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A Simulation-Based Study for Germany

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– A Simulation-Based Study for Germany

Christina Boll[*], Hendrik Hüning[†], Julian Leppin[‡] and Johannes Puckelwald[§]

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Abstract

In a simulation-based study with data from the German Socio-Economic Panel Study (SOEP), we analyze the effects of the newly introduced statutory minimum wage of 8.50 Euro per working hour in Germany on the gender wage gap. In our first scenario where we abstain from employment effects, the pay differential is reduced by 2.5 percentage points from 19.6 % to 17.1 %, due to a reduction of the sticky-floor effect at the bottom of the wage distribution. In more realistic scenarios where we incorporate minimum wage effects on labor demand, a further reduction of the pay gap by 0.2 pp (1.2 pp) in case of a monopsonistic (neoclassical) labor market is achieved. However, this comes at the cost of job losses by which women are more strongly affected than men. The magnitude of job losses ranges between 0.2 % and 3.0 % of all employees. It is higher in a neoclassical market setting and positively related to the assumed wage elasticity.

Keywords: Minimum wage, labor demand, wage elasticity, gender pay gap, monopsony

JEL: J31, J23, J16

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Content

1   Introduction[1]

By the 1st of January 2015, a statutory minimum wage of 8.50 Euro per working hour was introduced in Germany. Already before its official introduction there was a strong public debate about its potential effects. Proponents argue that the introduction of the statutory minimum wage could foster economic growth, because it boosts domestic demand especially due to the higher propensity of consumption of low income households (Sachverständigenrat 2013). The government emphasizes its expected diminishing effect on the abuse of temporary employment, promoting "existence-securing work" as a standard for everyone (Koalitionsvertrag 2014, p. 48). Some economists suggest that a moderate minimum wage does not necessarily lead to negative employment effects (Rürup 2013, Möller 2013). This argument is mainly based on the experience of other countries with the introduction of minimum wages. Opponents however argue that the minimum wage mainly increases labor costs and can lead to significant job losses especially in the low wage sector. The empirical literature on the employment effects of minimum wages is manifold (for an overview see Brown et al. 1982 and Neumark and Wascher 2008 for recent methodological approaches). The majority of studies finds significant negative employment effects. The opponents additionally argue that even in a scenario with zero employment effects, a higher consumption of low income households that is potentially derived from a higher aggregate wage level is countered by lower transfer payments and lower entrepreneurial incomes. Taking job losses additionally into account, the effect on aggregate demand is a priori unclear.

This study draws attention to another aspect in this debate, the potential effects of the statutory minimum wage on the gender pay gap. It is argued that the measure might mitigate gender wage differentials especially at the bottom of the wage distribution, i.e. in the low wage sector where women are overrepresented. Hence, the statutory minimum wage could lower the gender pay gap. The empirical evidence on the effects of minimum wages on the gender pay gap is naturally limited to countries which have already implemented a minimum wage. The results are mixed and strongly depend on the country and period under investigation. Metcalf (2008) for instance finds that the British statutory minimum wage has led to higher wages in the low income sector and to a reduced gender pay gap. The author does not find evidence for negative employment effects. In contrast, Cerejeira et al. (2012) using Portuguese matched employer-employee panel data find a gap-increasing effect of the minimum wage implementation. The reason is that fringe benefits have been adjusted more strongly in female dominated industries. The European Commission (2012) analyzes the relationship between the Kaitz index and the gender pay gap for European countries which in-

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troduced a minimum wage yet. The index is defined as the minimum wage divided by the average (mean or median) wage of a country and measures how strongly a minimum wage affects the wage distribution. The higher the index, the closer is the minimum wage to the average wage and thus, the stronger the leverage effect of the former on the aggregate wage distribution. In this respect, the index allows a cross-country evaluation of minimum wages. The European Commission reports two significant negative relationships for 2010. The higher the Kaitz index, the lower the gender pay gap and the lower the propensity of women to be employed in a low wage job. Similar results are presented by a recent study of Vogtman and Robbins (2014) for the USA. US federal states which introduced a higher minimum wage than the national minimum of 7.25 Dollar, face a lower gender pay gap. The gap difference is about 22 % for a federal state minimum wage of at least 8.00 Dollar (the state-specific wage gap amounts to 17.7 % compared to the US-average of 22.7 %). Among the federal states with the highest gender pay gaps solely one state (Montana) introduced a higher minimum wage than the national minimum of 7.25 Dollar.

From a theoretic point of view, the final effect of the minimum wage on the gender wage gap depends on two factors, first, the gendered propensity to be affected by induced job losses, and second, the gendered earnings structure of those who remain employed. If the minimum wage legislation benefits women more than men, the gender pay gap in the low income sector might c. p. be reduced. However, companies are likely to take measures in order to a) escape or b) compensate private costs accruing from the reform. As a compensation strategy, firms might e. g. cut down fringe benefits (as has been documented for Portugal). The measures taken by employers will likely depend on the firm's market situation, industry etc., thus female and male employees are differently affected. That is, taking job losses into account, the overall effect is a priori ambiguous. This is the starting point for the study at hand.

The aim of our paper is to investigate the argument that the introduction of the minimum wage in Germany can effectively reduce the gender pay gap. Since investigations with real data are not yet feasible, we opt for a simulation-based analysis under different labor market scenarios.

The main findings can be summarized as follows: The unadjusted gender pay gap is reduced from 19.6 % to 17.1 % due to the introduction of the statutory minimum wage of 8.50 Euro for the case when no employment effects are considered. This reduction is entirely caused by the reduction of the gender pay gap at the lowest three 5 %-quantiles of the wage distribution. The minimum wage therefore reduces the sticky-floor effect at the bottom of the wage distribution. Considering employment effects, the gender pay gap is reduced further (the higher the elasticity, the stronger the reduction). In this case, the unadjusted gender pay gap reduces from 17.1 % to 16.0 % assuming a neoclassical labor market and to 16.9 % assuming a monopsonistic labor market. However, the reduction of the gender pay gap comes at the price of job losses. They range between 0.2 % and 3.0 % of all employees and between 2.0 % and 24.3 % of those being subject to the minimum wage, respectively.

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The reminder of the paper is structured as follows: Section 2 briefly outlines the minimum wage legislation in Germany. For some employees, exceptions or transmission periods are defined. Section 3 discusses the data and samples and how we hereby cope with the mentioned exceptions. In Section 4, we outline the methodologies used for calculating the unadjusted gap, the adjusted gap and the simulation of employment effects, respectively. Section 5 reports the main results and further results from robustness checks, and Section 6 concludes.

2 Institutional background: The statutory minimum wage legislation in Germany

As mentioned above, the minimum wage has been implemented in Germany by the 1st of January 2015. Amounting to 8.50 Euro per working hour, the level is rather high in a European comparison (Möller et al. 2014). Although the statutory minimum wage applies to all regular employees, there are several (partly temporary) exceptions. The minimum wage neither applies for apprentices nor for teenagers below the age of 18 without a completed apprenticeship. This circumvents the need for adjusting salaries of apprentices. Furthermore, workers in voluntary community services, home workers and self-employed persons are disregarded. To facilitate the integration of long-term (more than twelve months) unemployed persons into regular work, those persons are excluded from the minimum wage for the first six months in a new job. For the same reason, participants of measures aimed at reintegrating unemployed persons into work are excluded. However, the exception rules do not apply for pensioners. People with a handicap are only excluded from the minimum wage if they have no regular employment contract.

The minimum wage applies to marginal employment. The maximum monthly workload of German "Mini Jobbers" is thereby restricted to 52.9 hours in order to stay below the tax-free earning ceiling of 450 Euro. The minimum wage applies for internships that last more than three months. In this case, the minimum wage has to be paid from the very start of the internship. It does not apply to internships that are obligatory according to school or high school curricula.

Finally, transitional arrangements until the 1st of January 2017 have been implemented for specific low-wage industries in order to smooth the cost increase and to mitigate respective employment effects. Particularly, labor intensive industries are hit by rising wages. Transitional arrangements thus apply to the following industries: Hairdressers, agriculture and forestry, gardening as well as the textile and clothing industry.

3 Data

For our analysis, we use the wave 2012 from the German Socio-Economic Panel Study (SOEP). The SOEP is a yearly repeated representative survey of private households in Germany. The survey started in 1984. Surveyed are all adult persons (17 years and older) of the respective household. The SOEP currently comprehends 22.000 persons from 10.000 households. Because of changes in the household composition (e.g. persons move out of household or children become 17 years old and participate in the survey themselves), the sample slightly changes over time. Using statistical weights, the sample composition represents the composition of the German population.[2] The SOEP covers a broad range of questions addressing socio-economic status and further topics like health and life satisfaction (see Wagner et al. 2007 for more details).

For the analysis of the gender pay gap in Germany the "Verdienststrukturerhebung" (VSE) is also frequently used. The German Federal Statistical Office (Destatis) relies on this data for the calculation of the gender pay gap. For the following reasons, we choose the SOEP and not the VSE for our analysis. First, the VSE is surveyed every four years only and its last available wave refers to 2010, which is not suitable for covering recent developments. Secondly, data from the SOEP is richer in important aspects for our study, i. e. with respect to employment biographies. Hence, the SOEP allows a more fine-grained analysis of characteristics explaining the gender pay gap. Thirdly, the SOEP allows to include the public administration sector, according to the guidelines of Eurostat (Geisberger and Till 2009). Previous findings suggest that the gender pay gap is lower in the public than in the private sector (BMFSFJ 2009). Fourthly, in contrast to the VSE, the SOEP allows us to include persons working in companies with less than ten employees. Very small businesses are particularly likely to be affected by minimum wages (Brenke und Müller 2013).

For our analyses, we only use data from the SOEP for employees which had a regular employment in 2012. The sample comprehends all employees for which the minimum wage applies, i.e. full-time workers, part-time workers, marginally employed workers and workers in partial (part-time) retirement. Employed persons, who are excluded from the minimum wage as outlined above, are mostly excluded from our sample as well. This applies to self-employed persons, freelancers, handicapped employees working in disabled people workshops, apprentices as well as teenagers below the age of 18 without a completed apprenticeship. Furthermore, since we have no information on the duration of internships, interns are also excluded.[3] Beside these restrictions, there are some other technical restrictions due to implausible or missing observations.

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[2] The respective weights are used for all calculations presented in the following.

[3] This is reasonable since the focus of our study is on the minimum wage effects on regular employment. Moreover, the number of observations accruing from internships in our sample is negligible.

The transitional arrangements for specific industries as well as for long-term unemployed persons are not covered by the subsequent analyses. The monthly information with respect to unemployment, which is necessary to identify long-term unemployment, is missing for many persons in the SOEP. Thus, implementing this restriction would mean losing many observations. Considering the transitional arrangements for specific industries is problematic. The sectoral classification stored in the SOEP data is not appropriate to exactly identify all specific industries for which the transitional arrangements were implemented. However, since the transitional period is relatively short, our simulated results can be interpreted as indicating the final post-transition effects.

4 Econometric specification

4.1 Earnings regressions

Earnings differentials between men and women refer to their hourly wages. We use gross hourly wages for the analysis because net wages are influenced by the household context (i. e. marital status, relative income of partners), which is not the focus of our study. The gross hourly wage (ghw_i) of an individual (i) is calculated using the SOEP information for the gross monthly earnings and the agreed weekly working hours of an individual as follows:

$$ghw_i = \frac{gross\ monthly\ earnings}{agreed\ weekly\ working\ hours * 4,3} \tag{1}$$

Fringe benefits, such as Christmas bonuses, vacation allowances or other irregular payments, are disregarded. Agreed weekly working hours usually deviate from actual weekly working hours due to overtime. In order to avoid arbitrary assumptions about if and how overtime is paid out to employees and/or is compensated with extra leave, we focus on agreed weekly working hours.[4] To sort out implausible information, we disregard calculated observations of gross hourly wages of less than 3 Euros or more than 150 Euros (according to Müller 2009).[5]

Furthermore, our sample includes the public administration sector as part of the public sector. The public administration sector comprises of public administration, defence and compulsory social security and covers 8 % of observations of our sample. Therefore, we expect the exclusion of the public administration sector ascertaining significant effects on the gender pay gap. We address this aspect in our robustness checks (see Section 6).

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[4] For another approach compare Bruckmeier and Wiemers 2014, p. 3.
[5] Knabe et al. (2014) point out that the exclusion of observations referring to gross hourly wages below 3 Euro leads to an underestimation and the inclusion to an overestimation of potential employment effects.

To be able to decompose the wage differential between men (*m*) and women (*f*) with respect to its explanatory factors we first estimate a standard linear earnings regression model denoted as follows:

$$\ln gwh_l = X'_l \beta_l + \epsilon_l, \quad l \in \{m, f\} \tag{2}$$

where X is a vector containing the exogenous variables and a constant, β contains the slope parameters, and ϵ is the error term fulfilling the requirements of the linear regression model.

Concerning the independent variables, we follow the specification of Boll and Leppin (2014) in our main specification. Compared to the specification of the German Federal Statistical Office (Destatis 2006), which relies on the VSE instead of the SOEP, the specification of Boll and Leppin (2014) allows using a richer set of potentially explaining characteristics, i. e. with respect to formal qualification and employment biography. We run separate regressions with the Destatis 2006-specification as a robustness check of our results (see Section 6).

Table 1 denotes the variables used in our main specification.

