data from the Census of Fatal Occupational Injuries (CFOI) for 1992–2002. The publicly available data contain the number of fatal injuries by occupations. The CFOI data come from reports by the Occupational Safety and Health Administration, workers' compensation reports, death certificates, and medical examiner reports. These data are combined with the number of employed persons published by the Bureau of Labor Statistics relied on the Current Population Survey. In contrast to the German injury data industrial injury risks are used for the US data set. The industrial and occupational classification systems in Germany and the US are very different. However, the main groups of the German occupational classification system and the US industrial classification system are similar (agriculture/forestry, mining, construction, manufacturing,...). Indeed the German industries (Wirtschaftszweige) and the us occupations are not comparable.

Three measures of fatal risk will be used. The first measure is the number of fatal injuries divided by the number of employed persons in each year in each occupation. The second measure is the 7–year average of the fatality risk, while the third measure is a 3–year average of the years surrounding the corresponding year. I We expect to be less measurement error in the 3–year average and 7–year average relative to the annual rate.

The wage regressions will be estimated separately for men and women. The following regression equations will be used:

$$\ln Y_{i,men} = \beta_{men} * X_i + \varepsilon \quad (1)$$

$$\ln Y_{i,women} = \beta_{women} * X_i + \varepsilon \quad (2)$$

Where X is a vector of productivity related variables and ε a error term By using OLS it is applied that the estimated regression curve goes to the arithmetic means of all variables and the expectation of the residual is zero.

$$\overline{\ln Y_M} = \beta_M * \overline{X_M} \quad (3)$$

$$\overline{\ln Y_F} = \beta_F * \overline{X_F} \quad (4)$$

The difference of the logarithmic wages gets to:

$$\overline{\ln Y_M} - \overline{\ln Y_F} = \beta_M * \overline{X_M} - \beta_F * \overline{X_F} \quad (5)$$

$$= \underbrace{\beta_M * (\overline{X_M} - \overline{X_F})}_{\text{diff. capacities}} + \underbrace{\overline{X_F} * (\beta_M - \beta_F)}_{\text{unexplained remain}} \quad (6)$$

Equation 3.11 results from addition and subtraction of $\beta_m \overline{X_F}$. The first part of the wage equation $\beta_M * (\overline{X_M} - \overline{X_F})$ is the part of the wage gap that develops out of differences in the productivity of both sexes. The second term is the unexplained remainder which can be interpreted as discrimination. In equation 5 addition and subtraction of $\beta_F \overline{X_M}$ is similarly possible. The consequence will be another weighting. The basic assumption that women would reach the same wage if no discrimination exists leads to the introduced

form, while the other way is to expect that man-wage will depreciate, nepotism prevailed.

The first assumption is normally used and implies the man wage as reference wage. This decomposition can be interpreted by the following variables.

In consideration of the endowment differences between men and women the corrected wage gap is the difference in wages if men and women have an identical endowment of all exogenous variables. The difference is again in relation to the men wage.

$$D_c = 1 - \frac{1}{\exp(\overline{X}_W(\beta_M - \beta_W))} \quad (7)$$

3 Results

The results of the pooled regressions are displayed in table 3. The estimated coefficients show the expected signs: A higher schooling degree returns higher wage differentials and middle-aged workers gain more than the other age groups. A higher job tenure also leads to a higher wage rate. These results apply to the three used data sets. The results for Germany indicate that East German workers gain less than their West German counterparts. The coefficient for the fatal injury risk is positive with high significance, except for women in the GSOEP dataset. This table only presents the pooled regression results by using the annual injury risk as explanatory variable. The summary of results of applying the decomposition method are displayed in table 4. For all three data sets pooled regressions with the different risk measures and without any risk measure were done separately for male and female workers. The estimated coefficients were used to calculate the unexplained part of the gender pay gap as described in the preceding chapter. In the GSOEP and the PSID sample the gender pay gap can obviously be reduced without using the fatality risk as explanatory variable. Adding the fatality risk leads to another reduction of the unexplained gap. In contrast to these results the Blinder-Oaxaca-Decomposition

