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Educational expansion, segregation and occupational placement of women and men – Gender specific changes in entry jobs' prestige and wages

1. Introduction

One of the strongest effects of educational expansion in Germany is the enormous rise in educational attainment of women. While in the 1960s women lagged behind men, they first caught up continuously and today they even have surpassed men in several fields of education. Thus, educational expansion has not led to gender equality – at least in the area of school based general education – but to better results of women.

On the other hand, research mostly assumes that women could not translate their educational gains adequately into working life. First, gender segregation in vocational training and higher education is strong and very persistent. Women are channeled into different training occupations and fields of study than men and their range of occupations is still narrower. Second, the link between education and labor market entry is particularly close in Germany: Persons are allocated to occupational positions according to their field of vocational training. By this mechanism gender segregation in the training system and higher education is transferred into the labor market. Finally, female dominated jobs are characterized in various respects by worse conditions than male dominated jobs: women's employment is more insecure, their wage levels and positions are lower and their promotion chances are worse.

However, assumptions about persistent male advantages in employment entry could increasingly loose empirical ground: Besides educational expansion also structural changes in the labor market such as occupational upgrading and sectoral change challenge these assumptions. Since the labor market is based increasingly on highly qualified, knowledge intense jobs and on service sector occupations – traditionally a strongly female dominated domain – the question arises if these changes have led to male disadvantages in occupational placement or if men still start their employment careers from a better position than women.

We aim to answer this question by analyzing changes in prestige and wages of employment entry cohorts in West Germany from 1980 until 2003. In particular, we are interested in changes of the effects of gender, educational attainment as well as occupational segregation. In the next section we subsume previous research on gender inequality in occupational placement. Subsequently, we discuss our theoretical considerations and hypotheses. In the

fourth section we describe our data, central variables and methods. After presenting the results of our empirical analyses, the article concludes with a discussion and an outlook on further necessary research.

2. Changes of gender inequality in employment entry

For analyzing occupational allocation different indicators are used in literature: labor market sector or segment, class, status and prestige as well as entry wages. Regarding the *occupational structure* of first jobs, Blossfeld (1984, 1985, 1987) showed for the early phase of German educational expansion until the late 1970s that women could enhance their occupational entry chances in all fields that required those educational preconditions they could raise during educational expansion. In 1978, their gains were still restricted on occupational segments that require medium secondary schooling and vocational training or a *Fachhochschule* degree. On the other hand, his results suggested that the gendered structure of occupational entry was very stable, mainly due to persistent gender specific choices of vocational training (cf. also Handl 1986, Brückner & Rohwer 1996). The new qualified jobs in the service sector did not change this structure, since they were strongly gendered as well (cf. also Charles 1992, Charles & Bradley 2004). This result is confirmed by newer analyses: *Horizontal segregation* is still strong and persistent in the West German training system, and it is transmitted more or less directly into the labor market at employment entry. Moreover, young men are even more concentrated in gender-typical fields of training than women (Trappe 2004, 2006).

Horizontal segregation strongly affects the economic side of occupational attainment: Young women still earn considerably less than men in their first job, despite of a slow decline of the *gender wage gap* at job entry in the last decades (Kunze 2002, Fitzenberger & Kunze 2005). Economic returns to education seem to be the same for women and men in their entry jobs (Kunze 2002, Trappe 2004). Rather, the bulk of earning differences at this early point of the employment career is explained by the strong segregation in vocational training, since lower levels of experience and tenure due to childcare – typical factors negatively influencing women's wage developments – show their impact later. Similar to entry wages, women still have disadvantages in terms of their class allocation (Gundert & Mayer 2007, Däumer 1993, Müller et al. 1998). Class analyses differ, though, regarding the question of returns to education: While Müller et al. do not find remarkable gender differences, Gundert's and Mayer's as well as Däumer's analysis suggests lower returns of women.

In contrast to wage development, female labor market entrants' *job prestige* has grown stronger than male and is higher in the 1990s (Müller 2001). Thus, women have gained at least "symbolic advantages" regarding their early career outcomes (Müller et al. 1998: 171), but these are mainly explained by the higher prestige scores of female dominated non-manual routine jobs in contrast to male dominated manual work. Prestige returns to education seem to be constant over time or even rising for women and men, and in general women have higher prestige returns than men (Müller et al. 1998). A similar result is found in Schiener (2006) who looked at the qualification level of entry jobs: He showed constantly higher relative returns of women[1] over a time span from 1984 to 2000. These can be traced back mainly to two educational groups: women and men with vocational training and either medium secondary or higher secondary education. The absolute returns of women and men turned out to be stable from the mid 1980s to the end of the century, while they dropped for male and increased for female university graduates.

Taken together, research on gender specific aspects of the transition into employment shows a differentiated picture of constant disadvantages of women on the one hand, mainly influenced by the strong and persistent horizontal segregation in education and training, and increasing advantages on the other hand, mainly caused by their educational gains. However, most of the existing results do not apply to employment entry cohorts after the mid 1990s, and thus do not account for the continuing educational gains of women. Furthermore, the different kinds of returns to education in the early working career are analyzed separately and sometimes only for subgroups or particular birth cohorts. Finally, the effects of occupational segregation and educational expansion are mostly not analyzed jointly over a longer time-span for women and men.