Table 1: List of variables used in our main specification (according to Boll/Leppin 2014)

Variable	Definition
Dependent variable	
Gross hourly wage	**Gross monthly wage / (contractually agreed weekly working hours*4.3)**
Independent variables	
Classification of economic activities	Based on NACE, dummy variables, reference: 85: Human health and social work activities,
	Other categories: other divisions (61 in total)
Education	*Completed School*
	Dummy variables, reference: secondary school,
	Other categories: intermediate school, technical school, upper secondary school, other degree, no school degree
	Vocational Degree
	Dummy variables, reference: apprenticeship,
	Other categories: no vocational degree, vocational school, health care school, technical school, civil service training, other degree
	College Degree
	Dummy variables, reference: no college degree,
	Other categories: university/technical university, technical college, college not in Germany, engineering/technical school (East), university (East), graduation/state doctorate
Employment biography	*Labor market experience*
	In years: experience in full-time employment, part-time employment, out-of labor force (OLF), unemployment
	Tenure
	In years
Firm size	Dummy variables, reference: 2000 employees and more,

	Other categories: less than 20 employees, 20-199 employees, 200-1999 employees
Married	Dummy variable, reference: not married,
	Other category: married
Migration background	Dummy variables, reference: no migration background,
	Other categories: direct migration background, indirect migration background
Occupation	Based on ISCO-88, dummy variables, reference: ISCO 4 (clerks),
	Other categories: ISCO 1 (Legislators, senior officials and managers), ISCO 2 (Professionals), ISCO 3 (Technicians and associate professionals), ISCO 5 (Service workers and shop and market sales workers), ISCO 6 (Skilled agricultural and fishery workers), ISCO 7 (Craft and related trades workers), ISCO 8 (Plant and machine operators and assemblers), ISCO 9 (Elementary occupations)
Occupational position	Dummy variables, reference: trained worker,
	Other categories: unknown, untrained worker, semi-trained worker, foreman, team leader, foreman, help in family business, foreman (industry), untrained employee with simple tasks, trained employee with simple tasks, qualified professional, highly qualified professional, managerial, low-level civil service, middle-level civil service, high-level civil service, executive civil service
Region	Dummy variable, reference: West Germany (incl. Berlin),
	Other category: East Germany
Characteristics of current employment	*Full-, part-time, marginal employment*
	Dummy variables, reference: full-time,
	Other categories: small part-time (16-25 hrs.), large part-time (26-35 hrs.), marginal
	Fixed-term employment contract
	Dummy variable, reference: permanent contract,
	Other category: fixed-term contract
	Part-time retirement
	Dummy variable, reference: no part-time retirement,
	Other category: part-time retirement

As mentioned above, the added value of the specification of *Boll/Leppin (2014)* mainly refers to the more fine-grained information on qualification and employment status and biography. As descriptive statistics show (see Table A 1 in the appendix), there is notable variation by gender in these variables. Whereas the German Federal Statistical Office simply differentiates between persons with and without completed apprenticeship and university degree, respectively, the data from the SOEP allows considering different types of school, vocational and college degrees. 6.1 % (5.1 %) of women (men) in our sample hold a university degree. 19.2 % (15.1 %) of women (men) hold an upper secondary school degree. Additionally, whereas the Destatis (2006) specification uses potential work experience derived from age and standardized years of education, we use factual work experience. The latter refers to the years the individual has spent in full-time employment, part-time employment, in a deliberate out of the labor force spell named "out-of-labor force (OLF)" and in unemployment, respectively. Human capital depreciates during spells out of the labor force, and wage returns from pro-

motion and further training are foregone. By these reasons, career interruptions prove to be associated to significant earnings losses (Boll 2011). Since women are more likely to exhibit intermittent careers than men, we expect the employment biography to significantly impact on the gender pay gap. In our sample, women (men) exhibit on average 3.8 (0.2) years out of the labor force (OLF). Finally, wage growth during part-time spells proves to be lower than during full-time spells (Boll 2011, Bardasi and Gornick 2008, Fagan and Burchell 2002), presumably since part-timers less often experience advancements (O'Reilly and Bothfeld 2002) and vocational education and training (Bellmann et al. 2013). Part-time employment is measured as a binary variable and is separated into *"large part time"* (with 26-35 working hours per week) and *"small part time"* (with 16-25 working hours per week). Marginal employment is measured as dummy variable and equal to one if working hours are below 16 hours per week. 14.9 % (1.7 %) of women (men) in our sample work 16-25 weekly hours, 18.0 % (1.3 %) work 26-35 hours and 11.0 % (1.9 %) work less than 16 hours per week. Finally, both a direct and an indirect migration background is incorporated.

By controlling for the named independent variables in our wage regressions that provide the basis for the subsequent gender pay gap calculation and decomposition, we expect to increase the share of the explained variance in wages and to decrease the unexplained part. However, note that the adjusted gap does not equal discrimination (Boll/Leppin 2015). This becomes obvious by the fact that the constant which is included in the adjusted gap comprises of unobservable individual effects. Furthermore, observable characteristics that answer for the explained part of the gap may be subject to potential discrimination, too. This for instance applies to managerial positions if they are less frequently accessed by women due to discriminatory tastes of employers (Becker, 1971).

4.2 Calculation and decomposition of the gender pay gap

In order to analyze the effect of the minimum wage of 8.50 Euro per working hour on the gender pay gap, we set all employees, to whom previously a gross hourly wage of less than 8.50 Euro has been paid, to this new minimum wage level. As outlined in the data section, we use wage information from the year 2012. Subsequently, we compare the unadjusted and adjusted gender pay gap before and after the simulated introduction of the minimum wage.

We calculate the unadjusted gender pay gap as the percentage difference of the average log gross hourly wages of men and women with the average gross hourly wage of men as a reference:[6]

$$\text{GPG}_{\text{unadjusted}} = \overline{\ln\ ghw_m} - \overline{\ln\ ghw_f} \tag{3}$$

where $\overline{ghw}_m$ depicts the average gross hourly wage of men and $\overline{ghw}_w$ the average gross hourly wage of women.

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[6] We use the log gross hourly wages to ensure comparability of the unadjusted to the adjusted gender pay gap.

While the unadjusted gender pay gap expresses the average difference in pay of employed women and men, the adjusted gender pay gap depicts the average difference in pay of women and men with comparable characteristics. The adjustment decomposes the gender pay gap into an explained part (also referred to as the endowment effect) and an unexplained part. The explained part of the gender pay gap indicates by how much women earn less than men because they differ from men in wage relevant observable characteristics. These are for example weekly working hours, industry, years of employment experience, and managerial positions. The explained and unexplained part of the gender pay gap sum up to the unadjusted gender pay gap.

As it is conventional in the literature, we use the twofold decomposition of Oaxaca (1973) und Blinder (1973) to decompose the observable differential between average wages of women and men into its explained and unexplained part. This methodology further allows to decompose the explained and unexplained part of the gap into their single components, namely the independent variables of the underlying wage regression (equation (2)) that answer for the respective part of the gap. The formula for the decomposition of the unadjusted gender pay gap denotes as follows (cf. for instance Destatis 2006):

$$\overline{\ln ghw_m} - \overline{\ln ghw_f} = \sum_j \bar{x}_{f,j} (\beta_{m,f} - \beta_{f,j}) + \sum_j \beta_{m,j} (\bar{x}_{m,j} - \bar{x}_{f,j}) \tag{4}$$

The term on the left hand side of equation (4) denotes the difference of the average log-wages of women and men. The first term on the right hand side of equation (4) depicts the unexplained part of the gender pay gap, the evaluation effect, while the second term depicts the explained part of the gap, namely the endowment effect, calculated for all $j = 1,…,J$ explanatory variables.

The evaluation effect comprises of the part of the pay gap that arises from gender specific returns to (a vector of) given characteristics (x_j), taking women's characteristics ($\bar{x}_{f,j}$) as reference. The endowment effect refers to the part of the gap that arises from gender-specific characteristics, evaluated with men's returns ($\beta_{m,j}$). The returns refer to the coefficients and the characteristics to the independent variables of the underlying wage regressions, respectively.

4.3 Modelling employment effects of the minimum wage

The introduction of the minimum wage increases the relative price of labor compared to other production factors such as capital. Furthermore, as particularly the unqualified earn low hourly wages, unqualified labor becomes more expensive in relation to qualified labor. Economic theory predicts that at least in the medium and long term companies will respond to the change in relative prices. In more detail, it is likely that employees who are subject to the reform (who earned less than the minimum wage before) are substituted against more highly skilled labor, or capital. Moreover, the reform makes marginal employment contracts less

attractive, compared to regular employment. This is the more so as the firms' transaction costs to meet the legislation's requirements increase. Thus, to some extent transformations of marginal employment contracts into regular employment contracts are a likely outcome of the reform.

In our study, we abstain from substitution effects between different kinds of labor or employment contracts, that is, we treat labor as a homogeneous production factor. Furthermore, we do not consider efficiency wages which are, according to the model of Shapiro and Stiglitz (1984), set above the equilibrium wage in order to incentivize employees' (unknown) productivity. Instead, we model labor productivity as constant. As a further simplifying assumption, we abstain from factor substitution effects and solely consider own-wage elasticities of labor demand. Finally, according to the assumption of homogeneous labor, we use a unique elasticity that does not differentiate between certain groups of employees in our main specification.[7] As a robustness check, we deviate from the last mentioned assumption (see Section 6).

The size of the employment effect depends on the modelled product market competition, i. e. if we assume a neoclassical or a monopsonistic market. We model product markets as homogeneous, i. e. we abstain from different price elasticities of consumption goods (see e. g. Müller and Steiner 2013). Furthermore, the elasticity of labor demand plays a crucial role.

Starting with our modelled market settings, in a neoclassical labor market the equilibrium wage equals the marginal productivity of labor. The implementation of a minimum wage above this equilibrium wage leads to negative employment effects, in its magnitude depending on the elasticity of labor demand. This elasticity indicates the percentage reduction of employment due to a one percent wage increase. By contrast, the introduction of a minimum wage below the equilibrium wage is not binding and therefore associated to zero employment effects. In this market model, positive employment effects are impossible. If we assume a monopsonistic labor market, companies use their market power to choose a profit-maximizing wage-labor demand combination. Both the resulting wage and employment level are below their equilibrium level. Card and Krueger (1995) report empirical evidence of monopsonistic labor markets. In the monopsony market, the introduction of a moderate minimum wage can entail positive employment effects, if the level of the minimum wage lies in between the wage enforced by the monopsonist and the equilibrium wage of the neoclassical model. In this case, the employment effect is determined by the labor supply side only. If a monotonic increasing supply curve is additionally assumed, the wage increase arising from the reform leads to a positive employment effect that equals the increase of labor supply. In this case, higher earnings of (a higher number of) employees are funded by a respectively lower monopsony rent (Bosch and Weinkopf 2014). However, if the minimum wage is higher

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[7] Among other studies using one labor demand elasticity for all employees are Knabe et al. (2014), Ragnitz and Thum (2007) (both $\eta = 0.75$), and Folkerts-Landau (2013) ($\eta = 0.5$).

than the equilibrium wage of the neoclassical model, the employment effects are negative, even under the assumption of a monopsonistic labor market.

According to the literature, elasticities often lie between -0.2 and -0.6. Lichter et al. (2014) show in their meta-analysis that 80 % of the studies estimate labor demand elasticities between 0 and -1, the average denoting at -0.51. Especially in the low-wage sector and among low-qualified employees some studies identify elasticities of around -1 (Arni et al. 2014, Sinn et al. 2006, Fitzenberger and Franz 1998). Based on the cited empirical literature, we simulate the following labor demand elasticities: -0.2, -0.5, -0.75, -1 and -1.2.

For the assumption of a neoclassical labor market, we follow Knabe et al. (2014) and calculate the (negative) employment effect in percent as follows:

$$\text{Employment effect} = 1 - \left(\frac{w^{min}}{w}\right)^{-\eta} \tag{5}$$

where w is the average gross hourly wage, w^{min} is the implemented minimum wage and η is the constant labor demand elasticity. For the assumption of a monopsonistic labor market, we again follow Knabe et al. (2014) and calculate the potential employment effects as follows:

$$\text{Employment effect} = 1 - \left(\frac{w^{min}}{w(1+m)}\right)^{-\eta} \text{ if } w^{min} > w(1 + 0.5m) \tag{6}$$

and

$$\text{Employment effect} = \left(\frac{w^{min}-w}{0.5m*w}\right) * \left(1 - \left(\frac{1+0.5m}{(1+m)}\right)^{-\eta}\right) \text{ if } w^{min} \leq w(1 + 0.5m) \tag{7}$$

As before, w is the average gross hourly wage, w^{min} is the introduced minimum wage and η is the constant labor demand elasticity. In this monopsony setting, it is assumed that the wage w is m percent lower than the productivity of the marginal employee. The gap therefore indicates the market power of the monopsonist, with a higher gap relating to a higher market power. According to Knabe et al. (2014), we assume that the linear labor demand curve and labor supply curve intersect right in the middle of that gap, i.e. at $(1 + 0.5m) \cdot w$. Relying on Card and Kruger (1995), who assume a range of 10-20 % for m, Knabe et al. (2014) use a value of 20 %. We follow this approach with the argument that with $m = 0.2$ we implement the maximum of possible market power of monopsonists and thereby the minimum of potential employment effects that the empirical literature gives evidence for.

