Journal for Labour Market Research

ORIGINAL ARTICLE Open Access

Does organizational context matter? An examination of the factors influencing employees' judgments of minimum wage increases

Matthias Dütsch[1,2*], Monika Senghaas[3], Gesine Stephan[3,4] and Olaf Struck[2]

Abstract

This article presents novel findings on company factors that determine judgments regarding the fairness of minimum wage increases. Drawing on minimum wage and organizational justice research, we conducted a factorial survey among German employees. It seems that the internal wage structure plays a crucial role because raising only the pay of minimum wage workers and not that of other employees causes a minimum wage increase to be rated as less fair. While a hiring freeze does not negatively influence fairness judgments, layoffs do. Finally, if a minimum wage increase adversely affects a company's economic situation, respondents assess it as less fair.

Keywords Distributive justice, Fairness judgment, Minimum wage, Factorial survey

JEL Classification D63, J31

1 Introduction

In recent decades, minimum wages have become popular policy instruments for addressing issues of wage and income inequality and in-work poverty (ILO 2017; Leventi et al. 2017; Wilson 2017). Accordingly, they have been the subject of numerous studies, whereby the focus of interest has typically been on the effects of minimum wages on labor market outcomes (Dütsch et al. 2025; Hirsch et al. 2015; Schmitt 2015). Furthermore, it is important, but rarely studied, that the institution of the minimum wage, like all social policy measures, requires legitimacy, which depends on citizens' acceptance (Mau 2004; Sabbagh and Schmitt 2016; van Oorschot and Roosma 2017).

In this respect, citizens' perceptions of the fair distribution of scarce goods, e.g., wages, which are addressed by distributive justice approaches (Austin and Walster 1975; Jasso 1978; Leventhal 1976), play a decisive role. In contrast to typical social policy measures, such as unemployment benefits, which are set and paid by the state or federal institutions, a minimum wage setup poses an interesting and specific case for distributive justice research: While decisions on new minimum wage levels are made by governments or by a minimum wage commission, public and private companies must implement and deal with this exogenously made decision. Companies employing minimum wage workers usually cope with increased labor costs by using various internal adjustments, such as work intensification, layoffs, and a compression of the internal wage structure, or the existence of such a company may be jeopardized (Hirsch et al. 2015; Lester 1960; Schmitt 2015).

*Correspondence:
Matthias Dütsch
duetsch.matthias@baua.bund.de
[1] Federal Institute for Occupational Safety and Health (BAuA), Nöldnerstraße 40-42, 10317 Berlin, Germany
[2] Otto-Friedrich University of Bamberg, Feldkirchenstraße 21, 96052 Bamberg, Germany
[3] Institute for Employment Research (IAB), Regensburger Str. 104, 90478 Nuremberg, Germany
[4] Friedrich-Alexander-Universität Erlangen-Nürnberg, Lange Gasse 20, 90403 Nuremberg, Germany

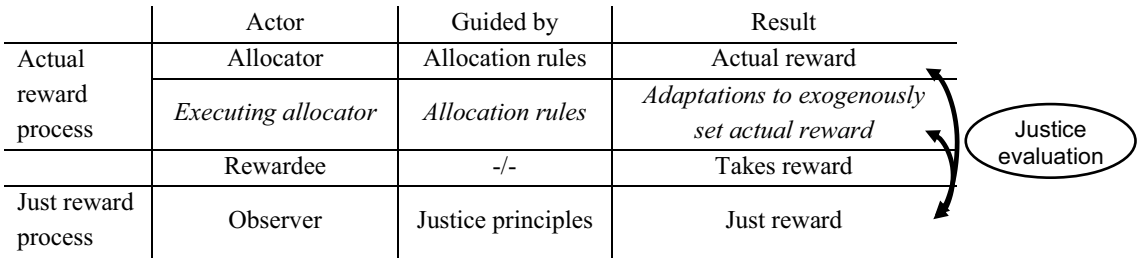

Fig. 1 Extended key actors' model of distributive justice (Source: Authors' own illustration based on Jasso et al. (2016))

Therefore, minimum wage-related changes in the structure and contextual features of companies are likely to affect citizens' justice evaluations. The importance of the company level in the case of minimum wages is also reflected in the empirical findings from scarce qualitative studies, which suggest that employees' assessments of the minimum wage depend on the specific consequences for companies and workforces (Koch et al. 2018:8, 58ff.; Low Pay Commission 2020:75f.).[1] Beyond these qualitative minimum wage studies, only one representative survey (Fedorets and Schroeder 2019) exists on subjective attitudes driving public support for a minimum wage reform, and it did not consider organizational factors.