We take these research gaps as a starting point for our own analysis, focusing on gender specific trends in occupational placement of labor market entrants in West Germany from the 1980s until 2003 and addressing influences of educational expansion as well as segregation. We concentrate on two aspects of occupational attainment that seem to differ fundamentally according to previous research: on the one hand the more or less symbolic sphere of job prestige, on the other hand the economic sphere of (cf. Hauser & Warren 1997). With this dual focus we are able to illustrate the longer-term development of gender inequality more coherently than by analyzing just one of them – the sociological dimension of status based on the assumption that occupations are used as a device to interpret and label social position in inter-

[1] His analyses are based on the complete workforce, not only on labor market entrants.

action (Ganzeboom & Treiman 2003) as well as the economic dimension of status based on the assumption that wages decide about power, expenditures and poverty risks.

3. Theoretical considerations

Our theoretical considerations are based on the assumption that new entrants are affected more by structural changes than older cohorts in the workforce, since they are less protected in the highly regulated German labor market, a "flexibly coordinated economy with closed employment relationships" (Soskice 1999). Changing labor market conditions thus lead to a higher flexibility at the edges of the workforce, concerning labor market entrants as well as older employees (Buchholz & Kurz 2008). From another viewpoint, structural change in the German labor market is triggered mainly by cohort exchange, whereas intrapersonal mobility is comparably low (DiPrete et al. 1997, Allmendinger & Hinz 1998).

A stable structural element in Germany is the strong link between vocational training and occupational chances: Persons are allocated to occupational positions according to their vocational qualifications, thus the mobility space in Germany is primarily based on qualifications (Müller & Shavit 1998, Müller et al. 1998, Solga & Konietzka 2000). *Occupationalism* thus is a decisive mechanism of reproduction of social inequality (Solga & Konietzka 2000) and it also affects gender inequality: Since young women are channeled into different fields of training and study than men (for overviews cf. Smyth 2005, Seibert 2007), segregation is reproduced in the labor market by the strong link between trained occupation and placement (Solga & Konietzka 2000, Trappe 2006). Empirically, this can be seen by nearly similar patterns of gender shares in different fields of training and in positions in the first job (Trappe 2006). The share of women in occupations has a substantial negative effect on entry wages (Kunze 2002, Trappe 2004), and from gender wage gap analyses in the whole labor force we know that this effect is stronger for women than for men (Brückner 2004). However, newer analyses hint at a declining explanatory power of occupational segregation on wages. According to Aisenbrey and Brückner (2006) in younger cohorts the entire gender wage gap is due to differences within occupations. In contrast to wage, the prestige of female occupations is often even higher than the prestige of male occupations (Müller 2001). In Figure 1 the development of occupational segregation of women and men in the complete German labor market is displayed, using two measures: the index of dissimilarity and the Gini index (for a discussion cf. Massey & Denton 1988).[2] Both indices show that the amount of occupational segregation and

[2] For details on the data source and estimation cf. section 4.

gender inequality in the West German labor market has slightly decreased since 1980, but it still extraordinary strong in 2003. Thus, women may have benefited from the grown heterogeneity, in particular in terms of entry wage. This may even more be the case if the influence of occupational segregation has decreased, as Aisenbrey and Brückner's (2006) results suggest.

- Figure 1 -

Other structural factors in education and employment were subject to greater changes. First and most important in the context of this volume, *educational expansion* continued until the mid 1990s, but slowed down afterwards (Reinberg & Hummel 2006). However, this accounted mainly for young men, whereas women could further expand their educational attainment. Women did not only catch up with men, but even surpassed them in several aspects and fields, for example in terms of general schooling levels (Budde 2008, Baethge et al. 2007) and in basic cognitive competences (Deutsches PISA-Konsortium 2001: 253). In vocational training the same trend is visible: Women nowadays form nearly half of the graduates of dual firm-based training (Hartung & Janik 2006), and they traditionally hold the majority in school-based training (Konsortium Bildungsberichterstattung 2006, BMBF 2006, Faulstich-Wieland 2003). In contrast, young men participate at a higher rate than young women in vocational preparation schemes which do not lead to fully recognized certificates (Budde 2008, BMBF 2006, Faulstich-Wieland 2003). A main reason for this trend is sectoral change. As a result, the supply of firm based training positions in the production sector and crafts, traditionally male dominated fields, has strongly declined in the last years. By this change the chances of lower educated young men to find adequate firm-based training positions have declined (Baethge et al. 2007, Budde 2008). In higher education women have caught up with men and by now they have lower drop-out rates (Autorengruppe Bildungsberichterstattung 2008). Accordingly, continuing female participation in vocational training and higher education should have lead to growing advantages in occupational placement as well. Taken together with rising female employment participation, the educational gains of women may also have an indirect effect, leading to a gradual change in employers' perceptions of potential risk candidates and in turn to recruitment strategies more favorable for women.

Regarding changes in the labor market, *occupational upgrading* has continued from the mid 1990s due to increasing globalization of commerce and markets (Gangl 2003, Schubert &

Engelage 2006).[3] Taking the stagnation of educational expansion since the mid 1990s into account, the demand of highly educated labor market entrants may have been higher than the supply in the German labor market since the mid 1990s (Müller 2001: 57). Thus, there is no reason to assume a deflation of educational certificates or occupational displacement of lower qualified entrants.[4] From a gender perspective another aspect of occupational upgrading may be more important: the shift from manual occupations in industry and crafts to non-manual occupations in the service sector (Schubert & Engelage 2006). Since women are trained more often than men in service occupations, they may enjoy smoother transitions into employment (for first empirical hints cf. Burkert & Seibert 2007), resulting also higher prestige and wages.

