

Why do women earn more than men in some regions? Explaining regional differences in the gender pay gap

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Extended Abstract

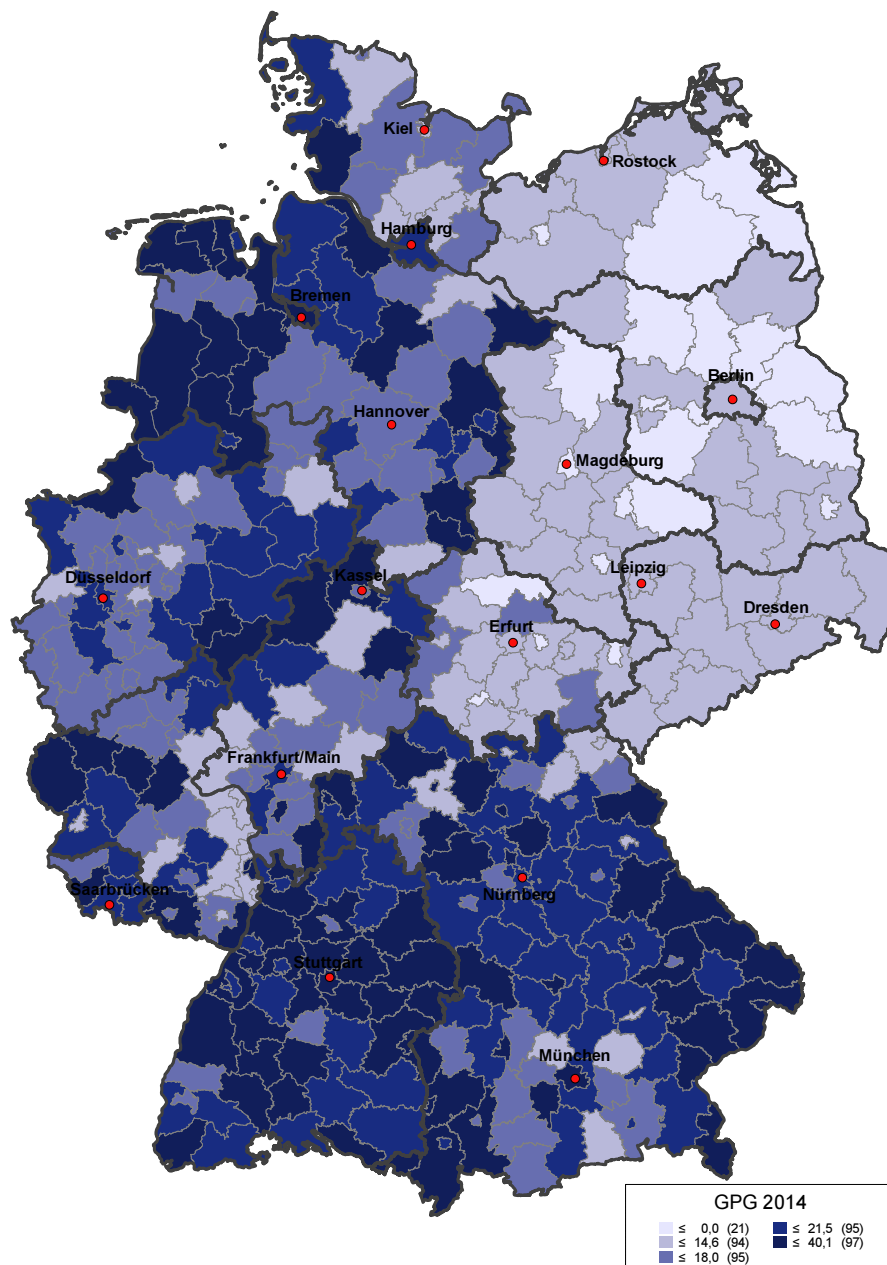
It has long been established as a stylized fact that women earn less than men. While an extensive literature deals with the impact of individual, occupation and industry differences as well as gender roles, only few attention has been awarded to the regional dimension of the gender pay gap (GPG). In Germany, women's daily full-time wages amounted to 85 % of men's wages in the year 2014. Between the German NUTS 3-regions, however, the GPG varied between 39 % in Dingolfing-Landau (i.e., women earn 39 % less than men) and -19 % (women earn 19 % more than men) in Frankfurt/Oder (see figure 1). Moreover, striking differences exist between East (GPG: -2 %) and West Germany (GPG: 17 %). All 21 regions in which women earn more than men are located in East Germany. These large regional differences and distinctive spatial patterns suggest that gender-specific wage differentials not only depend on individual or socio-demographic characteristics, but also on factors specific to the single regions (Fuchs et al. 2014). What is more, regional disparities in the GPG have increased over time. The range between the regions with the highest and lowest values increased from 41 percentage points in 1994 to 58 percentage points in 2014.