Against this background, the aim of this study is twofold. First, in terms of theory, we modify current justice research on social policies by conceptually including companies as relevant allocators in addition to a state-level or federal allocator regarding minimum wages. Second, we determine the conditions under which employees consider minimum wage increases to be fair and focus on less-researched adjustments within and consequences for companies. Our main hypothesis is that when contextual factors harm the welfare of others—the fairness of their relative earnings, their quality of work life, and their job security—observers view the minimum wage increase as less fair than the current minimum wage. This in turn is important because minimum wages represent a generalized baseline and thus also encapsulate the associated positive and negative effects. This differs from a system of industrial relations based exclusively on collective agreements, where wages and wage grids are usually negotiated at the sectoral level, and in some cases, at the regional or even company level. Accordingly, in the case of minimum wages, despite the heterogeneity of companies, there is no possibility of differentiation in the lowest wage range. The corresponding research question is the following: Are minimum-wage-induced wage increases and adjustments in the lower wage range generally assessed as fair by employees, or do company adjustments caused by minimum-wage increases influence observers' fairness judgements? To examine this question, we conducted a factorial survey among German employees describing fictitious scenarios of minimum wage increases and the resulting adaptations of a company as well as internal changes. These vignettes were randomly presented to survey participants who were asked to judge the scenarios. Understanding the motivations behind people's judgments is important for several reasons. First, it is the public, especially the working population, which is intended to benefit from a minimum wage and that carries its economic burden. Second, wages and wage differentials can encourage or discourage employees' motivation to perform. Therefore, the structuring of wages and wage differentials within companies is also important in the case of a minimum wage. Third, policymakers may consider public assessments during their political decision-making processes, including minimum wage legislation.

2 Theoretical background and hypotheses

The investigation of factors determining justice evaluation is a central challenge in the study of distributive justice (Jasso and Wegener 1997; Jasso et al. 2016). Jasso (1980) developed a key actor model as a theoretical framework, which we relate to the sociopolitical measure of a minimum wage and modify this well-established model (Fig. 1). To this end, we focus on the German statutory minimum wage, which was instituted in 2015 at an initial level of 8.50 euros (gross) and has been increased in three steps to the level of 9.35 euros in 2020, the year this survey was conducted. In the minimum wage case, an allocator makes the decision on the actual reward at the lower end of the wage distribution—the new minimum wage level. Depending on the specific setup, the key

[1] In addition to these, there are empirical studies that have examined more generally the importance of organizations for social inequalities (e.g. Adriaans et al. 2023; Sauer and May 2017).

actor is a minimum wage commission or the government (see Eurofound (2023) for a typology of relevant actors). In Germany, a minimum wage commission determines the new minimum,[2] while the government enacts the corresponding ordinance. The basis for the decision-making process is set out in the Minimum Wage Act (MiLoG 2014), which stipulates that the minimum wage commission should examine, as part of an overall assessment, which level of the minimum wage is suitable for contributing to an appropriate protection of employees, enabling fair and functioning competition and not jeopardizing employment. When the minimum wage is set, the minimum wage commission is oriented toward the development of collectively agreed-upon wages. Accordingly, its decisions are not necessarily based on a specific fairness principle. We neglect the allocator-specific characteristics of the minimum wage commission in further theoretical considerations and empirical analysis because the commission consists of a chairperson, three employer representatives, three employee representatives and two academics who are appointed for 5 years and decide on the minimum wage uprating by majority vote. Thus, the allocator characteristics do not vary over this 5-year period.