Our theoretical considerations on the effects of gender, education and occupational segregation over time work lead to the following hypotheses:

H1 (trends in general gender differences): Women have been allocated to entry jobs with a higher prestige than men in the whole analyzed time and their advance has grown over time. In contrast, women's entry wages have been lower than men's, but the trend has been the same: Women have been catching up over time.

H2 (cohort effects): This trend can be attributed mainly to continued educational gains of women and a steady growing demand of qualified workers and employees in the service sector and additionally to the slight decline in occupational gender segregation. In other words, women's increasing advantages in terms of prestige and the decreasing disadvantages in terms of wages are mainly results of compositional shifts. Thus, we expect no decline in prestige and wage returns for men and women in general over time and the relative returns to education to be more or less stable. Accordingly, we assume that occupational gender segregation has a constant strong effect on prestige and entry wages.

H3 (gender differences in educational groups): Regarding gender differences in prestige returns in specific educational groups, we expect higher returns of women with low educational levels. In contrast, women may achieve lower wage returns than men in every educational group, but this returns gap should decline over time.

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[3] A scientific debate has discussed the development of returns to education during educational expansion, partly expecting declining returns and displacement processes, partly not expecting changes due to occupational upgrading (cf. Müller 2001, 1998, Däumer 1993; contradictory Blossfeld 1984, Handl 1986, Schiener 2006). All in all, the empirical results suggest that the demand for higher qualified employees in the German labor market seems to have grown accordingly to educational expansion until the mid 1990s.

[4] In this context it is important to mention that it is conceptually impossible to distinguish clearly between supply and demand factors when taking labor market entrants into account, since this group is positively selected and changes in occupational structures in the German labor market are mainly realized by cohort exchange.

H4 (gender differences in male and female occupations): We expect the prestige to be higher in female dominated and mixed occupations and lower in male dominated occupations, whereas entry wages should be lower in female dominated than male dominated and mixed occupations. According to previous research results, segregation effects on prestige should be the same for women and men, while segregation effects on wages should be higher for women.

4. Data, variables and methods

For our analysis, we use a process-produced dataset, the IAB employment sample (IABS) (cf. Drews 2007, Bender et al. 2000), covering data from 1975 to 2004. It contains employment histories of a 2 % sample of all employees covered by social security in this timeframe in Germany. For these persons it comprises exactly dated event history data consisting of employers' notifications to the social security system and employment agency data on times of unemployment benefit entitlement. For our purpose the dataset is suited well because it allows identifying the first stable job in the group of dependent gainfully employed persons in Germany, it contains detailed information on occupations and wages, and it is large enough to compare different labor market entrant cohorts, a task not being possible with existing survey data.

Our analysis dataset has a cross-sectional times-series structure of employment entry cohorts. First, it was restricted to all persons who have passed their entire reported employment career in West Germany (without Berlin) in order to minimize the risk of inclusion of East Germans who moved to West Germany after re-unification but had started their employment careers in the GDR. Afterwards, only the first employment episode (excluding marginal part-time employment) in an age range between 15 and 34 years lasting at least six months with a wage above 0 € was used. For the group of persons who had participated in the dual system of vocational training, we were able to identify the first stable job more precisely, since training episodes can be identified in the data. For this group we used the first gainful employment episode after their first vocational training episode.[5] Finally, we restricted the entry job cohorts to the years 1980 to 2003 to exclude incorrect entries caused by left censored employment histories as far as possible.[6] Excluding cases with missing data in our used variables and

[5] Known problems connected with the reported length of the training episodes were corrected first.

[6] The data for 2004 was not used because the chance to have an entry job lasting at least six months is considerably lower than in the previous years due to right censoring.

cases in the 1st and 99th centile of the wage distribution in every year left us with entry job information for 347,096 persons.

The central dependent variables in our analysis are the *occupational prestige* and the *wage* in the first job. To measure prestige we use Wegener's Magnitude Prestige Scale (Wegener 1980, 1985) since it is considered to be "the best available measure of prestige in Germany" (Müller 2001: 39).[7] However, prestige scales have the disadvantage of low external validity leading to lower and instable associations with other variables compared to status (Hauser & Warren 1997: 190). Thus, we complement it with a second aspect of occupational placement, the *average gross daily wage* in the first job.[8] We converted wages before 1999 in Euros and deflated them with the official Consumer Prize Index for West Germany to allow for cohort comparison. In the analyses the natural logarithms of both variables are used (for description cf. Table 1 in the appendix).

Our central independent variables are sex, the year of employment entry, segregation and educational level. To measure *occupational segregation* we used the whole IABS data for West Germany. On this base we counted the number of women and men in 331 occupations (all occupations in the 3-digit version of the German occupational classification) for every day and summarized these values for every year. For our multivariate analysis we generated a set of dummy variables indicating if labor market entrants are placed in a male dominated (28% or less women), in a female dominated (72% or more women) or in a mixed occupation.[9]

In the IABS only six broad *levels of education* can be distinguished (cf. Table 1 in the appendix). Information on education is not very reliable in the IABS since it is not central for determining social security contributions. Educational levels often vary implausibly within single employment histories and missing entries are frequent and increasing over the years. To account for these problems, we used an imputation procedure developed by Fitzenberger et al. (2005).[10]

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7 In our data we only have occupational information based on the German classification (KldB 1988, 3-digit level) which is not directly compatible with ISCO. Thus, we use a tested reconstruction for the MPS based on the KldB (cf. Frietsch & Wirth 2001).

