Income Differentials on Regional Labour Markets in Southwest Germany

Alice Guyot, Stefan Berwing and Maria Lauxen-Ulbrich[*]

Summary: The aim of our paper is to identify explanatory variables for income disparities between women and men across different regional types. Using data from the BA Employment Panel (BEP) descriptive statistics show that the gender pay gap grows wider from core regions to periphery. The main explanatory variables for the income differentials are vocational education in the men's case and size of enterprise in the women's case. Whereas in the case of women the importance of vocational status increases and the importance of size of enterprise decreases from rural areas to urban areas.

Key words: Regional economics, Regional data, Wage differentials, Wage gap.

JEL: J16, J24, J31, R21, R23.

Introduction

The fact that women earn less than men is a consistent and widely observed phenomenon which can be found across all industrial nations. Especially in Germany the gender pay gap of 22 percent per working hour clearly exceeds the EU average (Commission of the European Communities 2008, 15). In South West Germany this situation is even worse: Women in full time jobs earn, on the average, 29 percent less than men. Despite an enormous increase of women's labour force participation throughout the last decades, the gender pay gap is persistent.

Income differentials between women and men have been studied by numerous economists and social scientists and it is quite evident that a set of different factors plays a role in this context. By explaining income differentials

between the sexes it is inevitable to examine the influence of both individual factors and establishment characteristics as well. This will be taken into account in the present study. Furthermore the interaction of different factors shall be observed in a regional dimension.

To say in advance: until now there aren't theoretically based concepts, which put income differentials between women and men in touch with regional characteristics. It might be that income differentials between women and men vary in regional areas as a result of different effects of individual and establishment characteristics.

This requires an examination of the following research questions:

- Are there regional disparities in the gender pay gap?
- Are there regional disparities in the explanatory power of individual factors (occupation, age, vocational education, nationality) and of establishment characteristics (size of enterprise, branch of economic activity), which influence the incomes of women and men?

1. Theoretical framework

Empirical research on gender differences in pay has traditionally focused on two main pillars: the role of gender differences in productivity-related individual characteristics like education, training and experience (Jacob Mincer and Solomon Polachek 1974, Polachek 1981) and the different treatment of equally qualified male and female workers by employers (i.e. labour market discrimination). Enormous research work has been undertaken to study this theoretical framework, but in contrast the regional dimension of this remains in the dark. On the other hand geographic labour market research has shown that there are indeed great disparities between different labour market regions (see e.g Elisabeth Bühler and Verena Meier Kruker 2002, Caroline Kramer and Anina Mischau 2002, Bundesamt für Bauwesen und Raumordnung 2007). So the basic idea of this paper is to combine the regional and the gender perspective to the study of labour markets. There has not been a theoretical approach to this topic yet and we do not venture to fill this gap in this paper. Our approach is therefore evaluating, means to see if human capital hypothesis holds true while differing between regions, and explorative since we go into empirical research without deeper theoretical considerations concerning gender and region.[1]

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[1] This statement also includes a methodological position, which is not likely to be shared by many scholars. But from our point of view all theory begins with the identification of a problem, which the theory gives a hypothetical solution for. As we do not have a concrete problem, we do not have a solution to this nonexistent problem. But the research results of labour market geography makes us quite confident that we will find problems to solve, when regionalizing gender and labour market.

Human capital explanations are based on the gendered division of labour. Because women are expecting shorter and more discontinuous working lives as a consequence of their role within the family, they will have less incentive to invest in market-oriented formal education and on-the-job-training than men; an investment in education will therefore not pay off in future. More limited experience and less investment in education will reduce their productivity and will lower their earnings relative to men's (Gary S. Becker 1957, Becker 1985). In addition to the "classical" human capital variables it is quite common to control the income data also for differences in job or establishment characteristics. That is variables like occupation, job level, economic sector and firm size are included in order to make a more precise comparison (Francine D. Blau and Lawrence M. Kahn 2000).

The tendency of men and women to work in different occupations, and the fact that female occupations are paid and valued less, have a major effect on the income differentials (Barbara F. Reskin and Irene Padavic 2002). As there is general agreement that occupational segregation is widespread and that women are disproportionately clustered in relatively low paid jobs, there is no consensus on the causes of these outcomes.

So, according to human capital theory we suggest a model of a gender-segregated labour market, whereas the male and female labour markets are again divided into regional sub-labour-markets. This offers the possibility to compare on the one hand the influence of different human capital factors on the income of men and women and on the other hand the "behaviour" of these factors in different regions.