Table 2: Selected Summary Statistics

| | GSOEP | | | | IABS | | | | PSID | | | |
|---------------------------------------|--------------|--------------|----------------|--------------|--------------|--------------|----------------|--------------|--------------|--------------|----------------|--------------|
| | male workers | | female workers | | male workers | | female workers | | male workers | | female workers | |
| | mean | sd | mean | sd | mean | sd | mean | sd | mean | sd | mean | sd |
| wage | 80.92 | <i>37.93</i> | 62.57 | <i>24.91</i> | 90.12 | <i>34.62</i> | 70.62 | <i>29.92</i> | 80.75 | <i>47.18</i> | 60.44 | <i>34.19</i> |
| log wage | 4.310 | <i>0.405</i> | 4.063 | <i>0.395</i> | 4.431 | <i>0.394</i> | 4.168 | <i>0.457</i> | 4.275 | <i>0.464</i> | 3.985 | <i>0.472</i> |
| Fatal injury risk | 0.055 | <i>0.070</i> | 0.014 | <i>0.024</i> | 0.052 | <i>0.066</i> | 0.013 | <i>0.024</i> | 0.092 | <i>0.171</i> | 0.030 | <i>0.046</i> |
| age 15–20 | 0.009 | <i>0.095</i> | 0.017 | <i>0.130</i> | 0.011 | <i>0.104</i> | 0.020 | <i>0.140</i> | 0.011 | <i>0.103</i> | 0.020 | <i>0.140</i> |
| age 20–25 | 0.081 | <i>0.272</i> | 0.135 | <i>0.341</i> | 0.070 | <i>0.254</i> | 0.117 | <i>0.321</i> | 0.107 | <i>0.309</i> | 0.105 | <i>0.307</i> |
| age 25–30 | 0.145 | <i>0.352</i> | 0.161 | <i>0.368</i> | 0.134 | <i>0.340</i> | 0.152 | <i>0.359</i> | 0.138 | <i>0.345</i> | 0.104 | <i>0.306</i> |
| age 30–35 | 0.180 | <i>0.384</i> | 0.141 | <i>0.348</i> | 0.176 | <i>0.381</i> | 0.150 | <i>0.357</i> | 0.149 | <i>0.356</i> | 0.147 | <i>0.354</i> |
| age 35–40 | 0.158 | <i>0.365</i> | 0.137 | <i>0.344</i> | 0.164 | <i>0.370</i> | 0.143 | <i>0.350</i> | 0.161 | <i>0.368</i> | 0.175 | <i>0.380</i> |
| age 40–45 | 0.132 | <i>0.338</i> | 0.140 | <i>0.347</i> | 0.139 | <i>0.346</i> | 0.137 | <i>0.344</i> | 0.160 | <i>0.366</i> | 0.149 | <i>0.356</i> |
| age 45–50 | 0.113 | <i>0.317</i> | 0.117 | <i>0.322</i> | 0.117 | <i>0.322</i> | 0.120 | <i>0.325</i> | 0.115 | <i>0.319</i> | 0.110 | <i>0.313</i> |
| age 50–55 | 0.091 | <i>0.287</i> | 0.088 | <i>0.283</i> | 0.098 | <i>0.298</i> | 0.093 | <i>0.291</i> | 0.063 | <i>0.243</i> | 0.076 | <i>0.264</i> |
| age 55–60 | 0.074 | <i>0.261</i> | 0.059 | <i>0.236</i> | 0.079 | <i>0.269</i> | 0.063 | <i>0.243</i> | 0.048 | <i>0.213</i> | 0.055 | <i>0.228</i> |
| age 60–70 | 0.018 | <i>0.134</i> | 0.005 | <i>0.067</i> | 0.013 | <i>0.115</i> | 0.004 | <i>0.065</i> | 0.042 | <i>0.200</i> | 0.052 | <i>0.223</i> |
| white | | | | | | | | | 0.561 | <i>0.496</i> | 0.521 | <i>0.500</i> |
| married | 0.695 | <i>0.461</i> | 0.542 | <i>0.498</i> | | | | | 1.729 | <i>1.147</i> | 2.073 | <i>1.320</i> |