8 Employers have to notify information on their employees every year. Thus, for jobs lasting one year or longer, the gross daily wage is an average for the first year in the entry job, while for shorter jobs it is an average for the whole employment episode.

9 We could not use the conventional limits for these groups of 30% and 70% (cf. Jacobs 1995, Hakim 1993) because a large entry occupation (skilled office clerks) had a share of females slightly above 70% in between 1988 and 1999 and slightly below before and afterwards. This change would result in a 10% increase in female entry occupations in the mentioned years and therefore leading to distorted OLS results.

10 In detail, we use the third suggested imputation routine based on the frequency of education reports by different employers.

Finally, three *control variables* are included in the analyses: foreign nationality, the age of employment entry (measured in years), and part-time work. The latter variable is important to account for the lower daily wages of part-time workers. We decided not to exclude part-time employees (as is often done in wage analyses based on the IABS) since a considerable amount of female (but also increasingly male) labor market entrants would be neglected, thus producing results only valid for a probably biased subgroup, while general trends in occupational placement may be overlooked. By including the age of employment we account for heterogeneity within the broad educational groups. The statistical characteristics of all described variables are found in Table 1 in the appendix.

To test our hypotheses, we use linear regression models. First, we estimated models stratified by entry cohort and sex, controlling for German nationality and part-time work, education and age as well as occupational segregation. Second, we estimated pooled models for all labor market entry cohorts with continuous time trend variables and then tested for stable gender interaction effects over time and for cohort interaction effects in separate models for women and men. Testing for the best approximation to the time trends, we decided to include a linear cohort effect in the prestige regressions and a curvilinear effect (including cohort and cohort squared) in the wage regressions. All the models are estimated for log prestige as well as for log wage. Mainly for the sake of space, we do not present the results of the stratified models.[11]

5. Results

We start by describing the development in prestige and wage for male and female labor market entrants. Figure 2 shows the trends in log prestige and log wag by sex. As expected, women attain considerably higher prestige scores in their entry jobs than men. This difference stays more or less constant over time. For women and men alike, a slight upward trend in prestige can be observed, hinting at a modest amount of occupational upgrading. The development of entry wages looks different: As assumed, women earn less in their first jobs than men, but the gender wage gap decreases continuously – when real wages are taken into account, from 77% in 1980 to 92% in 2003. The overall trend shows a steady increase in price adjusted log entry wages in between 1983 and 1992. Afterwards, they declined until 1999 and then increased slightly again.

- Figure 2 -

[11] The results are available on request by the authors.

Now we analyze the reasons for these changes in more detail, first for prestige and second for wage. Tables 1 and 3 contain estimation results of pooled models for the whole sample, testing for gender interaction effects. Tables 2 and 4 contain results of separate models for women and men, testing for cohort interaction effects.

5.1 Prestige returns

The basic model (Table 1, model 1) shows a positive gender effect on log prestige in the entry job and no significant cohort interaction with this effect. Thus, our results point to stable advantages for women in terms of entry job prestige. In contrast to our expectation (H1), no trend in the gender difference in prestige is visible. This result has to be modified, though, when taking prestige estimates for different subgroups into account:

- Table 1 -

Regarding educational level, prestige scores for male and female university graduates (the reference group) do not differ significantly. The same accounts for women and men with *Abitur* and no vocational training as well as with vocational training. In contrast, women with no *Abitur* and vocational training (and to a lesser degree also unskilled women) attain considerably higher prestige returns to education than men (as hypothesized in H3), whereas women with a *Fachhochschule* degrees realize far lower returns. Whereas the gender differences in the lower skilled groups are stable over time, the prestige of female, but not for male *Fachhochschule* graduates increases.

- Table 2 -

Generally, education has a strong effect on job prestige. In contrast to the reference group, university graduates, all other educational groups, women and men alike, could increase their entry job prestige over time. This trend is strongest in the two groups without vocational training. Thus, contrary to our expectations (H2) prestige returns to education got more similar over time. However, we do not find any signs of displacement of lower skilled entry groups by higher educated. On the contrary, our results point to a higher skill demand than supply.

Second, occupational gender segregation considerably affects prestige: When controlling for the gender typing of entry occupations, the effect of gender on prestige declines significantly. Thus, gender differences in prestige are partly due to the gender typing of occupations that leads to certain prestige wins and losses. Hypothesis 4 has to be revised partly, though: Labor market entrants in male, but also in female dominated occupations attain less prestige than entrants in mixed occupations. Furthermore, the negative effects of female occupations are

stronger for women than for men (significant gender interaction effects in Model 2). In female dominated occupations, women attained about 10 percent less prestige than in mixed occupations, while the effect for men was negligible until 1990 and comparable to women afterwards. In male dominated occupations, only minor and unstable gender differences are visible in the stratified cohort models. However, the prestige losses in these occupations are higher and constantly increasing, from around 10% in 1980 to more than 20% in 2003. Thus, contrary to our hypothesis (H2), entering employment in a male occupation has an increasing negative effect on job prestige. The interpretation of this result depends on the development of the occupational structure: If the gender typing of occupations changed, it suggests that men are increasingly crowded in low prestige occupations. If the gender typing structure remained stable – and that was the case in West Germany –, it suggests that in male dominated field in crafts and industry entry positions increasingly loose prestige – thus, the occupational structure is continually downgraded in these sectors.