Regarding minimum wages, companies form another central actor. Companies are the "executing allocators", because while they must pay the new minimum wage to the eligible employees, they cannot determine the lowest wage threshold level. The minimum wage thus constitutes an exogenous intervention for companies and their wage determination processes for low-paid work (Borjas 2015; Hirsch et al. 2015; Manning 2013). This implies that companies employing minimum wage workers must cope with increased labor costs; they make internal adjustments, which have been widely discussed in minimum wage research (Hirsch et al. 2015; Lester 1960; Schmitt 2015). A further crucial key actor in Fig. 1 is a rewardee or group of rewardees who receive the actual reward (i.e., the adjusted minimum wage). In Germany, these include all employees who previously earned less than the new minimum except for youths under 18 years, apprentices, trainees and/or interns, long-term unemployed individuals in their first 6 months after starting a new job, and nonprofit and/or voluntary workers (Bruttel 2019). In the following, we do not consider rewardee-specific factors because all employees previously earned less than the new minimum benefit from the higher hourly wage regardless of their sociodemographic characteristics. The last key actor consists of the observers, who follow justice principles and form an idea of a just reward, i.e., a just minimum wage increase. A comparison of the just minimum wage increase (=just reward) and the new minimum wage (=actual reward) while considering company-internal adjustments (=adaptations to exogenously set actual reward) results in the observers' justice evaluations.

As mentioned above, observers consider justice principles when determining a just reward. Distributive justice research differentiates among three main principles: "need," "equality" and "equity" (Deutsch 1975, 1985; Jasso et al. 2016). According to the needs principle, an allocation generated by an allocator is perceived as fair if it satisfies the (basic) needs for living (Deutsch 1985; Konow 2001). In recent years, minimum wages and significant minimum wage increases have been regarded as policy instruments to alleviate the income hardships of low-wage workers, reduce in-work poverty and combat the problem of poverty in old age even after a long working life (ILO 2017; Leventi et al. 2017; Wilson 2017). Employees who previously earned less than the new wage floor benefitted from higher incomes and thus experience less in-work poverty and require fewer additional benefits, ceteris paribus (Bruckmeier and Bruttel 2021; Bruckmeier and Schwarz 2022; Dube 2019). In fact, a small minimum wage effect on in-work poverty was revealed by empirical studies (ibid.).[3] Against the backdrop of the need principle and the abovementioned sociopolitical objectives, observers should assess considerable minimum wage increases to be fair. However, because the needs principle states that basic needs for living should be satisfied (Deutsch 1985; Konow 2001), it is to be expected that the relationship between minimum wage increases and fairness assessments is not monotonic. Rather, this relationship usually reaches an inflection point at which the fairness judgment becomes negative. This inflection point denotes the minimum wage at which the observer expects individuals' basic living needs to be satisfied. This implies that a minimum wage hike should be considered less fair above a certain level and that the fairness assessment is an inverted-U-shape. The following hypothesis can be derived:

H1 Observers are likely to consider moderate minimum wage increases as fairer than no increase or very small increases; they are, however, likely to judge more

[2] One exception was the legislative increase in the statutory minimum wage to 12 euros as of October 1, 2022, which was approved by the German federal government.

[3] There are several reasons for the modest impact of minimum wages on in-work poverty (Bruckmeier and Bruttel 2021; Bruckmeier and Schwarz 2022). For instance, need and poverty often result from low working hours rather than low hourly wages; furthermore, low-wage workers are often members of nonpoor families that feature another, higher-paid earner.

substantial minimum wage increases, which are higher than what is necessary to ensure a decent living, as less fair.

Ceteris paribus, a minimum wage increase raises the total labor costs of companies affected by the new minimum and will impact their internal wage structures. This can be important for fairness judgments against the background of the equity principle. The common ground of this principle is that a distribution is rated fair if it allocates rewards according to individual merit (Adams 1965; Austin and Walster 1975; Deutsch 1985). Thus, a fair allocation of a good depends predominantly on the inputs and achievements a person contributes to an organizational process or output. For this purpose, the observer conducts social comparisons to assess the respective contributions of two persons or groups involved in the achievement of a certain outcome. Unequal allocations of goods are then judged to be fairer given the larger contributions or achievements of a reference person or group compared to those of a comparison person or group (ibid.; Konow 2003). To consider such differences in achievements and contributions in practice, wage differentials typically exist between different groups of employees or in formal pay grids. In particular, these reflect the respective qualifications required or the complexity of the tasks performed. Minimum wages, in turn, can lead to a reduction or elimination of such wage differentials in the case of wage compression and an absence of spillover effects. The empirical evidence is mixed. While some studies found positive wage effects for employees who earned slightly more than the minimum wage (Avram and Harkness 2019; Dolton et al. 2012), others did not detect such spillover effects (Stewart 2012a, b). Accordingly, qualitative interviews with employers revealed that they could not always maintain the existing wage differentials (Koch et al. 2018:8., 58ff.; Low Pay Commission 2020:75f.). In such cases, the internal wage distribution no longer mirrors the equity principle. Thus, the following hypothesis is derived:

H2 Observers will consider a minimum wage increase less fair if a company raises the wages of only those employees directly affected by the new minimum.