In order to get a more precise picture of the potential employment effects and the change in the gender pay gap induced by the reform, it is not only necessary to define the size of the effect but also who is affected by job losses. In our main specification, we employ the distance between the employee's original wage and the minimum wage as a selection criterion of job losers. Other factors, like the employee's working hours, play no role for the selection. We henceforth refer to this criterion as the "wage selection" criterion. The idea behind this is

as follows: If we assume productivity-oriented compensation, low wages indicate low productivity. Employees are therefore the less profitable and the more likely to be released, the larger the named distance is. Admittedly, there can be a bulk of company- and job-specific criteria which determine who specifically is losing his or her job. As a robustness check, we also employ a random selection criterion in our simulations of the employment effects and the gender pay gap after the reform (see Section 6).

We argue that the different specifications of the simulated employment effects cover the range of potential outcomes to a reasonable extent. The maximal elasticity (-1.2) combined with the neoclassical labor market model should indicate the upper bound of this range, the minimal elasticity (-0.2) combined with the monopsony model the lower bound.

5 Main results

5.1 Employment effects

According to our dataset, 12.3 % of all employees in Germany are affected by the statutory minimum wage (Table 2). Women (17.5 %) are more affected than men (7.2 %), as are employees in Eastern Germany (23.6 %) compared to employees in Western Germany (9.9 %). Furthermore, the individual propensity to be subject to the reform is negatively related to a person's qualification level.

Table 2: Gender and qualification structure of employees

Characteristics		All employees	Employees subject to the minimum wage*
Total		100.0	12.3
Men		50.7	7.2
Women		49.3	17.5
West		82.9	9.9
High qualification	Men	9.4	0.9
	Women	7.6	4.5
Medium qualification	Men	25.7	5.4
	Women	25.7	14.5
Low qualification	Men	4.5	9.6
	Women	4.6	28.5
East		17.1	23.6
High qualification	Men	3.0	10.3
	Women	3.5	12.6
Medium qualification	Men	7.4	18.1
	Women	7.5	33.0
Low qualification	Men	0.6	38.0
	Women	0.4	47.8

* Share of employees subject to the minimum wage of all employees with the relevant characteristics.
Source: SOEP v29, 2012; HWWI.

The total share of affected employees by the reform significantly differs from the results of Bellmann et al. (2015). Using German firm data from the IAB Betriebspanel, the authors find

that only 4.4 % of the employees fall within the scope of the minimum wage. One likely explanation for the difference is that the underlying representative survey of employers is from 2014 and thereby much closer to the actual introduction of the minimum wage than our dataset which relies on 2012 wages. Second, we abstain from modelling wage adjustments prior to the effective date of the minimum wage implementation which are likely to be at least partly incorporated in the IAB dataset. Still, anticipatory wage adjustments must be interpreted as an outcome of the minimum wage legislation. Hence, the overall magnitude of employees subject to the reform depends on the reference point in time. Finally, the IAB Betriebspanel only covers firms with at least one regular employee subject to social insurance contributions. Firms with only marginally employed employees are thereby neglected.

A crucial question in connection with the introduction of a minimum wage is how it will affect employment. In our study, the share of job losses ranges from 0.6 % of all employees for a low elasticity of labour demand of -0.2 to 3.0 % for an elasticity of -1.2 % if we assume a neoclassical labour market (cf. Table 3). Referring to employees subject to the minimum wage, the share of job losses ranges from 5.0 percent to almost one quarter (24.3 %). If we instead assume a monopsony market, the shares of job losses are less than half as high. They range from 0.2 % to 1.1 % of all employees respectively 2.0 % to 9.2 % of all employees subject to the minimum wage. As argued above, in this market scenario individual productivity is assumed to exceed original wages by 20 %, leaving room for an employment-neutral or even job generating wage increase for some employees. However, others lose their job. That is, the overall effect is negative also in this market scenario.

Table 3: Employment effects of the minimum wage[*]

Elasticity	Share of total employees		Share of employees subject to the minimum wage	
	Neoclassical model	Monopsony model	Neoclassical model	Monopsony model
-0.20	-0.6%	-0.2%	-5.0%	-2.0%
-0.50	-1.4%	-0.6%	-11.6%	-4.5%
-0.75	-2.0%	-0.8%	-16.6%	-6.4%
-1.00	-2.6%	-1.0%	-21.1%	-8.1%
-1.20	-3.0%	-1.1%	-24.3%	-9.2%

*Effects refer to the wage selection criterion. Source: SOEP v29, 2012; HWWI

Among all employees, women are absolutely and relatively more affected than men.[8] From an almost even sex distribution among employees, a higher share of female employees falls under the minimum wage (cf. Table 2). This also means that women exhibit a higher share

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[8] Multiple lay-off risks are incurred by employees who combine risky characteristics. These are, beyond gender, e. g. part-time work, marginal employment, low qualification, and employment in (very) small businesses. Detailed results are available from the authors on request.

among employees who are subject to the minimum wage. For this reason, job losses among females outweigh those among men irrespective of the assumed market model, elasticity and the selection method of job losses (Figure 1). Furthermore, Figure 1 depicts the upper and the lower bound of job losses depending on the assumptions regarding the named criteria. It becomes evident that the level of the job losses for both men and women is lower under the monopsony model than under the neoclassical model, and lower for a modest than for a high elasticity of labor demand. Only with respect to the selection method results are mixed. In the neoclassical model, the job losses of men arising from random selection are throughout higher than those from wage selection, whereas the opposite holds for women. We assume that the wage distribution of men who are subject to the minimum wage shows a stronger tendency towards the threshold of 8.50 Euro than those of women. This also explains why the size of the negative effect of the wage selection criterion on men declines for higher elasticities while this is not the case for women. Under the monopsony model, the relationship between random and wage selection method is less clear and seems to be rather reversed. Admittedly, referring to the rather small number of total job losses in this market model, the effects should not be overrated.

In sum, in the neoclassical model with wage selection, job losses of women subject to the minimum wage range between 3.2 % (elasticity -0.2) and 18.4 % (elasticity -1.2), those of their male counterparts between 1.7 % and 5.9 %, respectively. In the monopsony model with wage selection, job losses of women (men) range between 1.2 % and 6.6 % (0.7 % and 2.6 %).

Figure 1:
Share of job losses on all employees subject to the minimum wage by elasticities, selection method and gender
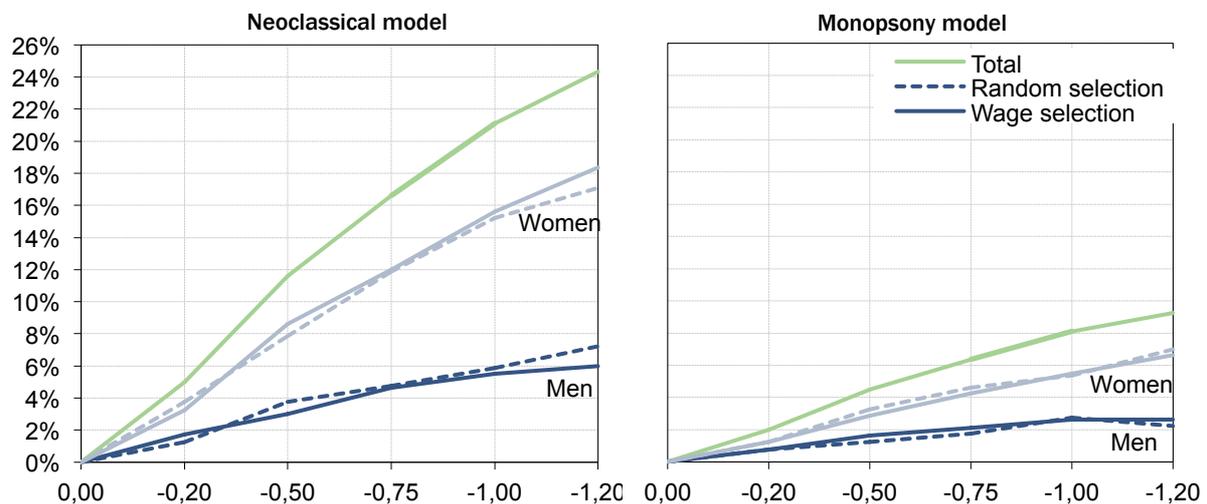
Source: SOEP v29, 2012; HWWI

Our estimated employment effects due to the minimum wage are in line with the results of other studies on the topic. For a labor demand elasticity of -0.75 we find similar employment effects to those obtained in Knabe et al. (2014). They employ a labor demand elasticity of -0.75 and calculate job losses that amount to 2.6 % of all employees (910,717 persons) for the neoclassical model case and 1.2 % (425,676 persons) for the monopsony market, respectively.

Arni at al. (2014) use different elasticities for lowly, medium and highly qualified employees and also consider labor supply effects arising from the minimum wage. Their results show that the minimum wage reduces employment by roughly 570,000 persons due to a lower labour demand while it increases labour supply by 224,000 persons.[9]

How should one interpret our simulated effects on employment? For methodological reasons, we expect that the job losses are somewhat overstated. First, this arises from our wage information that refers to the year 2012. We thereby neglect the wage growth until the end of 2014 which should have lowered the distance between original wages and the minimum wage for a notable amount of employees. Moreover, we do not take the transitional arrangements for the minimum wage in some industries into account.[10] However, the recently reported job losses of German "Mini-Jobbers" emphasize that our predictions are far from being unrealistic. By the end of March 2015, the number of marginally employed workers decreased within a year by 2.8 %. As compared with the previous quarter, the decline amounted to 3.5 % (DRV Knappschaft-Bahn-See / Minijob-Zentrale 2015). According to our simulations, the respective job losses range from 1.4 % (elasticity -0.2) to 9.3 % (elasticity -1.2) for the neoclassical model and from 0.5 % (elasticity -0.2) to 3.6 % (elasticity-1.2) in the monopsony model, respectively. Therefore, our suggestion that the volume of job losses will lie in between the two market model predictions for a moderate elasticity fits quite well into recent real figures.

5.2 Gender pay gap

For the analysis of the gender pay gap we start with the unadjusted pay gap. Thereafter the adjusted gap and the main explanatory factors for the gender wage differential are analysed.

Before the implementation of the reform, as is illustrated in Figure 2, women's hourly wages are on average by 19.6 % lower than men's, with women (men) earning 14.69 (17.73) Euro per hour (see Table A 1 in the appendix). In the course of the minimum wage implementation and abstaining from employment effects in a first step, the mean pay gap decreases by 2.5 percentage points to 17.1 %. The structure of the gender pay gap at the 5 %-quantiles of the wage distribution shows that wage differences at the lower end of the distribution are

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[9] Other studies simulating employment effects due to an introduction of a minimum wage in Germany are (among others): Ragnitz and Thum (2007); (2008), Bachmann (2008), Bruckmeier and Wiemers (2014), and Henzel and Engelhardt (2014). The studies report a wide range of potential employment effects, with the concrete size heavily depending on the assumed labor market model and labor demand elasticity.

[10] We tested the effect of the transitional arrangements for the minimum wage and considered it as negligible.

notably higher. This is a pattern often found in the literature, referred to as sticky floors.[11] Note that the overall reduction of the mean gender pay gap solely arises from the first three wage quantiles, with an entirely vanishing gap in the very first quantile. Hence, we suggest that if employment effects are excluded from the analysis, the minimum wage mainly reduces the sticky floor effects at the bottom end of the earnings distribution.

Figure 2

Gender Pay Gap 2012 before and after minimum wage for wage quantiles, zero employment effects
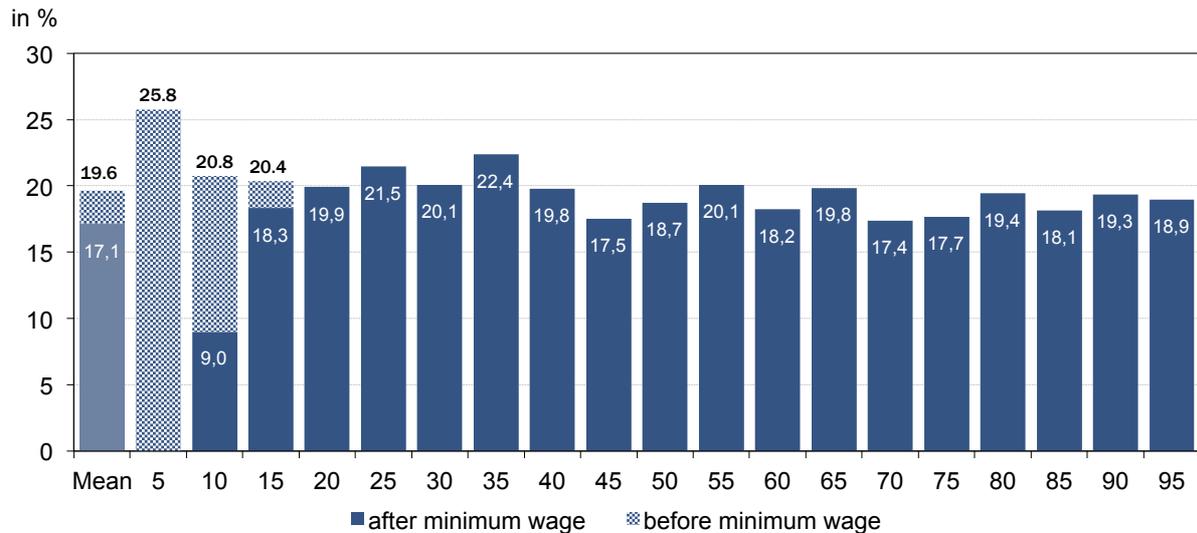
Source: SOEP v29, 2012; HWWI.