Finally, we do not find a significant influence of part-time work on prestige, with one exception: Men working part-time in had a far higher prestige in the early 1980s than men working full-time. This difference disappeared over the subsequent years, when the rates of part-time working men and women increased. Thus, men working part-time had constituted a small selective group of mainly academic entry positions in the 1980s. As the share of part-time work increased, it became more heterogeneous and thus less influential on job prestige.

5.2 Wage returns

The first regression model of entry wages (Table 3, Model 1) shows clearly that the gender wage gap has declined throughout time, visible in the highly significant cohort interaction effect of sex. Detailed results of male and female entry wages in the stratified cohort models show that the gender wage gap was fairly stable until 1991 and has declined constantly afterwards. From 1999 on the effect of sex on log wages is not significant anymore; thus the gender wage gap has closed completely when controlling for part-time work, occupational gender segregation and educational level. Thus, hypothesis 1 is confirmed by our results.

- Table 3 -

This trend can be explained mainly by part-time work and educational level. Obviously, since we have only information for average daily wages, part-time work results in a high wage penalty. This penalty is even more pronounced for men than for women (Model 2, Table 3). Controlling for part-time work decreases the effect of sex about 2 percentage points until the early

1990s. Since then its influence has increased considerably, also visible in the significant cohort interaction effects for women and men (Table 4). This is mainly an effect of grown numbers of part-time employees, whereas the relative wage penalties of part-time work remain relatively constant over the years in the stratified regressions models. Thus, part-time work explains a substantive part of the raw gender wage gap, since more women then men have been working part-time and the share of labor market entries in part-time has been increasingly steadily in both groups.

- Table 4 -

Educational level has a strong and persistent effect on entry wages. Wage returns to education have developed similarly for most educational groups (with a steady increase until 1991 and stagnation afterwards), with one important exception: For entrants without vocational training (with *Abitur* or lower schooling) wage returns have declined sharply throughout the 1990s compared with the higher skilled groups. This trend, confirmed by strong negative cohort interaction effects (Table 4), reflects devaluation processes of unskilled persons with regard to wages. In contrast, returns to education for skilled entrants and higher education graduates have not been declining over analysis time (visible in the cohort effects in Table 4), thus no signs for a displacement of lower skilled through educational expansion are visible. Hence, hypothesis 2 has to be qualified in part: As expected, no dissolving of the impact of education on wages can be observed, as well no general decrease in returns to education. However, unskilled employment entrants had to put up with increasing wage disadvantages compared to higher educated entrants.

Regarding gender differences, divergent trends in educational groups can be observed: In the reference group, university graduates, the gender wage gap is relatively small (Table 3, Model 2). In comparison with this group, females with vocational training achieved lower wage returns than their male counterparts until the early 1990s (resulting in a bigger wage gap than in the reference group); afterwards this difference disappeared (visible in contrary cohort interaction effects). The same trend accounts to labor market entrants with *Abitur* and vocational training. In contrast, wage returns of female *Fachhochschule* graduates were constantly lower than the returns of male graduates. Despite of slightly decreasing returns of men in this group this trend has resulted in a remaining wage gap. Women no vocational training (without and with *Abitur)* obtained far lower wages than men when compared with the reference group (Model 2, Table 3). For men and women alike, the wage returns for unskilled entrants decreased, in particular for men without *Abitur*. The large gender wage gap in the lowest educa-

tional group remained substantive throughout the years, though. Thus, in 2003 a significant gender wage gap remained in only three educational groups: *Fachhochschule* graduates and unskilled labor market entrants with and without *Abitur*. Whereas in our third hypothesis we expected a gender wage gap in every educational group and a similar decline of the gap throughout the groups, our results point to highly differential trends in educational groups.

Taken together, our results show that part of raw gender wage gap can in fact be explained by educational gains of women, as assumed theoretically (H2): Controlling for education lowers the effect of sex on entry wages considerably in the 1980s, then its influence is decreasing, and from 2001 on it is not visible anymore. Increasing numbers of women are found in those educational groups where the gap has closed, university graduates and entrants with vocational training, and declining numbers in two of those groups where the gender wage gap still exists, unskilled entrants with and without *Abitur*.

In contrast, occupational gender segregation has only a weak effect on wages: Controlling for the gender typing of entry occupations increases the explained variance of wages only slightly. Generally, entering the labor market in female dominated occupations has a similar declining negative effect for men and women compared with mixed occupations (Table 4). The stratified regression results show that this effect is significant for men only in the 1980s, for women until the mid 1990s. Thus, our results do not confirm the expectation that women obtain a greater wage penalty than men for working in a female dominated occupation (H4). As assumed in hypothesis 4, entering the labor market in male dominated occupations has hardly any effect on estimated entry wages compared to mixed occupations (significantly positive in the pooled models, but mostly insignificant in the stratified models). All together, despite the high amount of occupational gender segregation and its persistence in the West German occupational structure, it has lost its influence on entry wages – segregation and wages are increasingly decoupled. According to the bulk of research that states a constant and high effect of occupational gender segregation on wages, we did not expect this result, but it reflects well the results of Aisenbrey and Brückner (2006), who found as well negligible effects in younger birth cohorts.