2. Examining the regional effects of individual and establishment characteristics on women's and men's incomes

According to our assumptions about the two dimensions of labour markets, we have a double set of hypothesis. The overall hypothesis is about the differences between regions and the human capital hypotheses are nested into this spatial hypothesis.

Looking at regions through the lens of human capital theory, no differences in the explanatory value of human capital factors should be expected (H_r1).[2] This means e.g. that the variance explained by vocational status should be similar across regional types and also the effect of the coefficients should be comparable.

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[2] H_r = regional hypothesis, H_m = model hypothesis.

Referring to human capital theory and the segregation literature we derive four hypotheses.

Firstly, the literature on human capital suggests that income differentials between men and women are a consequence of the lower vocational education and work experience of women compared to men. Thus, as men accumulate a higher degree of vocational education and work experience within their lifetime, their incomes must be higher than that of women with rising age (H_m1).

The vocational-education-argument applies also to migrants. According to Sabine Schmidt (2005) the educational level of migrants in the South of Germany is significantly lower than that of Germans. The lower vocational education of migrants will lead to lower incomes. According to human capital theory, taking the variables sex and nationality into account, we assume that the incomes of female migrants are the lowest (H_m2).

Also we have pointed out that in explaining income differentials not only individual characteristics, but also job and establishment characteristics play a crucial part. For this reason we expect that the highest incomes are reached in male-dominated jobs/branches of industry and the lowest in female-dominated jobs/branches of industry (H_m3), as a consequence of occupational segregation.

Finally the effect of employer size on wages is also well-documented in the empirical literature on wage determination. The empirical regularity that larger firms pay more compared to small ones was discovered by Henry L. Moore (1911) and has been supported in subsequent studies (Walter Y. Oi and Todd L. Idson 1999). The fact that proportionally more women in Southwest Germany are occupied in small enterprises than men (Harald Strotmann and Diana Weber 2005) could lead to disadvantages in the income of women (H_m4).

3. Data and methods

A   Data and classification

The data used originate from the BA Employment Panel (BEP) – a 2 percent sample of all German employees - of the German Federal Employment Agency (for further information see Dana Müller and Alexandra Schmucker 2006). The employment statistics cover all employees in Germany who are subject to social security (including marginal employment since 1999). The data set includes both individual and establishment characteristics.

Additionally the BEP contains some sensitive variables such as place of work and place of residence on the level of local authority districts [Gemeinde], which we used to distinguish regionally between the regression models.[3] The

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[3] For further information see http://fdz.iab.de/en/FDZ_Individual_Data/BA_ Employment_Panel/BA_Employment_Panel_Weakly_Anonymous_Version.aspx.

possibility to use a fine grained spatial distinction between core cities, urban areas, suburban areas and rural areas (see below) was the most important factor for the decision to use the BEP.

To describe the occupational structure and work orientations of women and men, occupations were divided, according to Catherine Hakim (1998), in female-dominated, male-dominated and integrated occupations. In the BEP 2005 44,8 percent of the employees are female. Female-dominated occupations are therefore those with a proportion of women greater-or-equal 59,81 percent. Integrated occupations are those with a proportion of women from 29,81 percent to 59,80 percent. Male-dominated jobs are those with a proportion of women less than 29,80 percent.[4]

To analyse to what extent women and men pursue different economic activities and furthermore to examine intra-industry wage differentials, the branches of economic activities were divided into 9 classes.[5] Using the German Classification of Economic Activities (Edition 2003) 5 branches were directly defined as follows: Agriculture and forestry, manufacturing and mining, construction, wholesale and retail trade and hotels and restaurants. Furthermore 4 additional branches were developed: skill-intensive (other), skill-intensive (health care and education), not skill-intensive (other) and not skill-intensive (Health Care and Education).

According to the Commission of the European Communities (2003) enterprises were defined as micro (1-9 employees), small (10-49 employees) and medium-sized (50-249 employees) enterprises (SMEs) (Commission of the European Communities 2003, article 2 annex). Enterprises with more than 250 employees were defined as large.

B   Regression models

The aim of our regression-models was to test the influence of different individual and establishment characteristics on the gross salary of men and women in different regional types. As independent variables occupation type, age, vocational education, nationality, size of enterprise and the branch of economic activity were used. All variables were inserted stepwise into the calculation of the models (Table 1).