In the following, we analyse the adjusted gender pay gap. Furthermore, we incorporate our simulated employment effects arising from the reform into the gender pay gap calculation and decomposition scheme. We thereby refer to the wage selection criterion.

Figure 3 shows the mean gender pay gap disaggregated into its explained and unexplained part. The explained part is denoted as endowment effect and the unexplained part is referred to as the evaluation effect since it depicts the gendered differences in returns. Results including potential employment effects are presented for the two theoretical labour market models as specified in the preceding section. With respect to the elasticities of labour demand, we illustrate the results for the lowest (-0.2) and the highest (-1.2) elasticity to span the corridor

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[11] Many studies also find particularly high gender pay gaps for high wage quantiles. This so called glass ceiling effect is not observed here. However, the data supports glass ceilings when wave 2011 is used instead of wave 2012.

of potential employment effects arising from the assumptions established in the empirical literature.[12]

Figure 3

Explained and unexplained part of the gender pay gap by market model and elasticity
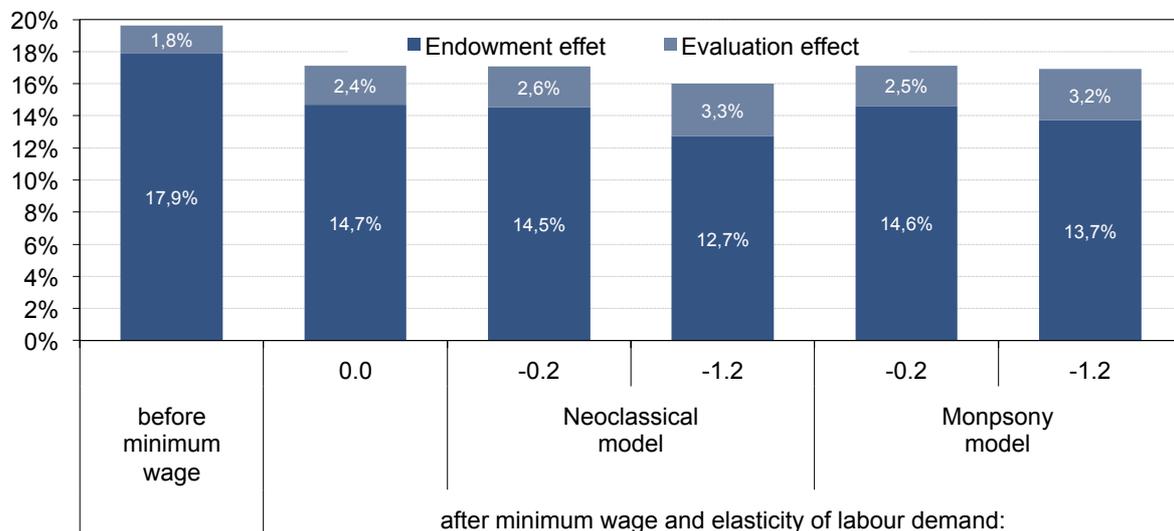
Source: SOEP v29, 2012; HWWI.

Before the introduction of the minimum wage, 17.9 percentage points of the gender pay gap can be explained by different characteristics of the male and female employees (endowment effect). 1.8 pp of the gap are assigned to gendered returns to similar characteristics, in other words: 1.8 pp of the gap remain unexplained. In the scenario with zero employment effects, the minimum wage scales the endowment effect down to 14.7 pp whereas the evaluation effect increases to 2.4 pp. If we allow for employment effects, the total gender pay gap does not differ for a low elasticity of labour demand of -0.2, regardless of the labour market model employed. Though, the moderate job losses (cf. Table 3) cause a minor shift to a further reduced endowment and increased evaluation effect. For a high elasticity of -1.2 these shifts continue. The share of the unexplained part on the gap increases to 3.3 pp in the neoclassical and to 3.2 pp in the monopsony model whereas the explained part decreases to 12.7 pp and 13.7 pp, respectively. Moreover, the unadjusted gender pay gap is further reduced by 1.0 percentage points to 16.0 % in the neoclassical model and by 0.2 pp to 16.9 % in the monopsony model, respectively. The lower employment effects under the monopsony model are related to a comparatively lower decline of the pay gap even in a context with highly elastic labor demand. Thus, employment effects affect the gender pay gap only under assumptions that lead to a substantial loss of employment.

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[12] Detailed results for the Oaxaca-Blinder decomposition of the gender pay gap and the underlying wage regressions are to be found in **Fehler! Verweisquelle konnte nicht gefunden werden.** and **Fehler! Verweisquelle konnte nicht gefunden werden.** in the appendix.

Next, we take a closer look at the explanatory factors for the pay gap between men and women. A changing influence of certain variables points to particularly affected subgroups of employees by the reform.

Figure 4 illustrates the gender pay gap as in Figure 3 but partitions the endowment effect into its summarized main explanatory factors (cf. Table A 1). Before the implementation of the minimum wage, most of the gender pay gap accrues from the volume of employment (6.4 pp), followed by industry (4.9 pp) and employment biography (2.9 pp). By contrast, education reduces the gender pay gap. Women earn on average 0.8 % more than men due to a higher average school degree of the former.[13]

Figure 4

Composition of the explained part of the gender pay gap (variable groups)
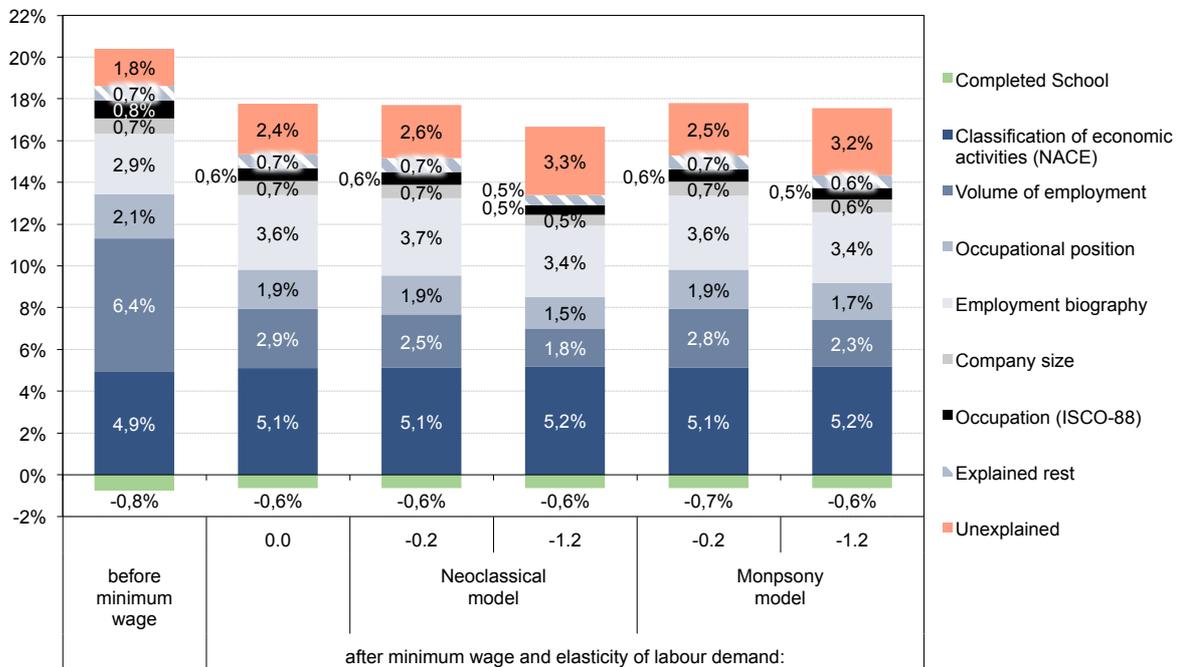
Source: SOEP v29, 2012; HWWI.

The reduction of the explained part of the gender pay gap due to the minimum wage is mainly triggered by characteristics related to the employment volume. The influence of this category is more than halved, from 6.4 pp to 2.9 pp when no employment effects are assumed. This points to a particularly pronounced work volume gradient in the low wage sector which has been moderated by the reform. On the other hand, the influence of the employment biography increases most notably from 2.9 pp to 3.6 pp. We suggest that the seniority of employees is more important outside than inside of the low wage sector. As a consequence of the minimum wage implementation, the dispersion of wages decreases, with a

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[13] Vocational and college degrees are not displayed here. They decrease the gap by another 0.3 percentage points (cf. **Fehler! Verweisquelle konnte nicht gefunden werden.**).

diminished share of low wages on the aggregate distribution. This results in an overall higher influence of the employment biography. The influence of the other explanatory factors stays more or less unchanged. This is also true when employment effects are taken into account. The explanatory value of the work volume variables further decreases. This does not come as a surprise, since in the neoclassical model and an elasticity of labour demand of 1.2 around seven percent of the part-time and nine percent of the marginally employed persons are losing their job. The contribution of the occupational position variable is also slightly diminished, referring to the fact that unskilled and semi-skilled workers are most likely to lose their job, resulting in a reduced hierarchical dispersion of employees particularly at the lower tail of the distribution.

To sum up, employment effects accruing from the introduction of the statutory minimum wage significantly affect the gender pay gap only under rather restrictive assumptions and even then the effects are rather small compared to the wage composition effect. Table 4 summarizes the main results as they were documented in Figure 2 and Figure 3.

Table 4: Summary of main results

		Mean	Quantiles										
			5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%
Unadjusted gap	before	19.6	25.8	20.8	20.4	19.9	20.1	19.8	18.7	18.2	17.4	19.4	19.3
	after	17.1	0.0	9.0	18.3	19.9	20.1	19.8	18.7	18.2	17.4	19.4	19.3

Decomposition	before	after				
			Neoclassical model		Monopsony model	
		$\eta = 0$	$\eta = -0.2$	$\eta = -1.2$	$\eta = -0.2$	$\eta = -1.2$
Mean	19.6	17.1	17.1	16.0	17.1	16.9
Adjusted gap (un-explained part)	1.8	2.4	2.6	3.3	2.5	3.2
Explained part	17.9	14.7	14.5	12.7	14.6	13.7

6   Robustness checks

In what follows, we illustrate the robustness of our findings with respect to the specification of variables, the sample and the assumptions regarding the simulation of employment effects.[14]

We start with discussing an alternative list of independent variables, as it is referred to in Destatis (2006). See for specification details **Fehler! Verweisquelle konnte nicht gefunden**

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[14] More detailed results are available upon request.

werden. in the appendix. In order to be able to compare the results of the two specifications, the sample is restricted to observations which contain information for all explaining variables of both specifications. Based on the assumption of zero employment effects, the comparison shows that according to the Destatis (2006)-specification, the unexplained part of the gender pay gap is notably higher, amounting to 5.2 % before and 5.7 % after the implementation of the minimum wage and assumed zero employment effects. As discussed above, this might be attributed to the less detailed measure of education, employment biography and volume of employment.

In the Destatis (2006) specification, the public administration sector is excluded from the analysis. If we exclude the public administration sector from our estimations the gender pay gap rises to 19.9 % before the implementation of the minimum wage. Though, after the implementation the gender pay gap is only 0.1 pp higher. The same is true for the adjusted gender pay gap before and after the implementation of the minimum wage.

With respect to special transition arrangements for some industries and permanently unemployed persons which are disregarded in our main analyses, the respective robustness checks show that considering the named effects changes the results by less than 0.1 pp.[15] The same is true when we incorporate hourly wages below 3 Euro according to Müller (2009) but set them to 2.75 Euro following Knabe et al. (2014).

Another modification addresses the endogenous variable. As a sensitivity analysis, we calculate the gross hourly wage rate with prorated fringe benefits. The question behind this is, does the employment effect alter the gendered distribution of fringe benefits and is this reflected by the post-reform gender pay gap? To this end, we simulate a cut down of (per hour) fringe benefits to the extent of the (per hour) wage increase. If the wage increase exceeds the irregular payment, the latter is set at zero. This procedure applies to all employees who are subject to the reform and who received irregular payments before the reform. We expect that the procedure moderates the effective wage increase, thereby reducing negative employment effects. Yet, our estimations show that the effect is rather small. The employment effects are at maximum one percentage point lower for the neoclassical and the monopsonistic labour market model compared to our main results reported in Table **3**4. Therefore, the effect on the gender pay gap is barely notable.

Regarding the employment effects, we modified the selection method according to which job losers are designated. As argued above, various company- and job-specific criteria might determine who specifically is losing his or her job. In order to account for unknown criteria, we calculate the gender pay gap arising from employment effects that rely on a random selection criterion (see Section 5.1). As a result, a rising elasticity of labor demand is associated

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[15] Due to data limitations, the investigation for the special arrangement regarding unemployment is carried out with data for 2011 and a smaller sample size.

to a slightly less pronounced decrease of the adjusted gender pay gap. This is plausible since with a relaxed linkage of job losses to prior-reform wages, gender wage differentials are less efficaciously eliminated where they prove to be highest – at the very bottom of the earnings distribution.

We further differentiated between various elasticities of labour demand, instead of using a unique elasticity for all employees. In more detail, we used averages of labor demand elasticities for different subgroups of employees with respect to gender, qualification, and German region (East/West) as it is reported in the empirical literature.[16] However, the structure of job losses is similar to that reported in our main results section relying on a unique elasticity.