6. Discussion

In general, our results confirm our central assumption: Structural changes in education and the labor market have enhanced the occupational placement of women in West Germany from 1980 to 2003. In terms of entry job prestige, we can observe stable advantages for women. In

terms of entry wages, the gender wage gap is closed – at least, when taking the higher amount of part-time working women into account. However, these results do not implicate that gender equality is realized in general. Even when the gender wage gap at the time of employment entry is closed, it opens up again in later stages of the career, in particular after child birth. With respect to life-course changes, gender differences even may have increased due to the heavily grown rates of part-time working mothers. A thorough analysis of the changes in life-course patterns of the gender wage gap over time is still missing, though.

Besides, occupational gender segregation – usually considered as the decisive factor explaining the gender wage gap at employment entry – has lost its influence on wage determination. In contrast, it has an increasing effect on the job prestige, but with opposite signs: While starting one's employment career in a female dominated occupation has only a minor negative effect on one's prestige, starting one's career in a male dominated occupation has led to increasing disadvantages, irrespective of one's own sex. We do not know, however, about the effect of firm-specific segregation on prestige and wages – another aspect of gender separation in work that is strong in the German labor market (Hinz & Gartner 2005). Thus, a next analysis step would be to include firm-specific factors.

In addition to our general findings, we can still observe gender differences in certain educational groups: From 2000 on, a significant wage and prestige gap remained for female *Fachhochschule* graduates, even when controlling for occupational segregation that is particularly strong in this educational group. Unskilled women continued to have wage disadvantages as well, but they attained jobs with a comparably higher prestige than men. It has to be analyzed in future how these differences will develop further. More important in our view is the considerable change in returns for the whole group of unskilled labor market entrants, men and women: Compared with higher qualified groups, they have increasingly managed to enter higher prestige occupations, nevertheless their wages declined, in particular during the 1999s. With our models we are not able to attribute these developments to particular macro-structural changes. Thus, it would be fruitful to model them explicitly in order to attribute changes in entry job prestige and wages of women and men to effects of educational expansion, occupational upgrading, sectoral change, and cyclical labor market changes, in particular the growing unemployment rates.

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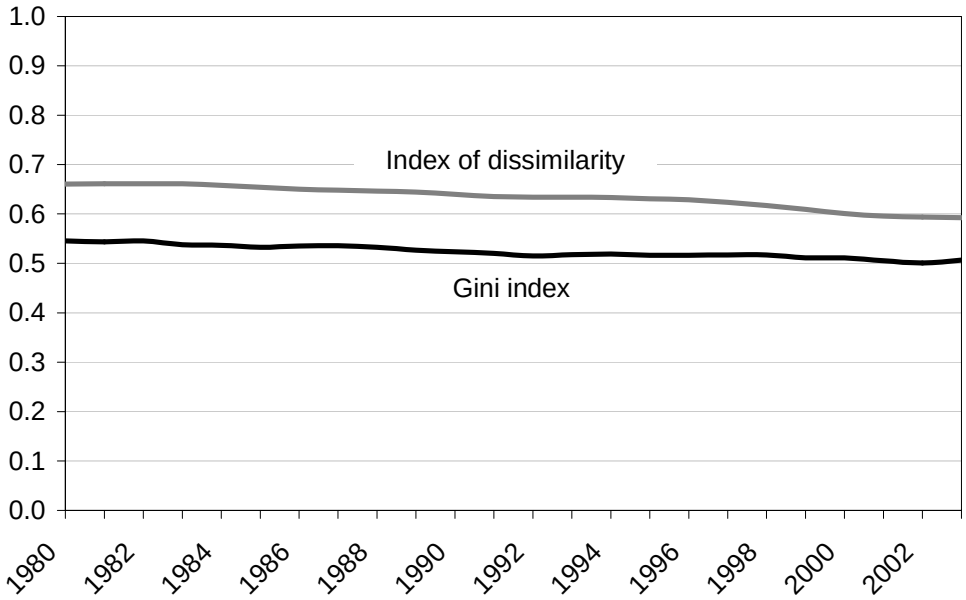
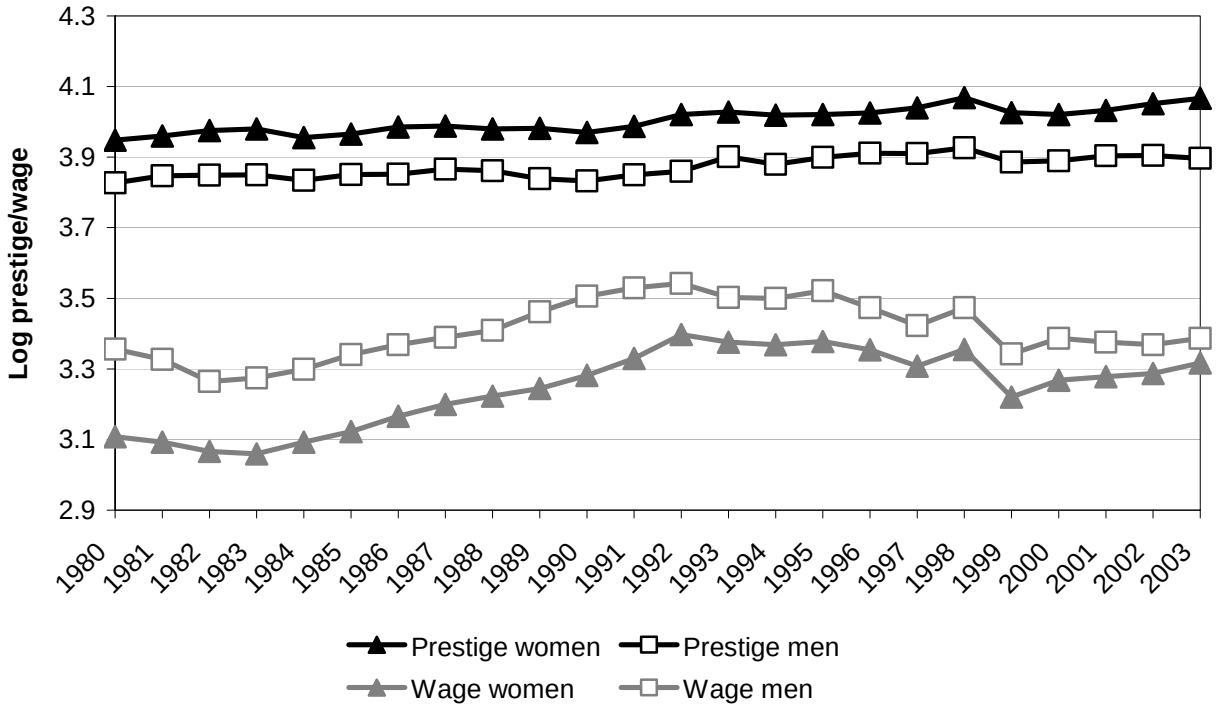
Figures and tables