Furthermore, changes in work intensity represent an adjustment measure companies use to cope with higher labor costs resulting from minimum wage hikes (Hirsch et al. 2015; Lester 1960; Schmitt 2015). From a company's point of view, an increase in work output per unit of time improves labor productivity and can compensate for the higher wage costs. While neoclassical models of perfect competition assume that work processes are maximally efficient, institutionalist approaches suggest that this is often not the case. This is explained by the costs to workers and managers of identifying, implementing and maintaining procedures and practices that continuously maximize the efficiency of work processes (Kaufman 1999, 2010). In this context, minimum wages are regarded as stimuli that encourage companies to take productivity-increasing measures (Schmitt 2015). An increase in work intensity for employees whose wage has been raised due to the minimum wage should be considered fair according to the equity principle (Adams 1965; Austin and Walster 1975; Deutsch 1985) because the input–output ratio of minimum wage employees then conforms to the ratio before the minimum wage hike again. In contrast, no change in work intensity or minimum wage-related growth in work intensity across the total workforce is likely to be perceived as unfair since the input–output ratio of higher-paid earners deteriorates compared to that of minimum wage employees after a minimum wage hike. The following hypotheses can be derived:

H3 An increase in the work intensity of employees whose minimum wage is raised will be judged as fair.

H4 A minimum wage hike will be considered less fair if work intensity increases for the entire workforce and not only for minimum wage workers.

Another type of justice is the efficiency principle (Konow 2001, 2003). People care about outcomes not only at the individual level but also at the social level, as emphasized by the "need," "equality" and "equity" principles (Deutsch 1975, 1985; Jasso et al. 2016). According to the efficiency principle, a distribution will be assessed as fair if it maximizes the returns or minimizes the burdens of social entities, such as entire organizations or all persons belonging to an organization (Abraham 2007; Konow 2001; Struck et al. 2006). Minimum wage models of perfect competition, which assume an equilibrium wage that matches labor supply with labor demand, predict a decline in labor demand (i.e., job losses if the minimum wage is set above the equilibrium wage) (Borjas 2015). Such minimum wage-induced employment effects have been widely and controversially discussed in international research (Card and Krueger 1994; Cengiz et al. 2019; Neumark and Wascher 2008) and for the German labor market (Dütsch et al. 2025; Caliendo et al. 2019). According to the efficiency principle, a minimum wage-related increase in wages for a part of the workforce of a company at the expense of layoffs would constitute a burden for the dismissed persons, would diminish the internal overall benefit, and thus should be assessed as

less fair. Accordingly, justice research has revealed that downsizing is perceived as a highly negative experience both for those employees forced to leave an organization and for those who remain because it violates their implicit expectations (Dijke and De Cremer 2016; Morrison and Robinson 1997). In fact, layoffs have been found to be associated with reduced organizational commitment and job involvement as well as increased voluntary turnover behavior among survivors (Brockner et al. 2004; Datta et al. 2010; Trevor and Nyberg 2008). Referring to the efficiency principle, we can derive the following hypothesis:

H5 A minimum wage uprating will be considered less fair when layoffs occur.

A minimum wage can also have a negative impact on the general economic situation of a company due to the related increase in labor costs. The greater the competition in markets is, the more an increased minimum wage reduces profits for profit-maximizing companies (Bell and Machin 2018). This result occurs due to the limited possibilities for using other margins of company adjustment to compensate for the increase in labor costs. Empirical studies have shown that minimum wage increases have a negative effect on company profitability (Bell and Machin 2018; Bossler et al. 2022; Draca et al. 2011), influence investments in company fixed capital (Bossler et al. 2022) and can even lead to company closures (Dustmann et al. 2022). A minimum wage-related deterioration of a company's economic situation would therefore increase business and personnel risks in both the short and medium terms and consequently raise workforce burdens, which violates the efficiency principle (Konow 2001; Struck et al. 2006). We can hypothesize the following:

H6 A minimum wage hike will be judged to be less fair if it causes a deterioration in the economic situation of a company.