7 Conclusion

In this study, we use data from the Socio-Economic Panel Study (SOEP) to simulate the potential effects of the implementation of the statutory minimum wage legislation in Germany on the gender pay gap. We simulate one scenario, where we assume that labor demand will not adapt to the change in labor costs, i.e. the labor demand elasticity is assumed to be zero, as well as scenarios with labor demand elasticities above zero. Additionally we incorporate two labor market models, i.e. a neoclassical model and a monopsony. Relying on these assumptions, we simulate an upper and a lower bound of an employment corridor. Considering the range of employment effects, we compare the gender pay gap before and after the minimum wage introduction.

According to our findings, the unadjusted gender pay gap amounts to 19.6 % before the introduction of the minimum wage. The gap is larger at the bottom than at the top of the wage distribution. Under the assumption of zero employment effects the unadjusted gender pay gap is reduced by 2.5 percentage points after the introduction of the minimum wage. The implementation of the reform most notably cuts down the sticky-floor effects at the bottom of the wage distribution, merely concentrating on the three lowest 5%-quantiles. The explained part of the gender pay gap reduces from 17.9 pp to 14.7 pp while the unexplained part increases from 1.8 pp to 2.4 pp. This change is mainly due to a decreased importance of the employment volume in the context of minimum wages. On the contrary, the employment biography more notably contributes to the gap in the aftermath of the reform than before.

Women are more likely to be subject to the reform than men, particularly if they are lowly qualified, work part-time or are marginally employed. For the neoclassical model with wage selection, job losses of women subject to the minimum wage range between 3.2 % (elasticity -0.2) and 18.4 % (elasticity -1.2), those of their male counterparts between 1.7 % and 5.9 %,

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[16] See Fitz et al. (1998), Buslei and Steiner (1999), Bellmann et al. (2002), Jacobi and Schaffner (2008), Bauer et al. (2009), and Steiner (2010).

respectively. In the monopsony market setting, job losses are far smaller for both genders. We suggest that the volume of job losses will lie in between the two market model predictions for a moderate elasticity. Our predictions fit quite well into recently reported real figures referring to job losses of German "Mini-Jobbers". Considering employment effects, the gender pay gap is notably affected by job losses solely in scenarios with high labor demand elasticity and highly competitive labor markets. Even then, the effect is rather small. The gender pay gap further decreases by roughly one percentage point.

The results of our simulation show that the introduction of a minimum wage can effectively reduce the gender pay gap especially at the bottom of the wage distribution, which is a notable ingredient to the evaluation of the statutory minimum wage in Germany. However, the reduction of the gender pay gap possibly comes at the price of job losses. If we assume moderate employment effects, the change in the gender pay gap will be, as indicated by our simulation, rather moderate as well.

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Appendix

Table A 1: Descriptive statistics

	Men		Women		Total	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
Gross hourly wage						
without minimum wage	17.734	8.511	14.694	7.595	16.236	8.214
with minimum wage (no employment effects)	17.842	8.374	14.977	7.302	16.431	7.993
with minimum wage (sector specific transition agreements)	17.84	8.377	14.973	7.306	16.428	7.996
Firm size						
less than 20 employees	0.17	0.376	0.238	0.426	0.204	0.403
20-199 employees	0.299	0.458	0.265	0.441	0.282	0.45
200-1999 employees	0.248	0.432	0.234	0.423	0.241	0.428
2000 Employees and more	0.282	0.45	0.263	0.44	0.273	0.445
Classification of economic activities						
01: Agriculture, hunting and related service activities	0.013	0.111	0.006	0.08	0.009	0.097
02: Forestry, logging and related service activities	0.002	0.048	0	0	0.001	0.034
05: Fishing, fish hatcheries and fish farms; incidental service activities	0	0	0	0	0	0
10: Mining of coal and lignite; extraction of peat	0	0.013	0	0	0	0.009
11: Extraction of crude petroleum and natural gas; incidental service activities	0	0	0	0.021	0	0.015
14: Mining of uranium and thorium ores, metal ores, other	0.001	0.028	0	0	0	0.02
15: Manufacture of food products and beverages	0.029	0.169	0.025	0.156	0.027	0.163
16: Manufacture of tobacco products	0	0.016	0	0	0	0.012
17: Manufacture of textiles	0.002	0.041	0.005	0.069	0.003	0.057
18: Manufacture of wearing apparel; fur	0	0	0.001	0.024	0	0.017
19: Tanning and dressing of leather	0	0.022	0.001	0.027	0.001	0.024
20: Manufacture of (products of) wood and cork, except furniture	0.006	0.079	0	0.016	0.003	0.057
21: Manufacture of pulp, paper and paper products	0.009	0.093	0.004	0.061	0.006	0.079
22: Publishing, printing and reproduction of recorded media	0.015	0.121	0.011	0.103	0.013	0.113
23: Manufacture of coke, refined petroleum products and nuclear fuel	0.001	0.038	0.001	0.023	0.001	0.031
24: Manufacture of chemicals and chemical products	0.028	0.166	0.017	0.129	0.023	0.149
25: Manufacture of rubber and plastic products	0.01	0.101	0.008	0.089	0.009	0.095
26: Manufacture of other non-metallic mineral products	0.005	0.072	0.004	0.06	0.004	0.066
27: Manufacture of basic metals	0.01	0.101	0.002	0.047	0.006	0.08
28: Manufacture of fabricated metal products, except machinery and equipment	0.068	0.253	0.014	0.118	0.042	0.2
29: Manufacture of machinery and equipment n.e.c.	0.047	0.212	0.01	0.101	0.029	0.168
30: Manufacture of office machinery and computers	0	0	0.001	0.035	0.001	0.025
31: Manufacture of electrical machinery and apparatus n.e.c.	0.034	0.183	0.014	0.117	0.024	0.154
32: Manufacture of radio, television and communication equipment	0.005	0.07	0.002	0.049	0.004	0.061

The table is continued on the next page.

Table A 1 (continued)	Men		Women		Total	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
33: Manufacture of medical, precision and optical instruments	0.007	0.082	0.008	0.091	0.008	0.087
34: Manufacture of motor vehicles, trailers	0.06	0.238	0.019	0.136	0.04	0.196
35: Manufacture of other transport equipment	0.006	0.079	0.003	0.056	0.005	0.068
36: Manufacture of furniture; manufacturing n.e.c.	0.005	0.068	0.002	0.039	0.003	0.056
37: Recycling	0.001	0.032	0.001	0.036	0.001	0.034
40: Electricity, gas, steam and hot water supply	0.013	0.114	0.006	0.074	0.009	0.097
41: Collection, purification and distribution of water	0.003	0.056	0.001	0.032	0.002	0.046
45: Construction	0.1	0.299	0.016	0.125	0.058	0.234
50: Sale, maintenance and repair of motor vehicles; retail sale of automotive fuel	0.022	0.145	0.004	0.062	0.013	0.113
51: Wholesale trade and commission trade, except of motor vehicles	0.018	0.134	0.013	0.113	0.016	0.124
52: Retail trade, except of motor vehicles; repair of household goods	0.053	0.224	0.142	0.349	0.097	0.296
55: Hotels and restaurants	0.024	0.153	0.028	0.166	0.026	0.16
60: Land transport; transport via pipelines	0.035	0.184	0.009	0.093	0.022	0.147
61: Water transport	0	0.022	0.001	0.033	0.001	0.028
62: Air transport	0.005	0.071	0.003	0.055	0.004	0.064
63: Supporting and auxiliary transport activities; activities of travel agencies	0.019	0.137	0.008	0.088	0.014	0.116
64: Post and telecommunications	0.02	0.141	0.018	0.133	0.019	0.137
65: Financial intermediation, except insurance and pension funding	0.027	0.161	0.03	0.169	0.028	0.165
66: Insurance and pension funding, except compulsory social security	0.008	0.087	0.019	0.137	0.013	0.114
67: Activities auxiliary to financial intermediation	0.001	0.036	0	0.011	0.001	0.027
70: Real estate activities	0.003	0.055	0.01	0.101	0.007	0.081
71: Renting of machinery and equipment without operator and of personal and household goods	0	0.021	0	0	0	0.015
72: Computer and related activities	0.022	0.146	0.01	0.097	0.016	0.125
73: Research and development	0.008	0.089	0.003	0.054	0.005	0.074
74: Other business activities	0.03	0.171	0.057	0.233	0.044	0.204
75: Public administration and defence; compulsory social security	0.077	0.267	0.078	0.268	0.078	0.268
80: Education	0.024	0.155	0.094	0.293	0.059	0.236
85: Health and social work	0.055	0.228	0.226	0.418	0.139	0.346
90: Sewage and refuse disposal, sanitation and similar activities	0.012	0.108	0.002	0.039	0.007	0.081
91: Activities of membership organizations n.e.c.	0.007	0.083	0.013	0.115	0.01	0.1
92: Recreational, cultural and sporting activities	0.014	0.117	0.018	0.135	0.016	0.126
93: Other service activities	0.002	0.049	0.008	0.091	0.005	0.073
95: Private households with employed persons	0	0	0.006	0.08	0.003	0.056
96: Industries without further classification	0.014	0.118	0.006	0.076	0.01	0.099
97: Crafts without further classification	0.002	0.039	0.002	0.048	0.002	0.044
98: Services without further classification	0.007	0.085	0.008	0.087	0.007	0.086
99: Extra-territorial organizations and bodies	0.001	0.034	0	0.021	0.001	0.028
100: Manufacturing without further classification	0.005	0.07	0.001	0.032	0.003	0.055

The table is continued on the next page.

Table A 1 (continued)	Men		Women		Total	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
Occupation						
ISCO 1	0.052	0.223	0.023	0.15	0.038	0.191
ISCO 2	0.127	0.333	0.106	0.308	0.117	0.321
ISCO 3	0.207	0.405	0.339	0.473	0.272	0.445
ISCO 4	0.09	0.286	0.189	0.392	0.139	0.346
ISCO 5	0.062	0.241	0.196	0.397	0.128	0.334
ISCO 6	0.008	0.088	0.005	0.072	0.007	0.081
ISCO 7	0.253	0.435	0.034	0.182	0.145	0.353
ISCO 8	0.12	0.326	0.025	0.156	0.073	0.261
ISCO 9	0.081	0.272	0.083	0.276	0.082	0.274
Occupational position						
unknown	0.002	0.045	0.003	0.051	0.002	0.048
untrained worker	0.027	0.162	0.039	0.194	0.033	0.179
semi-trained worker	0.124	0.329	0.092	0.288	0.108	0.31
trained worker	0.235	0.424	0.036	0.186	0.137	0.344
foreman, team leader	0.038	0.192	0.002	0.048	0.021	0.142
foreman	0.016	0.127	0.003	0.059	0.01	0.099
working in family business	0	0	0.001	0.029	0	0.021
foreman (industry)	0.009	0.092	0	0.012	0.004	0.067
untrained employee with simple tasks	0.028	0.165	0.076	0.266	0.052	0.222
trained employee with simple tasks	0.063	0.243	0.159	0.365	0.11	0.313
qualified professional	0.234	0.424	0.449	0.497	0.34	0.474
highly qualified professional	0.149	0.356	0.092	0.289	0.121	0.326
managerial	0.015	0.122	0.008	0.087	0.011	0.107
low-level civil service	0.003	0.056	0.001	0.024	0.002	0.043
middle-level civil service	0.024	0.153	0.014	0.116	0.019	0.136
high-level civil service	0.024	0.154	0.019	0.137	0.022	0.146
executive civil service	0.008	0.089	0.007	0.082	0.007	0.086
Volume of employment						
part-time retirement	0.006	0.077	0.011	0.103	0.008	0.091
fixed-term employment contract	0.089	0.285	0.114	0.318	0.101	0.302
part-time employment (16 - 25 hrs.)	0.017	0.13	0.149	0.356	0.082	0.275
part-time employment (26 - 35 hrs.)	0.013	0.115	0.18	0.384	0.095	0.294
marginal employment	0.019	0.136	0.11	0.313	0.064	0.245
Employment biography						
tenure	12.45	10.868	11.11	10.094	11.79	10.515
employment experience (full- and part-time)	20.954	11.938	19.378	11.276	20.177	11.642
out-of labor force (OLF) experience	0.221	1.275	3.771	6.178	1.97	4.772
Unemployment experience	0.649	1.834	0.638	1.581	0.644	1.714
Completed School						
secondary school	0.311	0.463	0.208	0.406	0.26	0.439
intermediate school	0.365	0.482	0.436	0.496	0.4	0.49
technical school	0.066	0.249	0.069	0.253	0.068	0.251

The table is continued on the next page.

Table A 1 (continued)	Men		Women		Total	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
upper secondary school	0.151	0.358	0.192	0.394	0.171	0.377
other degree	0.085	0.279	0.083	0.277	0.084	0.278
no school degree	0.021	0.143	0.012	0.107	0.016	0.127
College Degree						
technical college	0.056	0.229	0.054	0.226	0.055	0.228
university, technical university	0.051	0.221	0.061	0.24	0.056	0.23
college not in Germany	0.005	0.067	0.003	0.054	0.004	0.061
engineering, technical school (east)	0.005	0.074	0.014	0.117	0.01	0.098
university (east)	0.003	0.051	0.002	0.049	0.003	0.05
graduation/state doctorate	0.002	0.045	0.003	0.051	0.002	0.048
Vocational Degree						
no vocational degree	0.123	0.329	0.127	0.333	0.125	0.331
apprenticeship	0.583	0.493	0.521	0.5	0.552	0.497
vocational school	0.079	0.269	0.169	0.375	0.123	0.329
health care school	0.003	0.052	0.019	0.137	0.011	0.103
technical school	0.107	0.309	0.065	0.246	0.086	0.281
civil service training	0.038	0.191	0.022	0.145	0.03	0.17
other degree	0.033	0.178	0.037	0.189	0.035	0.184
Personal background						
married	0.574	0.495	0.531	0.499	0.553	0.497
direct migration background	0.082	0.275	0.073	0.261	0.078	0.268
indirect migration background	0.145	0.352	0.138	0.345	0.141	0.348
East Germany	0.166	0.372	0.176	0.381	0.171	0.376
Observations	3148		3356		6504	

Sources: SOEP v29, 2012; HWWI.