Many studies so far have investigated the determinants of the GPG on the supra-national (Aru-lampalam et al. 2007; Boll et al. 2016a, b) or on the national level (Blau/Kahn 2016). With regard to Germany, Hinz/Gartner (2005) emphasize the role of the gender-specific affiliation to sectors, occupations, and plants. Achatz et al. (2005) point towards discrimination in the allocation of men and women to different jobs as an important mechanism. Boll/Leppin (2015) underscore that the GPG can largely be explained by differences in the characteristics of men and women like work experience and work force interruption or occupational choice. In contrast, analyses that systematically investigate regional differences in the GPG and take explicitly into account regional explanatory variables are still rare. For (West) Germany, Busch/Holst (2008) and Guyot et al. (2009) show that the GPG is much more pronounced in rural areas than in agglomerations. Hirsch et al. (2013) argue that more densely populated labor markets are more competitive and constrain employers' ability to discriminate against women. They find that the unexplained GPG for young workers is substantially lower in large metropolitan than in rural areas and confirm that the differences between regions persist over time.

While there seems to be no economic theory that explicitly deals with regional differences in the GPG (Hirsch et al. 2013: 413), several theoretical strings might be brought forward. A key aspect in explaining regional differences is regional heterogeneity in the economic structure and characteristics of employers like firm size and ownership structure or the interaction between enterprises and unemployment (Majchrowska/Strawinski 2016). Empirical analyses confirm that larger firms pay higher wages, other factors being constant (Lallemand et al. 2005;

Gibson/Stillman 2009). Furthermore, the GPG increases along the wage distribution: it is typically larger at the top of the wage distribution, a finding that is consistent with the existence of 'glass ceilings' for women (Arulampalam et al. 2007). Regional differences in wages between men and women can also be explained on the basis of the monopsonistic theory of discrimination (Hirsch et al. 2013).

Figure 1: Regional Gender Pay Gap in Germany, 2014 (%)



Source: Establishment History, own calculations.

The aim of this paper is to explain the regional variation in the GPG within Germany by individual, job-related, and regional characteristics. Explicit focus is not only given to the development of the GPG over time, but also to those regions with a negative GPG which have not been considered so far. Our data comes from the Employment History of the Institute of Employment Research (IAB) for the years from 1994 to 2014. It provides detailed information on

all workers covered by the social security system, including daily wages and the place of work. Family workers and civil servants are excluded, as well as part-time workers, apprentices and persons with missing information. Our total sample population consists of roughly 26 million persons per year and represents almost 70 per cent of total employment in Germany. By restricting the data to full-time employees, we deliberately exclude one source for gender differences in earnings that rests on lower wages for part-time employment.