| kids | 0.635 | <i>0.915</i> | 0.260 | <i>0.570</i> | | | | | | | | |
| no vocational qualification, no Abi | 0.172 | <i>0.377</i> | 0.206 | <i>0.404</i> | 0.136 | <i>0.342</i> | 0.140 | <i>0.347</i> | | | | |
| no vocational qualification, Abi | 0.076 | <i>0.266</i> | 0.072 | <i>0.259</i> | 0.007 | <i>0.081</i> | 0.008 | <i>0.089</i> | | | | |
| with vocational qualification, no Abi | 0.693 | <i>0.461</i> | 0.644 | <i>0.479</i> | 0.722 | <i>0.448</i> | 0.728 | <i>0.445</i> | | | | |
| with vocational qualification, Abi | 0.059 | <i>0.235</i> | 0.077 | <i>0.267</i> | 0.033 | <i>0.177</i> | 0.055 | <i>0.228</i> | | | | |
| university of applied science degree | 0.065 | <i>0.246</i> | 0.118 | <i>0.322</i> | 0.046 | <i>0.209</i> | 0.028 | <i>0.164</i> | | | | |
| university degree | 0.097 | <i>0.296</i> | 0.083 | <i>0.276</i> | 0.058 | <i>0.233</i> | 0.042 | <i>0.200</i> | | | | |
| years of education | | | | | | | | | 12.16 | <i>2.111</i> | 12.40 | <i>2.112</i> |
| unskilled worker | 0.215 | <i>0.411</i> | 0.164 | <i>0.371</i> | 0.216 | <i>0.411</i> | 0.151 | <i>0.358</i> | | | | |
| skilled worker | 0.360 | <i>0.480</i> | 0.068 | <i>0.253</i> | 0.372 | <i>0.483</i> | 0.064 | <i>0.245</i> | | | | |
| master craftsman | 0.038 | <i>0.190</i> | 0.003 | <i>0.058</i> | 0.030 | <i>0.170</i> | 0.002 | <i>0.042</i> | | | | |
| white collar, salaried | 0.387 | <i>0.487</i> | 0.764 | <i>0.425</i> | 0.383 | <i>0.486</i> | 0.783 | <i>0.412</i> | | | | |
| tenure | 9.570 | <i>9.639</i> | 8.071 | <i>8.234</i> | 7.351 | <i>7.136</i> | 6.273 | <i>6.211</i> | 7.770 | <i>8.274</i> | 5.973 | <i>6.960</i> |
| work experience | 13.38 | <i>9.573</i> | 11.37 | <i>8.500</i> | | | | | | | | |
| East-Germany | 0.252 | <i>0.434</i> | 0.340 | <i>0.474</i> | 0.163 | <i>0.369</i> | 0.219 | <i>0.413</i> | | | | |
| job covered by union | | | | | | | | | 0.295 | <i>0.456</i> | 0.144 | <i>0.352</i> |
| union member | | | | | | | | | 0.267 | <i>0.443</i> | 0.114 | <i>0.318</i> |
| work for government | 0.150 | <i>0.357</i> | 0.353 | <i>0.478</i> | | | | | 0.111 | <i>0.314</i> | 0.249 | <i>0.433</i> |
| size of firm, 1–20 employees | 0.214 | <i>0.410</i> | 0.239 | <i>0.426</i> | | | | | | | | |
| size of firm, 20–200 | 0.317 | <i>0.465</i> | 0.295 | <i>0.456</i> | | | | | | | | |
| size of firm, 200 –2000 | 0.242 | <i>0.428</i> | 0.264 | <i>0.441</i> | | | | | | | | |
| size of firm, more than 2000 | 0.227 | <i>0.419</i> | 0.202 | <i>0.401</i> | | | | | | | | |
| industry/occupation dummies | | | | | | | | | | | | |
| year dummies | | | | | | | | | | | | |
| region dummies | | | | | | | | | | | | |
| number of observations | 14388 | | 7535 | | 1606783 | | 850964 | | 3754 | | 3152 | |