Table A 2: Blinder-Oaxaca decomposition of the gender pay gap

	before minimum wage		after minimum wage[1]	
Total				
Men	2.777***	(-0.008)	2.793***	(-0.007)
Women	2.581***	(-0.008)	2.622***	(-0.007)
Difference in Log- hourly wage rates	0.196***	(-0.011)	0.171***	(-0.010)
thereof endowment effect	0.179***	(-0.020)	0.147***	(-0.019)
thereof evaluation effect (price effect) (including the constant term)	0.018	(-0.020)	0.024	(-0.018)
Composition of the endowment effect				
Firm size				
less than 20 employees	0.013***	(-0.002)	0.012***	(-0.002)
20-199 employees	-0.005***	(-0.002)	-0.005***	(-0.002)
200-1999 employees	-0.001	(-0.001)	-0.001	(-0.001)
Classification of economic activities				
01: Agriculture, hunting and related service activities	0.000	(0.000)	0.000	(0.000)
02: Forestry, logging and related service activities	0.001*	(0.000)	0.001*	(0.000)
05: Fishing, fish hatcheries and fish farms; incidental service activities	–			
10: Mining of coal and lignite; extraction of peat	0.000	(0.000)	0.000	(0.000)
11: Extraction of crude petroleum and natural gas; incidental service activities	–			
14: Mining of uranium and thorium ores, metal ores, other	0.000	(0.000)	0.000	(0.000)
15: Manufacture of food products and beverages	0.000	(0.000)	0.000	(0.000)
16: Manufacture of tobacco products	0.000	(0.000)	0.000	(0.000)
17: Manufacture of textiles	-0.001	(-0.001)	-0.001*	(-0.001)
18: Manufacture of wearing apparel; fur	–			
19: Tanning and dressing of leather	0.000	(0.000)	0.000	(0.000)
20: Manufacture of (products of) wood and cork, except furniture	0.000	(0.000)	0.000	(0.000)
21: Manufacture of pulp, paper and paper products	0.000	(0.000)	0.000	(0.000)
22: Publishing, printing and reproduction of recorded media	0.001	(-0.001)	0.001	(-0.001)
23: Manufacture of coke, refined petroleum products and nuclear fuel	0.000	(0.000)	0.000	(0.000)
24: Manufacture of chemicals and chemical products	0.003***	(-0.001)	0.003***	(-0.001)
25: Manufacture of rubber and plastic products	0.000	(0.000)	0.000	(0.000)
26: Manufacture of other non-metallic mineral products	0.000	(0.000)	0.000	(0.000)
27: Manufacture of basic metals	0.002***	(-0.001)	0.002***	(-0.001)
28: Manufacture of fabricated metal products, except machinery and equipment	0.011***	(-0.002)	0.011***	(-0.002)
29: Manufacture of machinery and equipment n.e.c.	0.010***	(-0.002)	0.010***	(-0.002)
30: Manufacture of office machinery and computers	–	(0.000)		(0.000)

Table A 2 (continued)	before minimum wage		after minimum wage	
31: Manufacture of electrical machinery and apparatus n.e.c.	0.002***	(-0.001)	0.003***	(-0.001)
32: Manufacture of radio, television and communication equipment	0.000	(0.000)	0.000	(0.000)
33: Manufacture of medical, precision and optical instruments	0.000	(0.000)	0.000	(0.000)
34: Manufacture of motor vehicles, trailers	0.008***	(-0.002)	0.008***	(-0.002)
35: Manufacture of other transport equipment	0.001*	(-0.001)	0.001*	(-0.001)
36: Manufacture of furniture; manufacturing n.e.c.	0.001	(0.000)	0.001*	(0.000)
37: Recycling	0.000	(0.000)	0.000	(0.000)
40: Electricity, gas, steam and hot water supply	0.003***	(-0.001)	0.003***	(-0.001)
41: Collection, purification and distribution of water	0.000	(0.000)	0.000	(0.000)
45: Construction	0.011***	(-0.003)	0.011***	(-0.003)
50: Sale, maintenance and repair of motor vehicles; retail sale of automotive fuel	0.001*	(-0.001)	0.002***	(-0.001)
51: Wholesale trade and commission trade, except of motor vehicles	0.000	(0.000)	0.000	(0.000)
52: Retail trade, except of motor vehicles; repair of household goods	0.000	(-0.003)	-0.001	(-0.003)
55: Hotels and restaurants	0.000	(0.000)	0.000	(0.000)
60: Land transport; transport via pipelines	0.001	(-0.001)	0.001	(-0.001)
61: Water transport	0.000	(0.000)	0.000	(0.000)
62: Air transport	0.001	(0.000)	0.001	(-0.001)
63: Supporting and auxiliary transport activities; activities of travel agencies	0.001	(-0.001)	0.001*	(-0.001)
64: Post and telecommunications	0.000	(0.000)	0.000	(0.000)
65: Financial intermediation, except insurance and pension funding	-0.001	(-0.001)	-0.001	(-0.001)
66: Insurance and pension funding, except compulsory social security	-0.001*	(-0.001)	-0.002**	(-0.001)
67: Activities auxiliary to financial intermediation	0.000	(0.000)	0.000	(0.000)
70: Real estate activities	-0.002**	(-0.001)	-0.002**	(-0.001)
71: Renting of machinery and equipment without operator and of personal and household goods	0.000	(0.000)	0.000	(0.000)
72: Computer and related activities	0.002**	(-0.001)	0.002***	(-0.001)
73: Research and development	0.000	(0.000)	0.000	(0.000)
74: Other business activities	0.000	(-0.001)	-0.001	(-0.001)
75: Public administration and defence; compulsory social security	0.000	(0.000)	0.000	(0.000)
80: Education	-0.006*	(-0.003)	-0.006**	(-0.003)
90: Sewage and refuse disposal, sanitation and similar activities	0.002***	(-0.001)	0.002***	(-0.001)
91: Activities of membership organizations n.e.c.	0.000	(0.000)	0.000	(0.000)
92: Recreational, cultural and sporting activities	0.000	(0.000)	0.000	(0.000)
93: Other service activities	0.000	(-0.001)	-0.001	(-0.001)
95: Private households with employed persons	–			
96: Industries without further classification	0.001**	(-0.001)	0.001**	(-0.001)
97: Crafts without further classification	0.000	(0.000)	0.000	(0.000)
98: Services without further classification	0.000	(0.000)	0.000	(0.000)

Table A 2 (continued)	before minimum wage		after minimum wage	
99: Extra-territorial organizations and bodies	0.000	(0.000)	0.000	(0.000)
100: Manufacturing without further classification	0.000	(0.000)	0.000	(0.000)
Occupation				
ISCO 1	0.005***	(-0.001)	0.004***	(-0.001)
ISCO 2	0.003**	(-0.001)	0.003**	(-0.001)
ISCO 3	-0.018***	(-0.003)	-0.016***	(-0.003)
ISCO 5	-0.001	(-0.004)	-0.001	(-0.004)
ISCO 6	0.000	(0.000)	0.000	(0.000)
ISCO 7	0.013**	(-0.005)	0.010**	(-0.005)
ISCO 8	0.007***	(-0.003)	0.006***	(-0.002)
ISCO 9	0.000	(0.000)	0.000	(0.000)
Occupational position				
unknown	0.000	(0.000)	0.000	(0.000)
untrained worker	0.001**	(-0.001)	0.001*	(-0.001)
semi-trained worker	-0.003***	(-0.001)	-0.002***	(-0.001)
foreman, team leader	0.003***	(-0.001)	0.003***	(-0.001)
foreman	0.001	(-0.001)	0.001	(-0.001)
working in family business	–			
foreman (industry)	0.001**	(-0.001)	0.001**	(-0.001)
untrained employee with simple tasks	0.006***	(-0.002)	0.005***	(-0.002)
trained employee with simple tasks	0.008***	(-0.002)	0.007***	(-0.002)
qualified professional	-0.021***	(-0.004)	-0.020***	(-0.004)
highly qualified professional	0.018***	(-0.003)	0.018***	(-0.003)
managerial	0.004***	(-0.002)	0.004***	(-0.002)
low-level civil service	0.000	(0.000)	0.000	(0.000)
middle-level civil service	0.000	(0.000)	0.000	(0.000)
high-level civil service	0.001	(-0.001)	0.001	(-0.001)
executive civil service	0.001	(-0.001)	0.001	(-0.001)
Volume of employment				
part-time retirement	0.001	(0.000)	0.001	(0.000)
Fixed-term employment contract	0.003***	(-0.001)	0.003***	(-0.001)
part-time employment (16 - 25 hrs.)	0.012**	(-0.005)	0.007	(-0.005)
part-time employment (26 - 35 hrs.)	0.033***	(-0.008)	0.011	(-0.007)
Marginal employment	0.018***	(-0.004)	0.010***	(-0.004)
Employment biography				
tenure	0.008***	(-0.002)	0.007***	(-0.002)
employment experience (full- and part-time)	0.004***	(-0.001)	0.004***	(-0.001)
out-of labor force (OLF) experience	0.017	(-0.015)	0.024*	(-0.014)
Unemployment experience	0.000	(0.000)	0.000	(0.000)
Completed School	0.000	(0.000)	0.000	(0.000)
intermediate school	-0.001	(-0.001)	-0.001	(-0.001)
technical school	0.000	(0.000)	0.000	(-0.001)
upper secondary school	-0.005***	(-0.001)	-0.004***	(-0.001)

Table A 2 (continued)	before minimum wage		after minimum wage	
other degree	0.000	(0.000)	0.000	(0.000)
no school degree	-0.001*	(0.000)	-0.001*	(0.000)
College Degree				
technical college	0.000	(0.000)	0.000	(0.000)
university, technical university	-0.001	(0.000)	-0.001	(0.000)
college not in Germany	0.000	(0.000)	0.000	(0.000)
engineering, technical school (east)	0.000	(-0.001)	0.000	(-0.001)
university (east)	0.000	(0.000)	0.000	(0.000)
graduation/state doctorate	0.000	(0.000)	0.000	(0.000)
Vocational Degree				
no vocational degree	0.000	(-0.001)	0.000	(-0.001)
vocational school	-0.002	(-0.002)	-0.002	(-0.002)
health care school	0.000	(-0.002)	-0.001	(-0.001)
technical school	0.002***	(-0.001)	0.003***	(-0.001)
civil service training	0.000	(-0.001)	0.000	(-0.001)
other degree	0.000	(0.000)	0.000	(0.000)
Personal background				
married	0.003***	(-0.001)	0.003***	(-0.001)
indirect migration background	0.000	(0.000)	0.000	(0.000)
direct migration background	0.000	(0.000)	0.000	(0.000)
East Germany	0.003	(-0.002)	0.003	(-0.002)
Composition of the evaluation effect (price effect)				
Firm size				
less than 20 employees	0.020***	(0.006)	0.012**	(0.005)
20-199 employees	-0.001	(0.006)	-0.004	(0.005)
200-1999 employees	0.011**	(0.005)	0.008*	(0.005)
Classification of economic activities				
01: Agriculture, hunting and related service activities	0.000	(0.001)	0.000	(0.001)
02: Forestry, logging and related service activities	–		–	
05: Fishing, fish hatcheries and fish farms; incidental service activities	–		–	
10: Mining of coal and lignite; extraction of peat	-		-	
11: Extraction of crude petroleum and natural gas; incidental service activities	-0.001	(0.000)	-0.001	(0.000)
14: Mining of uranium and thorium ores, metal ores, other	–		-	
15: Manufacture of food products and beverages	0.002*	(0.001)	0.003**	(0.001)
16: Manufacture of tobacco products	-		-	
17: Manufacture of textiles	0.002**	(0.001)	0.001*	(0.001)
18: Manufacture of wearing apparel; fur	-0.001	(0.000)	-0.001	(0.000)
19: Tanning and dressing of leather	0.000	(0.000)	0.000	(0.000)
20: Manufacture of (products of) wood and cork, except furniture	0.000	(0.000)	0.000	(0.000)
21: Manufacture of pulp, paper and paper products	0.000	(0.000)	0.000	(0.000)