Figure 1: Occupational gender segregation and inequality, 1980-2003



Source: IABS 1975-2004, own calculations

Figure 2: Changes in log prestige and log price adjusted daily wage in the first job by sex



Source: IABS 1975-2004, own calculations

Table 1: Pooled linear regression of log prestige, whole sample

Model 1: Basic model				**Model 2: Gender interaction effects**			
	Coef.		Std.err.		Coef.		Std.err.
Female	.054	**	.002	Female	.003		.004
Cohort	.001	**	.000	Cohort	.003	**	.000
Non-German	-.093	**	.001	Non-German	-.093	**	.001
Part-time	-.005	*	.002	Part-time	.038	**	.003
Female occupations	-.087	**	.001	Female occupations	-.075	**	.003
Male occupations	-.203	**	.001	Male occupations	-.184	**	.001
No training	-.906	**	.002	No training	-.918	**	.003
Abitur, no training	-.600	**	.003	Abitur, no training	-.594	**	.004
Training	-.716	**	.002	Training	-.762	**	.003
Abitur, training	-.533	**	.002	Abitur, training	-.512	**	.003
Fachhochschule	-.263	**	.003	Fachhochschule	-.195	**	.004
Age (mean centered)	.000		.000	Age (mean centered)	.002	**	.000
Female*cohort	.000		.000	Female*part-time	-.052	**	.003
				F*female occupations	-.027	**	.003
				F*male occupations	-.018	**	.003
				F*no training	.043	**	.004
				F*Abitur, no training	-.001		.006
				F*training	.119	**	.004
				F*Abitur, training	-.005		.005
				F*Fachhochschule	-.199	**	.006
				F*age	-.005	**	.000
Constant	4.68487	**	.002	Constant	4.695	**	.003
Adj. R^2	.512	**		Adj. R^2	.523	**	
N	347096			N	347096		

Significance: * < .01, ** < .001, omitted category for segregation: mixed occupations, for education: university graduates.

Source: IABS 1975-2004, own calculations

Table 2: Cohort interaction effects in pooled regressions of prestige, men and women

Model 3	**Men**			**Women**		
	Coef.		Std.err.	Coef.		Std.err.
Cohort	.000		.000	-.001	*	.000
Non-German	-.091	**	.002	-.093	**	.002
Part-time	.118	**	.006	.002		.004
Female occupations	-.035	**	.005	-.111	**	.002
Male occupations	-.132	**	.003	-.136	**	.004
No training	-.996	**	.006	-.965	**	.006
Abitur, no training	-.676	**	.010	-.669	**	.010
Training	-.806	**	.005	-.682	**	.006
Abitur, training	-.544	**	.007	-.565	**	.007
Fachhochschule	-.190	**	.008	-.431	**	.010
Age (mean centered)	.004	**	.000	-.002	**	.000
Cohort*part-time	-.006	**	.000	-.002	**	.000
C*female occupations	-.004	**	.000	.001	**	.000
C*male occupations	-.005	**	.000	-.006	**	.000
C*no training	.007	**	.000	.008	**	.000
C*Abitur, no training	.007	**	.001	.005	**	.001
C*training	.004	**	.000	.003	**	.000
C*Abitur, training	.003	**	.001	.003	**	.001
C*Fachhochschule	.000		.001	.003	**	.001
C*age	.000	**	.000	.000	**	.000
Constant	4.713	**	.005	4.733	**	.006
Adj. R^2	.561	**		.433	**	
N	185253			161843		

Significance: * < .01, ** < .001, omitted category for segregation: mixed occupations, for education: university graduates.