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[4] For further information ask the authors.

[5] See the reference above.

Table 1: Sequence of bringing in the control variables

	M 1	M 2	M 3	M 4	M 5	M 6
Occupation type	X	X	**X**	X	**X**	X
Age		X	**X**	X	**X**	X
Vocational education			**X**	X	**X**	X
Nationality				X	**X**	X
Size of enterprise					**X**	X
Branch of economic activity						X

* In the article models 3 and 5 have been interpreted. (M = Model)
Source: BA Employment Panel 1998-2005 (Panel Wave 32).

Table 1 shows the base model for the following calculations. To test the effect of the variables independently for both sexes the base model was applied to both of them.

One mayor problem was to control the effect of part time and full time work on the gross salary. As the exact amount of hours worked is not included in the BEP the whole regression model would have been biased by the unknown working time. Consequently the database was split into the subsets part time and full time and the models were calculated independently for these subsets.

To test the effect of the variables in a regional dimension a further distinction was needed. This distinction included four categories: core cities, urban areas, suburban areas and rural areas. These categories were distinguished by the population density in the municipalities in Baden-Württemberg. The threshold values were: core cities >50.000 residents/ km², urban areas >300 residents/km², suburban areas 150-300 residents/km² and rural areas <150 residents/km².[6]

To see if commuting of men and women biases the regression results in the different regional types the models were applied to the data for place of work and place of residence.

Table 2 shows a matrix of the 32 subsets, which result of the distinctions made. The base model shown in Table 1 has then been applied to these subsets.

The relatively complex layout of the 32 subsets for the regression models was chosen to test the effect of the variables *in* different regions, and not the effect *of* region in one overall model. The reason for this is, that we understand region as an outcome of the different combinations of the variables and not as an independent variable of its own.

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[6] **Statistical Bureau of Baden-Württemberg**. 2007. Merged to the BEP by the municipality code of the German Bureau of Statistics. http://www.statistik.baden-wuerttemberg.de/SRDB/home.asp?- H =BevoelkGebiet (accessed October 30, 2007).

Table 2: Matrix of subsets the base model was applied to

		Women		Men	
		Part time work	Full time work	Part time work	Full time work
Core cities	Place of work	X	X	X	X
	Place of residence	X	**X**	X	**X**
Urban areas	Place of work	X	X	X	X
	Place of residence	X	**X**	X	**X**
Suburban areas	Place of work	X	X	X	X
	Place of residence	X	**X**	X	**X**
Rural areas	Place of work	X	X	X	X
	Place of residence	X	**X**	X	**X**

* In the article full time models (place of residence) have been interpreted.
Source: BA Employment Panel 1998-2005 (Panel Wave 32).

In the further description of the regression results we will focus on the full time models, because we ran out of cases in the part time models, especially in the men's case. We will also focus on the models for the subsets of the place of residence.[7]

4. Empirical findings

A   Influencing factors

Confirming our first hypothesis (H_m1), individual factors like *age and vocational education* have a strong effect on the income. We find that with rising *age* income of men are much higher than those of women. Table 3 shows that especially at the age of 35 income differentials grow stronger. At this age male full time workers in Southwest Germany earn on the average nearly one third more than female workers (Table 3). Taking the regression models into account it can be noted that the effect of *age*, when explaining the variance of income, is higher in the men's case than in the women's. Nevertheless this is, owing to the corrected R² (corr. R² men: 0,07 women: 0,03)[8] a minor result.

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[7] The models for place of work were also tested but this test did not show any significant differences.
[8] For further information ask the authors.

Not surprisingly over all regions descriptive statistics (Table 3) show that the higher the *vocational education* is, the higher the income is.

The same applies to women and men. Women in core cities with first and second stage of tertiary education (UAS/university) earn on average 3.600 € and women with lower and upper secondary education generally get 2.047 € on the average.[9]

Table 3: Outcome of different indicators on earnings

	Baden-Württemberg		
	Monthly gross salary	Women's earnings relative to men's in percent	Pay gap
Monthly gross salary			
Women	2287,42	71,14	28,86
Men	3215,20		
Female monthly gross salary by occupations			
Female-dominated	2175,97	70,92	29,08
Integrated	2466,53	78,78	21,22
Male-dominated	2631,09	80,35	19,65
Female monthly gross salary by age-groups			
15-24	1821,54	85,47	14,53
25-34	2347,86	80,45	19,55
35-44	2329,44	68,49	31,51
45-54	2356,07	68,53	31,47
55-64	2294,25	67,49	32,51
Female monthly gross salary by vocational education			
Lower and upper secondary education general	1948,23	76,22	23,78
Upper secondary education vocational *)	2292,80	72,19	27,81
Post-secondary non tertiary education general *)	2867,69	75,07	24,93
First and second stage of tertiary education **)	3489,29	77,86	22,14

[9] Table 3 only shows the results for Baden-Württemberg (in total), if the reader is interested in getting the results differentiated by regional types, please contact one of the authors.