Table A 2 (continued)	before minimum wage		after minimum wage	
22: Publishing, printing and reproduction of recorded media	0.003***	(0.001)	0.002***	(0.001)
23: Manufacture of coke, refined petroleum products and nuclear fuel	0.000	(0.000)	0.000	(0.000)
24: Manufacture of chemicals and chemical products	0.002	(0.001)	0.002*	(0.001)
25: Manufacture of rubber and plastic products	0.002**	(0.001)	0.001**	(0.001)
26: Manufacture of other non-metallic mineral products	0.000	(0.000)	0.000	(0.000)
27: Manufacture of basic metals	0.000	(0.000)	0.000	(0.000)
28: Manufacture of fabricated metal products, except machinery and equipment	0.001	(0.001)	0.001	(0.001)
29: Manufacture of machinery and equipment n.e.c.	0.000	(0.001)	0.000	(0.001)
30: Manufacture of office machinery and computers	0.000	(0.000)	0.000	(0.000)
31: Manufacture of electrical machinery and apparatus n.e.c.	0.000	(0.001)	0.000	(0.001)
32: Manufacture of radio, television and communication equipment	0.000	(0.000)	0.000	(0.000)
33: Manufacture of medical, precision and optical instruments	-0.001	(0.001)	-0.001	(0.001)
34: Manufacture of motor vehicles, trailers	-0.001	(0.001)	-0.001	(0.001)
35: Manufacture of other transport equipment	0.000	(0.000)	0.000	(0.000)
36: Manufacture of furniture; manufacturing n.e.c.	0.000	(0.000)	0.000	(0.000)
37: Recycling	0.000	(0.000)	0.000	(0.000)
40: Electricity, gas, steam and hot water supply	0.001	(0.001)	0.001*	(0.000)
41: Collection, purification and distribution of water	0.000	(0.000)	0.000	(0.000)
45: Construction	0.002**	(0.001)	0.002**	(0.001)
50: Sale, maintenance and repair of motor vehicles; retail sale of automotive fuel	0.001**	(0.000)	0.001	(0.000)
51: Wholesale trade and commission trade, except of motor vehicles	0.000	(0.001)	0.000	(0.001)
52: Retail trade, except of motor vehicles; repair of household goods	0.006	(0.005)	0.004	(0.005)
55: Hotels and restaurants	0.003*	(0.002)	0.000	(0.001)
60: Land transport; transport via pipelines	0.001	(0.001)	0.001	(0.001)
61: Water transport	0.001	(0.000)	0.001	(0.000)
62: Air transport	0.000	(0.000)	0.001	(0.000)
63: Supporting and auxiliary transport activities; activities of travel agencies	0.000	(0.001)	0.000	(0.001)
64: Post and telecommunications	0.000	(0.001)	0.001	(0.001)
65: Financial intermediation, except insurance and pension funding	0.001	(0.002)	0.001	(0.001)
66: Insurance and pension funding, except compulsory social security	-0.001	(0.001)	-0.001	(0.001)
67: Activities auxiliary to financial intermediation	0.000	(0.000)	0.000	(0.000)
70: Real estate activities	0.001	(0.001)	0.000	(0.001)
71 : Renting of machinery and equipment without operator and of personal and household goods	-		-	
72: Computer and related activities	0.000	(0.001)	0.000	(0.001)
73: Research and development	-0.001*	(0.000)	-0.001*	(0.000)

| 74: Other business activities | 0.002 | (0.003) | 0.002 | (0.002) |

The table is continued on the next page.

Table A 2 (continued)	before minimum wage		after minimum wage	
75: Public administration and defence; compulsory social security	0.001	(0.003)	0.001	(0.003)
80: Education	0.004	(0.005)	0.004	(0.004)
90: Sewage and refuse disposal, sanitation and similar activities	0.001	(0.000)	0.001*	(0.000)
91: Activities of membership organizations n.e.c.	-0.001	(0.001)	-0.001	(0.001)
92: Recreational, cultural and sporting activities	0.002	(0.001)	0.001	(0.001)
93: Other service activities	0.002**	(0.001)	0.002*	(0.001)
95: Private households with employed persons	0.000	(0.000)	0.000	(0.000)
96: Industries without further classification	0.000	(0.001)	0.000	(0.000)
97: Crafts without further classification	0.000	(0.000)	0.000	(0.000)
98: Services without further classification	0.002**	(0.001)	0.001**	(0.001)
99: Extra-territorial organizations and bodies	0.000	(0.000)	0.000	(0.000)
100: Manufacturing without further classification	0.000	(0.000)	0.000	(0.000)
Occupation		(0.000)		
ISCO 1	0.001	(0.001)	0.001	(0.001)
ISCO 2	-0.001	(0.004)	-0.003	(0.004)
ISCO 3	0.016	(0.010)	0.013	(0.009)
ISCO 5	0.001	(0.007)	-0.001	(0.007)
ISCO 6	0.000	(0.001)	0.000	(0.001)
ISCO 7	0.001	(0.002)	0.001	(0.001)
ISCO 8	0.004***	(0.001)	0.003**	(0.001)
ISCO 9	0.013***	(0.003)	0.008***	(0.003)
Occupational position		(0.000)		
unknown	0.001	(0.000)	0.000	(0.000)
untrained worker	0.000	(0.002)	0.001	(0.002)
semi-trained worker	0.001	(0.004)	0.003	(0.003)
foreman, team leader	0.000	(0.000)	0.000	(0.000)
foreman	0.000	(0.000)	0.000	(0.000)
working in family business	0.000	(0.000)	0.000	(0.000)
foreman (industry)	0.000	(0.000)	0.000	(0.000)
untrained employee with simple tasks	0.000	(0.004)	0.000	(0.004)
trained employee with simple tasks	-0.003	(0.007)	0.000	(0.006)
qualified professional	0.028	(0.017)	0.032**	(0.015)
highly qualified professional	0.012***	(0.004)	0.013***	(0.004)
managerial	0.002***	(0.001)	0.002***	(0.001)
low-level civil service	0.000	(0.000)	0.000	(0.000)
middle-level civil service	0.000	(0.001)	0.000	(0.001)
high-level civil service	0.000	(0.001)	0.000	(0.001)
executive civil service	0.002*	(0.001)	0.002**	(0.001)
Volume of employment				
part-time retirement	0.000	(0.001)	0.000	(0.001)

	before minimum wage		after minimum wage	
Fixed-term employment contract	0.003	(0.003)	0.001	(0.003)

The table is continued on the next page.

Table A 2 (continued)	before minimum wage		after minimum wage	
part-time employment (16 - 25 hrs.)	-0.014**	(0.007)	-0.008	(0.006)
part-time employment (26 - 35 hrs.)	-0.036***	(0.009)	-0.018**	(0.008)
Marginal employment	-0.013**	(0.005)	-0.008*	(0.005)
Employment biography				
tenure	-0.014	(0.011)	-0.017*	(0.010)
employment experience (full- and part-time)	0.000	(0.018)	0.017	(0.016)
out-of labor force (OLF) experience	-0.007	(0.016)	-0.016	(0.015)
Unemployment experience	-0.002	(0.003)	-0.002	(0.003)
Completed School				
intermediate school	0.005	(0.010)	0.000	(0.008)
technical school	0.006**	(0.003)	0.005**	(0.002)
upper secondary school	0.010	(0.006)	0.007	(0.005)
other degree	-0.001	(0.003)	-0.001	(0.003)
no school degree	0.000	(0.001)	0.000	(0.001)
College Degree				
technical college	0.001	(0.002)	0.001	(0.002)
university, technical university	-0.006**	(0.003)	-0.006**	(0.002)
college not in Germany	0.000	(0.000)	0.000	(0.000)
engineering, technical school (east)	0.000	(0.001)	0.000	(0.001)
university (east)	-0.001*	(0.000)	-0.001**	(0.000)
graduation/state doctorate	0.000	(0.000)	0.000	(0.000)
Vocational Degree				
no vocational degree	-0.002	(0.004)	-0.002	(0.003)
vocational school	0.001	(0.004)	0.000	(0.004)
health care school	-0.001	(0.002)	-0.001	(0.002)
technical school	-0.004**	(0.002)	-0.003*	(0.002)
civil service training	-0.001	(0.001)	0.000	(0.001)
other degree	-0.003*	(0.002)	-0.002	(0.002)
Personal background				
married	0.039***	(0.009)	0.035***	(0.008)
direct migration background	-0.009***	(0.002)	-0.008***	(0.002)
indirect migration background	0.000	(0.004)	-0.002	(0.004)
East Germany	-0.005	(0.004)	-0.011***	(0.004)
constant	-0.074	(0.059)	-0.056	(0.052)
Observations				
Total	6504		6504	
Men	3148		3148	
Women	3356		3356	

[1] Elasticity of labour demand = 0.
Standard errors in parenthesis, *p<0.05, **p<0.01, ***p<0.001.

Sources: SOEP v29, 2012; HWWI.

Table A 3: Wage regressions for the Blinder-Oaxaca decomposition

	without minimum wage				with minimum wage[1]			
	Men		Women		Men		Women	
Firm size								
less than 20 employees	-0.187**	(0.019)	-0.271**	(0.018)	-0.177**	(0.017)	-0.228**	(0.015)
20-199 employees	-0.136**	(0.015)	-0.132**	(0.016)	-0.134**	(0.014)	-0.118**	(0.014)
200-1999 employees	-0.050**	(0.015)	-0.097**	(0.017)	-0.052**	(0.014)	-0.088**	(0.014)
Classification of economic activities								
01: Agriculture, hunting and related service activities	-0.008*	(0.061)	-0.060*	(0.086)	0.047*	(0.055)	-0.021*	(0.073)
02: Forestry, logging and related service activities	0.260	(0.113)	-		0.250	(0.103)	-	
05: Fishing, fish hatcheries and fish farms; incidental service activities	-		-		-		-	
10: Mining of coal and lignite; extraction of peat	0.353	(0.399)	-		0.355	(0.364)	-	
11: Extraction of crude petroleum and natural gas; incidental service activities	-		1.305	(0.261)	-		1.243	(0.221)
14: Mining of uranium and thorium ores, metal ores, other	0.033	(0.185)	-		0.032	(0.169)	-	
15: Manufacture of food products and beverages	0.031**	(0.039)	-0.065**	(0.038)	0.062**	(0.036)	-0.041**	(0.032)
16: Manufacture of tobacco products	0.163	(0.314)	-		0.126	(0.286)	-	
17: Manufacture of textiles	0.312	(0.128)	-0.057*	(0.082)	0.306	(0.117)	0.027*	(0.070)
18: Manufacture of wearing apparel; fur	-		0.998	(0.229)	-		1.034	(0.193)
19: Tanning and dressing of leather	0.266	(0.237)	-0.112	(0.205)	0.238	(0.216)	-0.029	(0.173)
20: Manufacture of (products of) wood and cork, except furniture	-0.013*	(0.069)	-0.099	(0.347)	0.011*	(0.063)	0.058	(0.293)
21: Manufacture of pulp, paper and paper products	0.052*	(0.061)	0.084*	(0.092)	0.038*	(0.056)	0.135*	(0.077)
22: Publishing, printing and reproduction of recorded media	0.239**	(0.049)	0.003*	(0.055)	0.227**	(0.045)	0.024**	(0.047)
23: Manufacture of coke, refined petroleum products and nuclear fuel	0.382	(0.139)	0.030	(0.254)	0.400	(0.126)	0.006	(0.215)
24: Manufacture of chemicals and chemical products	0.254**	(0.040)	0.158**	(0.045)	0.254**	(0.036)	0.164**	(0.038)
25: Manufacture of rubber and plastic products	0.084*	(0.058)	-0.148*	(0.068)	0.076*	(0.053)	-0.102*	(0.057)
26: Manufacture of other non-metallic mineral products	0.159*	(0.075)	0.122*	(0.093)	0.151*	(0.068)	0.122*	(0.078)
27: Manufacture of basic metals	0.250*	(0.058)	0.167	(0.119)	0.245*	(0.052)	0.241	(0.101)
28: Manufacture of fabricated metal products, except machinery and equipment	0.202**	(0.033)	0.164**	(0.049)	0.201**	(0.030)	0.144**	(0.042)
29: Manufacture of machinery and equipment n.e.c.	0.259**	(0.035)	0.255*	(0.057)	0.269**	(0.032)	0.247**	(0.048)
30: Manufacture of office machinery and computers	-		-0.121	(0.158)	-		-0.155	(0.133)
31: Manufacture of electrical machinery and apparatus n.e.c.	0.115**	(0.037)	0.108**	(0.050)	0.122**	(0.034)	0.131**	(0.042)
32: Manufacture of radio, television and communication equipment	0.045*	(0.077)	0.162	(0.114)	0.045*	(0.070)	0.177*	(0.096)
33: Manufacture of medical, precision and optical instru-	0.037*	(0.068)	0.170*	(0.065)	0.043*	(0.062)	0.135*	(0.055)

ments

	without minimum wage				with minimum wage			
	Men		Women		Men		Women	
34: Manufacture of motor vehicles, trailers	0.195**	(0.033)	0.238**	(0.044)	0.202**	(0.030)	0.264**	(0.037)

The table is continued on the next page.