Source: IABS 1975-2004, own calculations

Table 3: Pooled linear regression of log wages, whole sample

Model 1: Basic model				**Model 2: Gender interaction effects**			
	Coef.		Std.err.		Coef.		Std.err.
Female	-.152	**	.003	Female	-.028	**	.006
Cohort	.022	**	.000	Cohort	.025	**	.000
Cohort^2	-.001	**	.000	Cohort^2	-.001	**	.000
Non-German	.003		.002	Non-German	-.003		.002
Part-time	-.539	**	.003	Part-time	-.677	**	.004
Female occupations	-.067	**	.002	Female occupations	-.077	**	.004
Male occupations	.014	**	.002	Male occupations	.017	**	.002
No training	-.525	**	.003	No training	-.459	**	.005
Abitur, no training	-.486	**	.005	Abitur, no training	-.447	**	.007
Training	-.395	**	.003	Training	-.377	**	.004
Abitur, training	-.227	**	.004	Abitur, training	-.243	**	.006
Fachhochschule	-.039	**	.005	Fachhochschule	-.016		.006
Age (mean centered)	.023	**	.000	Age (mean centered)	.031	**	.000
Female*cohort	.007	**	.000	Female*part-time	.245	**	.005
				F*female occupations	.001		.005
				F*no training	-.157	**	.007
				F*Abi., no training	-.088	**	.011
				F*training	-.054	**	.006
				F*Abi., training	.008		.008
				F*Fachhochschule	-.096	**	.010
				F*age	-.019	**	.000
Constant	3.700	**	.004		3.648		.004
Adj. R^2	.291	**		Adj. R^2	.299	**	
N	347096			N	347096		

Significance: * < .01, ** < .001, omitted category for segregation: mixed occupations, for education: university.

Source: IABS 1975-2004, own calculations

Table 4: Cohort interaction effects in pooled regressions of wages, men and women

Model 3	**Men**			**Women**		
	Coef.		Std.err.	Coef.		Std.err.
Cohort	.028	**	.001	.027	**	.001
Cohort^2	-.001	**	.000	-.001	**	.000
Non-German	-.004		.003	-.008		.003
Part-time	-.568	**	.011	-.366	**	.006
Female occupations	-.098	**	.008	-.102	**	.004
Male occupations	.019	**	.002	.020	**	.003
No training	-.192	**	.010	-.533	**	.010
Abitur, no training	-.229	**	.017	-.300	**	.016
Training	-.291	**	.009	-.490	**	.010
Abitur, training	-.210	**	.013	-.275	**	.012
Fachhochschule	.047	*	.014	-.095	**	.016
Age (mean centered)	.046	**	.001	.013	**	.000
Cohort*part-time	-.006	**	.001	-.006	**	.000
C*female occupations	.002	**	.001	.003	**	.000
C*no training	-.022	**	.001	-.008	**	.001
C*Abitur, no training	-.016	**	.001	-.018	**	.001
C*training	-.006	**	.001	.006	**	.001
C*Abitur, training	-.002		.001	.003	*	.001
C*Fachhochschule	-.005	**	.001	-.001		.001
C*age	-.001	**	.000	.000	*	.000
Constant	3.580	**	.009	3.599	**	.010
Adj. R^2	.287	**		.296	**	
N	185253			161843		

Significance: * < .01, ** < .001, omitted category for segregation: mixed occupations, for education: university.

Source: IABS 1975-2004, own calculations

Appendix

Table 1: Descriptive statistics for employment entry cohorts 1980-2003, by sex

	Women		**Men**		**Mean f. women**		**Mean f. men**		**Relative change** (Mean 2003/1980–1)	
	Mean	SD	Mean	SD	1980	2003	1980	2003	Women	Men
Log prestige	4.00	0.32	3.87	0.38	3.95	4.07	3.83	3.90	0.03	0.02
Log wage (price deflated)	3.24	0.46	3.41	0.51	3.11	3.32	3.36	3.39	0.07	0.01
Non-German	0.10	0.30	0.15	0.36	0.09	0.10	0.18	0.13	0.09	-0.27
Part-time job	0.14	0.35	0.06	0.23	0.12	0.20	0.03	0.09	0.77	2.42
Gender typing of entry occupation										
Female dominated (72%-100%)	0.45	0.50	0.06	0.25	0.49	0.44	0.05	0.09	-0.10	0.70
Mixed (>28%-<72%)	0.46	0.50	0.29	0.45	0.43	0.47	0.26	0.30	0.08	0.15
Male dominated (0%-28%)	0.09	0.29	0.65	0.48	0.08	0.09	0.68	0.61	0.18	-0.11
Education										
No Abitur, no training	0.20	0.40	0.21	0.41	0.29	0.17	0.28	0.22	-0.43	-0.22
No Abitur, voc. training	0.61	0.49	0.60	0.49	0.61	0.52	0.60	0.54	-0.14	-0.11
Abitur, no training	0.03	0.16	0.02	0.15	0.01	0.05	0.01	0.04	2.09	1.73
Abitur, voc. training	0.09	0.29	0.06	0.23	0.03	0.14	0.02	0.08	3.07	2.76
Fachhochschule	0.02	0.15	0.03	0.18	0.02	0.03	0.03	0.04	1.25	0.22
University	0.06	0.23	0.07	0.26	0.04	0.09	0.05	0.08	1.46	0.69
Age (in years)	22.74	4.22	23.36	4.36	22.19	23.27	22.11	23.44	0.05	0.06
N	163,724		187,591		8,305	4,551	9,023	5,085		

Source: IABS 1975-2004, own calculations