*) incl. master/technician, **) excl. master/technician

Female monthly gross salary by nationality

German	2312,13	70,45	29,55
Other nationality	2044,13	75,36	24,64

Source: BA Employment Panel 1998-2005 (Panel Wave 32), the authors calculations.

Considering *vocational status* great differences in the regression models could be observed: on the one hand between men and women and on the other hand between the different regions. As this is one of the major results of this paper, this topic will be discussed later.

According to our second hypothesis (H_m2), we find that in Southwest Germany the incomes of female *migrants* are the lowest (Table 3). As to the change of the corrected R^2 it seems that there is a strong interaction between vocational status and nationality. There are almost no changes between the models 3 and 4.[10]

Looking at the *occupation type* hypothesis 3 (H_m3) seems to be true: The highest incomes are reached in male-dominated jobs and the lowest in female-dominated jobs (Table 3). The lowest average female income is found in female-dominated jobs in rural areas, the highest in male-dominated jobs in core cities. Referring to the gender pay gaps, they are the highest in female-dominated jobs.

Continuation of Table 3: Outcome of different indicators on earnings

	Baden-Württemberg		
	Monthly cross salary	Women's earnings relative to men's in percent	Pay gap
Female monthly gross salary by size of enterprise			
Micro (1-9)	1588,82	66,58	33,42
Small (10-49)	2083,14	72,93	27,07
Medium (50-249)	2350,83	74,99	25,01
Large (more than 250)	2906,54	77,54	22,46

Female monthly gross salary by branch of industry

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[10] The corrected R^2 in model 3 is 0,18 in the women's case and 0,31 in the men's. The same applies to model 4. By bringing in an interaction term this will be tested in the further work with the regression models.

Agriculture and forestry	1527,61	75,72	24,28
Manufacturing and mining	2489,65	71,61	28,39
Construction	1819,15	69,65	30,35
Wholesale and retail trade	2046,88	69,76	30,24
Hotels and restaurants	1262,03	79,02	20,98
Skill-intensive (other)	2670,26	67,81	32,19
Skill-intensive (health care and education)	2308,61	66,93	33,07
Not skill-intensive (other)	2097,15	81,77	18,23
Not skill-intensive (health care and education)	2331,19	75,26	24,74

Source: BA Employment Panel 1998-2005 (Panel Wave 32), the authors calculations.

The coefficients of the regression models verify these findings, but in the separate models for women and men - looking at the corrected R^2 - the effect of the occupation type is almost irrelevant.

Looking at the *branches of industry* hypothesis 3 can be corroborated only in parts: Incomes are the highest in the skill-intensive (other) branches of the economy, where women and men are equally distributed, as measured by their proportion in employment (Table 3). The second highest incomes are reached in the manufacturing sector, where women are underrepresented. Regional disparities can be found in the gender pay gaps: the gender pay gap is the highest in skill-intensive (other) and skill-intensive (health care and education) sectors; interestingly they are the lowest in not-skill intensive (other).[11]

As assumed, the larger the *size of enterprise* is, the higher are the incomes (H_m4). This applies to both, men and women. Furthermore the descriptive statistics (Table 3) show that the gender pay gap is increasing from large enterprises to small ones.

Interestingly the regression coefficients are much higher for women in all regional types than for men. Also the explanatory value of this variable is much higher in the case of women (Table 6).

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[11] With regard to the regression models it has to be asserted that almost all branches of economic activities have a negative effect on the salaries of women. This is even more striking as the category of reference for the dummy variable was the non skill-intensive sector, which we expected to have the lowest salary level. Until now we found no plausible hypothesis for this fact and further investigation is needed.

B   Regional disparities

The main influencing factors to explain the gross salaries in South West Germany are, according to our regression models, the factors: vocational education and size of enterprise. Concentrating on these two factors gender disparities as well as regional disparities can be revealed.