Judgments about social situations likely depend on more than simply principles of justice. Psychological work in the field of justice research has noted the importance of the attitudes and motives of judging persons and conceptualizes that fairness judgments can be subject to a so-called self-serving bias (Montada and Maes 2016; Rutström and Willams 2000; Trump 2020). According to this research, an individual's justice perception is influenced by his or her assessment of whether or to what extent the measure being evaluated benefits that individual. In the case of the minimum wage, it can be expected that the fairness judgment hinges on an observer's own socioeconomic situation and will be assessed more often as fair by respondents who are themselves financially deprived. The following hypothesis can be derived:

H7 Individuals who are themselves financially deprived will more often evaluate minimum wage increases as fair.

3 Data, operationalization and method

To investigate the drivers behind employees' judgments regarding minimum wage increases, we performed a factorial survey experiment (Jasso 2006; Liebig et al. 2015). The respondents were asked to evaluate several different hypothetical scenarios, also called vignettes. The essential characteristics of a specific scenario are called "factors" or "dimensions" and are varied randomly, as they would be in an experiment. This random variation of the dimensions allows their causal effect on respondents' assessments to be identified. Vignettes have been shown to be a suitable approach for use in empirical justice research (ibid.).

In this study, the vignettes describe a fictitious minimum wage increase that leads to company-level changes and internal adjustments. A vignette consists of different dimensions featuring varying elements (Table 1). The dimensions address the extent of a minimum wage hike, changes in the internal wage structure and work intensity, personnel adjustments, and changes in the economic situation of the company.

The vignette universe—all possible combinations of vignette elements—consists of $4\times2\times3\times3\times2=144$ combinations. The entire vignette universe was applied, and a full factorial design was employed (Stephan et al. 2021). For example, one scenario presented to the respondents was, "The minimum wage is increased from 9.35€ to 11€. As a result, the company raises the wages of those who earn less than 11€. The wages of the other workers do not increase. The amount of work to be done remains the same for all workers in the company. The company does not lay off any workers because of the minimum wage increase and does not impose a hiring freeze. Furthermore, the economic situation of the company does not change as a result of the minimum wage increase." The respondents were then asked to indicate whether they judged the minimum wage increase to be unfairly too small, somewhat too low, fair, somewhat too high or unfairly too high based on the context of the internal changes and adjustments described in the scenario.[4] Each

[4] The vignette instrument, the corresponding introductory text and the graphical response scale can be found in English and German in Additional Appendix C. The German version is also included in the methodological report (Stephan et al.2021: 26f.).

Table 1 Dimensions of the vignettes

Dimensions	Varying elements	Potential justice principles applied and related hypothesis
Minimum wage increase	Increase from €9.35 to €10 Increase from €9.35 to €11 Increase from €9.35 to €12 Increase from €9.35 to €15	Need (inflection point, H1)
Internal wage structure	A wage increase for minimum wage workers only A wage increase for all workers	Equity (H2)
Work intensity	No increase in work intensity for all workers Increase in work intensity for minimum wage workers only Increase in work intensity for all workers	Equity (H3, H4)
Personnel adjustment	No layoffs and no hiring freeze Hiring freeze Layoffs	Efficiency (H5)
Economic situation of the company	Deterioration No change	Efficiency (H6)

respondent received four randomly selected vignettes. In addition to the vignette survey, the respondents provided numerous sociodemographic and socioeconomic variables, including assessments of the respondents' own financial situation, the current macroeconomic situation, and their political attitude.