Table A 3 (continued)	without minimum wage				with minimum wage			
	Men		Women		Men		Women	
35: Manufacture of other transport equipment	0.268*	(0.070)	0.361	(0.100)	0.287*	(0.064)	0.366*	(0.085)
36: Manufacture of furniture; manufacturing n.e.c.	0.169*	(0.079)	-0.112	(0.141)	0.186*	(0.072)	-0.044	(0.119)
37: Recycling	0.082	(0.161)	-0.100	(0.157)	0.063	(0.147)	-0.090	(0.133)
40: Electricity, gas, steam and hot water supply	0.327*	(0.051)	0.180*	(0.078)	0.328**	(0.046)	0.182*	(0.066)
41: Collection, purification and distribution of water	0.159*	(0.098)	0.142	(0.171)	0.202*	(0.089)	0.113	(0.145)
45: Construction	0.135**	(0.032)	0.009**	(0.047)	0.133**	(0.029)	-0.001**	(0.039)
50: Sale, maintenance and repair of motor vehicles; retail sale of automotive fuel	0.080**	(0.044)	-0.182*	(0.089)	0.116**	(0.040)	-0.035*	(0.075)
51: Wholesale trade and commission trade, except of motor vehicles	0.051**	(0.045)	0.062*	(0.050)	0.050**	(0.041)	0.048**	(0.043)
52: Retail trade, except of motor vehicles; repair of household goods	0.004**	(0.032)	-0.039**	(0.020)	0.009**	(0.030)	-0.016**	(0.017)
55: Hotels and restaurants	-0.023**	(0.044)	-0.125**	(0.037)	-0.017**	(0.040)	-0.032**	(0.031)
60: Land transport; transport via pipelines	0.025**	(0.039)	-0.069*	(0.061)	0.038**	(0.035)	-0.049*	(0.052)
61: Water transport	0.143	(0.240)	-0.512	(0.169)	0.153	(0.219)	-0.489	(0.142)
62: Air transport	0.267*	(0.078)	0.130	(0.101)	0.325*	(0.071)	0.148*	(0.086)
63: Supporting and auxiliary transport activities; activities of travel agencies	0.054**	(0.045)	0.062*	(0.064)	0.080**	(0.041)	0.113*	(0.054)
64: Post and telecommunications	0.043**	(0.047)	0.019**	(0.045)	0.076**	(0.043)	0.023**	(0.038)
65: Financial intermediation, except insurance and pension funding	0.217**	(0.042)	0.176**	(0.037)	0.223**	(0.038)	0.184**	(0.031)
66: Insurance and pension funding, except compulsory social security	0.124*	(0.063)	0.198**	(0.043)	0.147*	(0.058)	0.217**	(0.036)
67: Activities auxiliary to financial intermediation	0.157	(0.144)	0.260	(0.514)	0.157	(0.131)	0.247	(0.434)
70: Real estate activities	0.248*	(0.096)	0.192*	(0.056)	0.247*	(0.087)	0.214**	(0.047)
71: Renting of machinery and equipment without operator and of personal and household goods	-0.346	(0.246)	-		-0.232	(0.224)	-	
72: Computer and related activities	0.133**	(0.042)	0.145*	(0.058)	0.146**	(0.039)	0.131**	(0.049)
73: Research and development	-0.075*	(0.064)	0.161	(0.104)	-0.080*	(0.059)	0.154*	(0.088)
74: Other business activities	0.007**	(0.039)	-0.023**	(0.028)	0.035**	(0.035)	-0.005**	(0.023)
75: Public administration and defence; compulsory social security	0.036**	(0.034)	0.022**	(0.026)	0.042**	(0.031)	0.028**	(0.022)
80: Education	0.083**	(0.043)	0.041**	(0.024)	0.079**	(0.039)	0.036**	(0.020)
90: Sewage and refuse disposal, sanitation and similar activities	0.188*	(0.054)	-0.160	(0.142)	0.175**	(0.049)	-0.172	(0.120)
91: Activities of membership organizations n.e.c.	0.039*	(0.066)	0.119**	(0.049)	0.035*	(0.061)	0.121**	(0.042)
92: Recreational, cultural and sporting activities	0.058*	(0.051)	-0.048**	(0.044)	0.054**	(0.047)	-0.025**	(0.037)
93: Other service activities	0.080	(0.108)	-0.201*	(0.063)	0.084*	(0.099)	-0.142*	(0.053)

| 95: Private households with employed persons | - | | -0.052* | (0.071) | - | | -0.005* | (0.060) |
| 96: Industries without further classification | 0.144* | (0.051) | 0.072* | (0.075) | 0.151** | (0.046) | 0.074* | (0.063) |

The table is continued on the next page.

Table A 3 (continued)	without minimum wage				with minimum wage			
	Men		Women		Men		Women	
97: Crafts without further classification	0.289	(0.136)	0.150	(0.116)	0.300	(0.124)	0.115*	(0.098)
98: Services without further classification	0.200*	(0.066)	-0.006*	(0.065)	0.195*	(0.060)	0.012*	(0.055)
99: Extra-territorial organizations and bodies	0.082	(0.153)	-0.083	(0.264)	0.096	(0.139)	-0.106	(0.223)
100: Manufacturing without further classification	-0.103*	(0.078)	0.130	(0.172)	-0.085*	(0.071)	0.118	(0.145)
Occupation								
ISCO 1	0.157**	(0.032)	0.103**	(0.042)	0.154**	(0.029)	0.103**	(0.036)
ISCO 2	0.158**	(0.027)	0.170**	(0.028)	0.147**	(0.025)	0.171**	(0.024)
ISCO 3	0.136**	(0.023)	0.088**	(0.018)	0.120**	(0.021)	0.083**	(0.015)
ISCO 5	0.006**	(0.032)	0.000**	(0.021)	0.008**	(0.029)	0.014**	(0.018)
ISCO 6	-0.095*	(0.073)	-0.135*	(0.096)	-0.096*	(0.066)	-0.099*	(0.081)
ISCO 7	0.058**	(0.024)	0.021**	(0.038)	0.044**	(0.022)	0.021**	(0.032)
ISCO 8	0.074**	(0.027)	-0.091**	(0.044)	0.065**	(0.024)	-0.042**	(0.037)
ISCO 9	0.051**	(0.028)	-0.111**	(0.029)	0.023**	(0.026)	-0.079**	(0.025)
Occupational position								
unknown	-0.160	(0.121)	-0.438	(0.113)	-0.150	(0.110)	-0.262*	(0.095)
untrained worker	-0.120**	(0.037)	-0.130**	(0.045)	-0.072**	(0.034)	-0.095**	(0.038)
semi-trained worker	-0.091**	(0.020)	-0.102**	(0.037)	-0.071**	(0.019)	-0.100**	(0.031)
foreman, team leader	0.089**	(0.029)	0.065	(0.125)	0.085**	(0.027)	0.022	(0.106)
foreman	0.054**	(0.045)	0.149	(0.102)	0.049**	(0.041)	0.097*	(0.086)
working in family business	-		-0.297	(0.192)	-		-0.022	(0.162)
foreman (industry)	0.156*	(0.058)	-0.154	(0.446)	0.153*	(0.053)	-0.142	(0.376)
untrained employee with simple tasks	-0.127**	(0.036)	-0.130**	(0.038)	-0.101**	(0.033)	-0.098**	(0.032)
trained employee with simple tasks	-0.084**	(0.024)	-0.068**	(0.034)	-0.075**	(0.022)	-0.075**	(0.029)
qualified professional	-	(0.000)	-	(0.000)	-	(0.000)	-	(0.000)
highly qualified professional	0.096**	(0.019)	0.034**	(0.034)	0.095**	(0.017)	0.024**	(0.028)
managerial	0.317**	(0.024)	0.192**	(0.039)	0.315**	(0.022)	0.177**	(0.033)
low-level civil service	0.592**	(0.048)	0.319*	(0.075)	0.583**	(0.044)	0.307*	(0.064)
middle-level civil service	0.017**	(0.045)	-0.014*	(0.065)	0.009**	(0.041)	-0.019*	(0.055)
high-level civil service	0.125**	(0.049)	0.146*	(0.059)	0.139**	(0.045)	0.154**	(0.050)
executive civil service	0.538*	(0.067)	0.311*	(0.084)	0.554*	(0.061)	0.314*	(0.071)
Volume of employment								
part-time retirement	-0.166*	(0.068)	-0.192*	(0.055)	-0.163*	(0.062)	-0.180**	(0.046)
Fixed-term employment contract	-0.108**	(0.020)	-0.136**	(0.019)	-0.104**	(0.018)	-0.114**	(0.016)
part-time employment (16 - 25 hrs.)	-0.094**	(0.040)	-0.001**	(0.017)	-0.050**	(0.037)	0.005**	(0.014)
part-time employment (26 - 35 hrs.)	-0.199**	(0.047)	0.003**	(0.017)	-0.068**	(0.042)	0.033**	(0.014)
Marginal employment	-0.192**	(0.043)	-0.073**	(0.021)	-0.108**	(0.039)	-0.032**	(0.018)
Employment biography								
tenure	0.006***	(0.001)	0.007***	(0.001)	0.006***	(0.001)	0.007***	(0.001)

	without minimum wage		with minimum wage	
	Men	Women	Men	Women
employment experience (full- and part-time)	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.002*** (0.001)
out-of labor force (OLF) experience	-0.005*** (0.004)	-0.003*** (0.001)	-0.007*** (0.004)	-0.002*** (0.001)

Table A 3 (continued)	without minimum wage		with minimum wage	
	Men	Women	Men	Women
Unemployment experience	-0.012*** (0.003)	-0.009*** (0.004)	-0.008*** (0.003)	-0.005*** (0.003)
Completed School				
intermediate school	0.021** (0.014)	0.010** (0.017)	0.016** (0.013)	0.015** (0.014)
technical school	0.079** (0.025)	-0.009** (0.027)	0.080** (0.023)	0.003** (0.023)
upper secondary school	0.122** (0.022)	0.070** (0.023)	0.105** (0.020)	0.070** (0.020)
other degree	-0.020** (0.027)	-0.006** (0.030)	-0.037** (0.024)	-0.025** (0.026)
no school degree	-0.090** (0.039)	-0.083* (0.055)	-0.074** (0.036)	-0.050** (0.046)
College Degree				
technical college	0.057** (0.026)	0.035** (0.028)	0.050** (0.024)	0.031** (0.024)
university, technical university	0.068** (0.031)	0.170** (0.031)	0.072** (0.028)	0.169** (0.026)
college not in Germany	0.017* (0.087)	0.001 (0.107)	0.012* (0.079)	-0.001* (0.091)
engineering, technical school (east)	0.052* (0.071)	0.042** (0.050)	0.044* (0.064)	0.023** (0.042)
university (east)	0.104 (0.102)	0.489 (0.116)	0.093* (0.093)	0.474* (0.098)
graduation/state doctorate	0.280 (0.118)	0.336 (0.114)	0.290 (0.107)	0.347* (0.096)
Vocational Degree				
no vocational degree	-0.075** (0.019)	-0.059** (0.020)	-0.063** (0.017)	-0.046** (0.017)
vocational school	0.018** (0.020)	0.012** (0.017)	0.017** (0.019)	0.014** (0.014)
health care school	0.031 (0.101)	0.102** (0.042)	0.038* (0.092)	0.101** (0.036)
technical school	0.079** (0.025)	-0.009** (0.027)	0.080** (0.023)	0.003** (0.023)
civil service training	-0.017** (0.036)	0.007** (0.047)	-0.015** (0.033)	0.004** (0.040)
other degree	-0.020** (0.027)	-0.006** (0.030)	-0.037** (0.024)	-0.025** (0.026)
Personal background				
married	0.070** (0.012)	-0.004** (0.012)	0.065** (0.011)	-0.001** (0.011)
direct migration background	-0.051** (0.020)	0.073** (0.022)	-0.048** (0.018)	0.058** (0.019)
indirect migration background	-0.030** (0.021)	-0.027** (0.023)	-0.031** (0.019)	-0.015** (0.020)
East Germany	-0.262** (0.016)	-0.233** (0.016)	-0.241** (0.014)	-0.179** (0.014)
constant	2.475** (0.039)	2.549** (0.044)	2.491** (0.036)	2.547** (0.037)
Observations	3148	3356	3148	3356
$F_{(112, 3035)}$	40.52	33.67	42.98	35.41
Prob > F	0.00	0.00	0.00	0.00
R^2	0.599	0.538	0.613	0.550
Adjusted R^2	0.585	0.522	0.599	0.535
Root MSE	0.285	0.316	0.260	0.267

Standard errors in parenthesis, *p<0.1, **p<0.05, ***p<0.01

Sources: SOEP v29, 2012; HWWI.

Table A 4: List of variables used as a robustness check (according to Destatis 2006)

Variable	Definition
Classification of economic activities	Based on NACE, dummy variables, reference: 85: Human health and social work activities,
	Other categories: other divisions (61 in total)
Education	Dummy variables, reference: apprenticeship,
	Other categories: no vocational degree, college degree
Employment biography	*Labor market experience*
	In years: age - years of education – 6
	Tenure
	In years
Firm size	Dummy variables, reference: 2000 employees and more,
	Other categories: less than 20 employees, 20-199 employees, 200-1999 employees
Occupation	Based on ISCO-88, dummy variables, reference: ISCO 4 (clerks),
	Other categories: ISCO 1 (Legislators, senior officials and managers), ISCO 2 (Professionals), ISCO 3 (Technicians and associate professionals), ISCO 5 (Service workers and shop and market sales workers), ISCO 6 (Skilled agricultural and fishery workers), ISCO 7 (Craft and related trades workers), ISCO 8 (Plant and machine operators and assemblers), ISCO 9 (Elementary occupations)
Occupational position	Dummy variables, reference: trained worker,
	Other categories: unknown, untrained worker, semi-trained worker, fore-man, team leader, foreman, help in family business, foreman (industry), untrained employee with simple tasks, trained employee with simple tasks, qualified professional, highly qualified professional, managerial, low-level civil service, middle-level civil service, high-level civil service, executive civil service
Region	Dummy variable, reference: West Germany (incl. Berlin),
	Other category: East Germany
Characteristics of current employment	*Full-, part-time, marginal employment*
	Dummy variables, reference: full-time, *Other categories: small part-time (16-25 hrs.), large part-time (26-35 hrs.), marginal*
	Fixed-term employment contract
	Dummy variable, reference: permanent contract,
	Other category: fixed-term contract
	Part-time retirement
	Dummy variable, reference: no part-time retirement,
	Other category: part-time retirement