Table 4: Not standardized regression coefficients for men and women in different regional types for model 3[1)]

Ref. lower secondary education	Women			
	Rural	Suburban	Urban	Core cities
Upper secondary education vocational	516,61***	471,58***	519,72***	559,16***
Upper secondary education general	680,74***	337,84	821,90***	743,56***
Post-secondary non tertiary education general	1127,60***	880,98***	1091,62***	1164,94***
First and second stage of tertiary education (UAS)	1373,57***	1288,21***	1539,62***	1459,07***
First and second stage of tertiary education (univ.)	1781,51***	1535,68***	1602,65***	1747,43***
Ref. lower secondary education	Men			
	Rural	Suburban	Urban	Core cities
Upper secondary education vocational	645,33***	659,50***	719,10***	634,53***
Upper secondary education general	919,09***	1022,63***	938,17***	968,47***
Post-secondary non tertiary education general	1430,64***	1299,43***	1493,43***	1223,50***
First and second stage of tertiary education (UAS)	1891,50***	1969,94***	1962,91***	1843,45***
First and second stage of tertiary education (univ.)	2167,99***	2078,26***	2068,81***	1899,56***

1) *** significantly different from 0 at the 0,1-percent level , ** significantly different from 0 at the 1-percent level , * significantly different from 0 at the 5-percent level , all other values are insignificant
Source: BA Employment Panel 1998-2005 (Panel Wave 32), the authors calculations.

The regression coefficients (Table 4) show that for men and women in all regional types rising vocational status implicates higher gross salaries. But in all cases the effect of vocational status on the gross salary is much higher for men. To give an example: In rural areas highly qualified men earn on average two-thirds more than low-skilled, while highly skilled women in rural areas only earn 49 percent more than low-skilled. In the core cities there are hardly any differences between highly-educated men and women (Table 4).

Table 5: Corrected R² for men and women in different regional types for model 3[1)]

	Rural	Suburban	Urban	Core cities
Women corr. R²	0,121	0,090	0,130	0,182
Men corr. R²	0,201	0,217	0,254	0,267

1) The values are the result of subtracting the corrected R² of model 2 from the corrected R² of model 3.
Source: BA Employment Panel 1998-2005 (Panel Wave 32), the authors calculations.

Looking at the explained variance (Table 5) in the case of men the explanatory value increases slowly from rural areas to core cities from about 20 percent in rural areas up to about 27 percent in core cities. An analysis of the women's values shows a different pattern. The values for rural and urban areas are almost the same (12,1 percent and 13,0 percent), but the value for suburban areas is with about 9 percent clearly below the other two regional types. But within the core cities the explanatory value of 18,2 percent is astonishingly high. So the question is: why does the explanatory value of vocational education vary over space? And why are there disparities between men and women?

Table 6: Corrected R² for men and women in different regional types for model 5[1)]

	Rural	Suburban	Urban	Core cities
Women corr. R²	0,203	0,187	0,168	0,144
Men corr. R²	0,091	0,092	0,106	0,102

1) The values are the result of subtracting the corrected R² of model 4 from the corrected R² of model 5.
 Source: BA Employment Panel 1998-2005 (Panel Wave 32), the authors calculations.

Besides vocational status size of enterprise is the second major influencing factor on the gross salary. As Table 6 shows there are both gender and regional disparities. As pointed out in Table 6 in the case of women the explained variance of the variable is the highest in rural areas and decreases to the core cities. In the case of men there are hardly any regional disparities.

Table 7: Not standardized regression coefficients for men and women in different regional types for model 5[1)]

Ref. 1-9	Rural		Suburban	
	Women	Men	Women	Men
10-49	432,74***	297,49***	510,38***	371,05***
50-249	788,83***	534,88***	814,32***	631,69***
> 250	1193,16***	911,35***	1179,11***	997,17***
Ref. 1-9	Urban		Core cities	
	Women	Men	Women	Men
10-49	519,71***	397,51***	396,73***	471,89***
50-249	772,20***	622,16***	640,54***	650,01***
> 250	1220,69***	1114,02***	1147,26***	1158,00***

1) *** significantly different from 0 at the 0,1-percent level , ** significantly different from 0 at the 1-percent level , * significantly different from 0 at the 5-percent level , all other values are insignificant.
Source: BA Employment Panel 1998-2005 (Panel Wave 32), the authors calculations.