Table 3: Results of the pooled wage regressions with the different data sets

| | GSOEP | | IABS | | PSID | |
|---|-------------------|-------------------|--------------------|-------------------|------------------|------------------|
| | male workers | female workers | male workers | female workers | male workers | female workers |
| fatal injury risk $\times 10^3$ | 0.459 (3.55) | -0.573 (0.94) | 0.088 (20.18) | 0.066 (3.26) | 0.141 (3.69) | -0.501 (3.25) |
| white | | | | | 0.136 (9.08) | 0.003 (0.18) |
| married | 0.070 (6.54) | -0.032 (2.41) | | | | |
| number of children | 0.012 (2.32) | -0.004 (0.39) | | | | |
| <i>age</i> (Referenz: 15–20-aged) | | | | | | |
| 20–25 | 0.190 (2.78) | 0.120 (2.49) | 0.134 (42.19) | 0.149 (38.04) | 0.094 (1.72) | 0.007 (0.14) |
| 25–30 | 0.215 (3.09) | 0.224 (4.60) | 0.243 (78.37) | 0.247 (62.88) | 0.189 (3.50) | 0.184 (3.69) |
| 30–35 | 0.301 (4.47) | 0.288 (5.87) | 0.312 (100.85) | 0.259 (65.27) | 0.294 (5.47) | 0.216 (4.44) |
| 35–40 | 0.290 (4.29) | 0.279 (5.53) | 0.340 (109.68) | 0.251 (62.66) | 0.360 (6.67) | 0.241 (4.99) |
| 40–45 | 0.292 (4.31) | 0.310 (6.19) | 0.349 (112.23) | 0.264 (65.95) | 0.340 (6.33) | 0.232 (4.78) |
| 45–50 | 0.296 (4.33) | 0.277 (5.32) | 0.355 (113.51) | 0.270 (66.88) | 0.288 (5.30) | 0.216 (4.41) |
| 50–55 | 0.279 (4.07) | 0.275 (5.09) | 0.357 (113.27) | 0.260 (63.19) | 0.306 (5.45) | 0.219 (4.35) |
| 55–60 | 0.265 (3.85) | 0.275 (4.80) | 0.329 (102.48) | 0.220 (51.09) | 0.347 (5.96) | 0.166 (3.11) |
| 60–70 | 0.306 (4.14) | 0.367 (2.71) | 0.291 (70.73) | 0.175 (19.33) | 0.293 (4.95) | 0.131 (2.46) |
| <i>highest educational achievement</i> (Ref.: no vocational qualification, no Abi) | | | | | | |
| no vocational qualification, Abi | 0.085 (3.23) | 0.174 (4.10) | 0.042 (8.27) | 0.062 (8.57) | | |
| vocational qualification, no Abi | 0.057 (4.96) | 0.061 (3.46) | 0.075 (89.45) | 0.053 (32.33) | | |
| vocational qualification, Abi | 0.095 (4.26) | 0.155 (5.52) | 0.152 (89.81) | 0.202 (82.22) | | |
| university of applied science degree | 0.242 (12.30) | 0.207 (8.89) | 0.249 (177.66) | 0.316 (112.70) | | |
| university degree | 0.245 (10.22) | 0.217 (5.31) | 0.316 (229.39) | 0.422 (163.47) | | |
| years of education | | | | | 0.050 (15.52) | 0.060 (17.39) |
| <i>occupational status</i> (Ref.: unskilled worker) | | | | | | |
| skilled worker | 0.108 (11.22) | 0.169 (6.01) | 0.063 (87.76) | 0.020 (9.14) | | |
| master craftsman | 0.287 (15.69) | 0.595 (7.38) | 0.286 (178.84) | 0.224 (15.82) | | |
| white collar, salaried | 0.313 (20.79) | 0.296 (12.36) | 0.313 (357.69) | 0.266 (158.53) | | |
| job tenure | 0.005 (2.86) | 0.004 (1.42) | 0.022 (184.66) | 0.022 (99.88) | 0.008 (3.62) | 0.025 (9.91) |
| job tenure ² $\times 10^{-1}$ | -0.000 (0.37) | -0.000 (0.59) | -0.001 (121.30) | -0.001 (54.07) | -0.000 (0.01) | -0.000 (4.05) |
| East-Germany | -0.308 (33.12) | -0.228 (19.42) | -0.268 (173.99) | -0.151 (66.96) | | |
| job covered by union | | | | | 0.129 (2.98) | 0.108 (2.18) |
| belonging to union | | | | | 0.175 (3.93) | 0.124 (2.34) |
| work for government | | | | | -0.027 (1.20) | 0.005 (0.32) |
| firmsize dummies | + | + | | | | |
| industry dummies | + | + | + | + | | |
| occupation dummies | | | | | + | + |
| year dummies | + | + | + | + | + | + |
| region dummies | | | + | + | + | + |
| number of observations | 22,049 | 11,312 | 1,606,783 | 850,964 | 3754 | 3154 |