Besides providing detailed descriptive evidence on the regional GPG, we quantify the impact of regional characteristics in addition to factors related to the individual, occupation, plant, or sector. We further ask how it has changed over time by considering the years since 1994. As to the static perspective, we follow the seminal work of Oaxaca (1973) and Blinder (1973) both because of its widespread use and relative simplicity. The classic Oaxaca-Blinder decomposition focuses on the gap in median daily earnings between male and female workers. Formally, it consists of two estimation steps. First, estimations of the determinants of daily wages are carried out separately for male and female workers. In a log-linear model, log daily wages are regressed on a set of explanatory factors that comprise worker, job-related and regional characteristics and are viewed as observable indicators of productivity differences partly explaining the pay gap. Second, the resulting coefficient estimates are used to decompose the gender difference in the average wage levels into three components. The first component represents the part of the GPG attributable to gender differences in observed endowments. It allows us to determine the influence regional characteristics have on the regional GPG. The second component shows which part of the GPG is due to the fact that the same endowment generates different market returns for male and female workers. The third component represents a constant term that captures the influence of all unobserved wage determinants on the GPG, such as personal ability, negotiating skills and institutional setting. The sum of the second and third component represents the unexplained part of the GPG, as it cannot be traced back to observed endowment differences. As to the dynamic perspective and the factors explaining changes in the regional GPG over time, we relate to the decomposition by Juhn et al. (1991).

A closer look at the regions with the highest and the lowest GPG reveals striking differences in the local economic structure. Table 2 contains information on the *Landkreis* Dingolfing-Landau in the federal state of Bavaria, where women earn 39 % less than men, and the city of Frankfurt/Oder at the Polish border, where women earn 19 % more. Importantly, the female employees in Dingolfing-Landau do not earn less than the women on average in West Germany. They are also present on the labor market in about the same extent as the women in Frankfurt/Oder. The special feature in Dingolfing-Landau is rather the existence of very well-paid jobs for men. Perhaps as a result, their employment share is the highest among all regions in Germany. In Frankfurt/Oder, in contrast, the unemployment rate ranges among the highest ones. Whereas women earn even slightly more than in Dingolfing-Landau, men get about half the wages. Their employment share is very low, and many of them work part-time. This might be due to the missing male-dominated jobs in the region. The economic structure is quite diversified, with several sectors made up of small plants. As a consequence, the public sector provides comparatively good jobs that are mostly occupied by women. These jobs are also better paid than those in the small private plants.

Table 2: Selected characteristics of the regions with the highest and lowest GPG, 2014

Dingolfing-Landau (GPG -39 %)		Frankfurt/Oder (GPG 19 %)	
Wages			
Men	4,506 €	Men	2,395 €
Women	2,763 €	Women	2,840 €
Employment share			
Men	72.9 %	Men	56.4 %
Women	54.5 %	Women	55.3 %
Part-time share			
Men	4.4 %	Men	18.4 %
Women	45.1 %	Women	46.3 %
Unemployment rate			
Men	2.4 %	Men	11.8 %
Women	2.7 %	Women	10.5 %
Regional economic structure			
Highly specialized:		Rather diversified:	
<ul style="list-style-type: none">• 47% of all employees work in the manufacture of motor vehicles• Public sector plays a minor role• Strong dominance of large plants		<ul style="list-style-type: none">• 13% of all employees work in the public sector (mainly women)• Manufacturing rather weak• Strong dominance of small plants	

Source: Establishment History, Federal Agency of Labor; own calculations.

These two extreme regions highlight general correlations between the GPG and regional characteristics of the labor market and the economic structure. First of all in table 2, the regional economic structure picks up the different occupational sorting of women and men (see also Pereira/Galego 2011). Typically, women tend to work in the service sector and men in manufacturing. In the East German regions, the service sector is especially important, because due to low-paid manufacturing jobs it provides relatively well-paid jobs mainly for women. The local plant structure that includes the size of plants as well as the degree of specialization also plays a substantial role. The GPG increases along with the average plant size in a region. Furthermore, the GPG is lower in regions with high unemployment.

Table 2: Correlations between the regional GPG and selected determinants

	GPG	Wages men	Wages women
Share employees in small plants (<20 empl.)	-0.171*	-0.571*	-0.622*
Share employees in large plants (>500 empl.)	0.331*	0.749*	0.734*
Share employees in manufacturing	0.523*	0.256*	-0.057
Share employees in the public sector	-0.480*	-0.362*	-0.132
Share employees in the services sector	-0.410*	-0.018	0.300*
Regional specialization (Krugman index)	0.219*	0.256*	0.130*
Unemployment rate	-0.551*	-0.279*	-0.005

*: significant at the 1% level. Sources: Establishment History, Federal Agency of Labor; own calculations.

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