In both cases, for men and women, a bigger size of enterprise implies higher gross salaries (Table 7). Except for the core cities, the regression coefficients are higher for women than for men. Within the core cities the regression coefficients of women and men are almost identical for enterprises with 50-249 and for enterprises with more than 250 employees, within the class of 10-49 employees the regression coefficient is much higher for men.

Conclusion

The descriptive statistics show three main findings: Independently from the investigated factors and across all regions women earn less than men. Moreover female´s and male´s average incomes are predominantly increasing from rural areas to core cities. Inversely looking at the gender pay gaps they are declining from rural areas to cores cities.

The best variables to explain the incomes were the vocational education in the men´s case and the size of enterprise in the women´s case. We were able

to show, that especially the effect of vocational status of women varies strongly over space and is much lower than in the case of men. Besides strong regional differences could be revealed.

Interestingly also the explanatory value of the models differed between men and women. The fit of the model was much better for men. So additional factors must be driving forces for the incomes of women.

Discussion

Searching for an explanation for the strong effect of size of enterprise on the gross salaries of women the interpretation of Anja Heinze and Elke Wolf (2006) can be used. They suggest that strong regulations in large enterprises lead to a gender equalizing effect on incomes. Because of the legal framework enterprises which have no more than 10 employees are not compelled to establish a work council. On the other hand with increasing size of enterprise it is more likely that a work council is established. Heinze and Wolf (2006) also show that the gender pay gap is smaller within enterprises that have a formalized co-determination (work councils).

Another explanation might be the traditionalism-hypothesis of Max Weber (1920, 1988), which says that Catholics in contrast to protestants tend to be more traditional. As large firms or enterprises could be predominantly owned or lead by Prussians, which are predominantly protestant, these firms or enterprises could be less tradional. In contrast small and locally embedded firms or enterprises could be owned or lead predominantly by the catholic majority in the southwest of Germany. For this reason the traditionalism could then exert itself in lower incomes for women.

The next question to be raised is why the explanatory value of vocational status does vary over space. As the hypothesis H_r1 in section 3 show, we did not expect this effect. We thought that the effect of vocational status would be the same in all regional types. As a potential solution to this problem we suggest a mismatch hypothesis: this means a spatial mismatch between offered positions and the vocational status of potential employees.

The spatial mismatch hypothesis was originally developed to explain the wage disparities between caucasians and afro-americans by different access to transportation and therefore differently sized job search areas (John F. Kain 1968). Also the theory of differential overqualification, developed by Robert H. Frank (1978) takes mobility into account. The combination of the two hypotheses seems to fill this gap.

As shown above the explanatory value of vocational status increases for men from rural areas to core cities (Table 5). Because of the smaller job markets in rural areas and the bigger job markets in the core cities it is more likely to be over- or underqualified for a job in a rural area than in a core city. This seems to

be sound for men, but why is the gap between core cities and the other regions so wide for women? This is where different mobility patterns of men and women come in (Table 8).

Table 8: Commuting distances and percentage of commuters in different regional types

	Women		Men	
	Commuting distance	Percentage of commut-ers	Commuting distance	Percentage of commut-ers
Rural areas	20,3 km	68,4	26,1 km	77,6
Suburban areas	19,6 km	67,4	25,5 km	78,4
Urban areas	18,7 km	64,6	25,7 km	76,3
Core cities	34,6 km	28	41,6 km	41,4

Source: BA Employment Panel 1998-2005 (Panel Wave 32), the authors calculations.

Table 8 shows that the percentage of commuting women is lower than that of men and also the commuting distances of women are lower than that of men. Both values show the different mobility patterns and it is clear that these differences have an effect on the expansion of the job search areas of men and women. As the job search area of women is smaller, due to the smaller commuting distances, the probability to be over- or undereducated for a job rises for women. On the other hand it is likely that women in the greater labour markets of the core cities have more possibilities to find an adequate job according to their vocational education.

Both, size of the local labour market and the expansion of the potential labour market by commuting, are strong factors to explain the differences in the explanatory value of vocational education for men and women.

Much more investigation is needed to analyse regional disparities of gender issues. As the BEP is the only dataset which allows studies on the level of the local authority districts [*Gemeinde*], our further research will be based on this dataset. As pointed out above a new line of research is the combination of mobility patterns and the skill mismatch of men and women. Mats Johannson and Katarina Katz (2007) have shown for Sweden that skill mismatch is a major driving force for the gender pay gap. As a consequence of this research it seems to be fruitful to deepen this approach into the regional dimension.

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