robust t-statistics in parentheses

Table 4: Blinder-Oaxaca-Decomposition of the different pooled regressions with and without taking into account the fatal injury risk

| gender wage gap | <i>dataset</i> | | |
|---|----------------|--------|--------|
| | GSOEP | IABS | PSID |
| uncorrected | 22.91% | 21.64% | 26.46% |
| corrected without the fatal injury risk | 19.95% | 23.22% | 18.00% |
| corrected with the fatal injury risk | 19.05% | 23.11% | 17.24% |
| corrected with the 7-year fatal injury risk | 19.03% | 23.12% | 17.27% |
| corrected with the 3-year fatal injury risk | 18.99% | 23.14% | 16.94% |

Table 5: Blinder-Oaxaca-Decomposition of the different fixed-effect regressions with and without taking into account the fatal injury risk

| gender wage gap | <i>dataset</i> | | |
|---|----------------|--------|--------|
| | GSOEP | IABS | PSID |
| uncorrected | 23.06% | 21.64% | 26.47% |
| corrected without the fatal injury risk | 19.49% | 22.02% | 23.76% |
| corrected with the fatal injury risk | 19.18% | 21.86% | 23.58% |
| corrected with the 7-year fatal injury risk | 19.88% | | 23.63% |
| corrected with the 3-year fatal injury risk | 19.34% | 21.19% | 23.82% |

of the pay gap in the IABS sample leads to an increase of the gender pay gap. The corresponding summary of results for the fixed-effect regressions is described in table 5. The gender pay gap in the GSOEP dataset can be reduced to about 20 percent. Also considering the fatal injury risk leads to further reductions of the gender pay gap. The results are similar to those of the pooled regressions. The unexplained part in the PSID sample is bigger after the fixed-effect regressions relative to the pooled regressions. The decomposition in the IABS leads again to an increase in the gender pay gap. This implies that the gender pay gap would be bigger if the female workers and their occupations in the dataset had the same properties as the male workers. A reason for this unexpected result could be the omission of essential variables. For example the marital status appears unreliable in this dataset and can not be used for the regressions. Also the firm size is missing in this part of the IABS.

4 Conclusions

In this study male-female wage differentials in Germany and the US are examined. One dataset for the US (PSID) and two dataset for Germany (GSOEP and IABS) were used. In the data we find a substantial gender wage gap of about 21 to 26.5 percent. This gap is decomposed by the Blinder-Oaxaca method after pooled and panel regressions. The main finding is that a substantiae part of the gender pay gap can be explained by the differences in the occupational injury risk. For future studies it is advisable to include occupational fatality rates among other explanatory variables in wage regressions to explain the gender pay gap.

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