The sample of respondents was drawn in July 2020 from a 2-percent sample of the so-called "Integrated Employment Biographies" (IEB) of the Institute for Labor Market Research (Stephan et al. 2021). On a daily basis, the IEB covers all registered employees eligible for social security contributions, unemployment benefits, means-tested welfare benefit receipts for unemployed job seekers, job searches, and program participation at the German Federal Employment Agency through the end of December 2018. The sampling frame included individuals who were listed in the IEB in 2018, who were between 18 and 70 years old on November 1, 2020, and who had been living in Germany. The resulting sampling frame encompassed 826,024 individuals from whom an email sample and a postal sample were randomly drawn. The individuals in the email sample received invitation emails in six batches sent between November 2, 2020, and December 7, 2020. The postal letters for the second sample were mailed in three batches between November 12, 2020, and November 26, 2020. Both the email and postal invitations briefly described the research project and provided information on data protection. The email contained an individualized link to the survey, and the letter included a short link with an individual password and a QR code. The survey was conducted between November 2, 2020, and December 17, 2020. The cooperation rate, which is the share of completed interviews among those with an available postal or email address, was 2.9% for the entire sample (ibid: 9).[5] This rate is in line with expectations for such contact channels. Because sampling was based on the IEB register data, it was possible to conduct selectivity analyses on response rates. These results indicated that some demographic groups were more likely to participate in the survey than others were. In particular, more highly qualified individuals, those working in jobs with higher job requirements and those with more stable employment histories were more likely to participate in the survey (Stephan et al. 2021: 10ff.). For this reason, demographic characteristics are controlled for in the empirical analyses.

We limited our sample to those who were employed at the time of the survey and did not exhibit missing values for respondents' personal characteristics. Furthermore, responses to vignettes that contained missing values on fairness judgments were excluded. This left us with 3549 judgments from 891 respondents. The correlations between the vignette dimensions were close to zero, which confirmed that the random assignment to respondents was successful.[6]

Regarding the justice evaluation, we followed established justice research and focused on respondents' assessments of the categories of unjust underreward, perfect justice, and unjust overreward (Adams 1965; Austin and Walster 1975). For our analysis, the response categories "much too low" and "somewhat too low" as well as the response categories "somewhat too high" and "much too high" were combined into one value. Thus, regarding

[5] Considering established guidelines (AAPOR 2016), the net response ratios were calculated conservatively.

[6] The strongest pairwise correlation had a value of 0.0328.

the dependent variable, the three response categories consist of 0 (unfairly too low), 1 (fair), and 2 (unfairly too high). However, we have tested the consequences of this category grouping (see Sect. 4.3).

Due to the sequence of categories, an ordered logistic model can be considered. One of the assumptions underlying ordered logistic regressions is that the relationship between each pair of outcome groups is the same. The ordered logistic regression assumes that, e.g., the coefficients that describe the relationship between the category "unfairly too low" and the other two categories are the same as those that describe the relationship between the category "unfairly too high" and the other two categories. This is called the proportional odds or parallel regression assumption, which was checked by a Brant test.[7] This significance test indicated that the proportional odds assumption was violated (Long and Freese 2014). Therefore, we decided to alternatively draw on partial proportional odds models, which is a less restrictive approach that relaxes the proportional odds constraint for those variables where it is violated (Williams 2006, 2016). Formally, the ordinal dependent variable Y can take the values 1, 2 and 3. This generalized ordered logit model estimates a set of covariates (x_i) (the vignette dimensions, sociodemographic and socioeconomic determinants and political orientation) for each of the $j-1$ points at which the dependent variable can be dichotomized. The unconstrained cumulative probability of the proportional odds model is defined as follows:

$$P(Y \geq y_j|x_i) = {}^{1}/_{1+exp(-a_j - x_i'\beta - t'\gamma_j)} \qquad j = 1,2 \tag{1}$$

where x_i denotes a (p by 1) vector containing the values of observation i on the full set of p explanatory variables, and β is a (p by 1) vector of regression coefficients associated with the p variables. The partial proportional odds model permits nonproportional odds for a subset q of the p-predictors ($q \leq p$). Therefore, t' is a (1 by q) vector of q-covariates, containing the values of observation i on that subset of the p explanatory variables for which the assumption of proportionality is violated. y_j denotes a (q by 1) vector of regression coefficients associated with the q covariates. Accordingly, if $y_j = 0$ applies to all j, then this model reduces to the proportional odds model. As a robustness test (see Sect. 4.3), we additionally performed ordered logistic models that ignored the proportional odds assumption and a multinomial logit model, which is a nonordinal alternative.

Because our data consist of four vignette ratings per respondent, the observations are nested within judging persons. We took this structure into account by obtaining clustered standard errors from the partial proportional odds estimations. Alternative approaches for processing hierarchical data structures include random and fixed effects models. Thus, to check the robustness of our results, we also estimated a random-effects model for ordered responses with a random intercept at the respondent level (Hedeker and Gibbons 1994) and a fixed-effects ordered logit model (Baetschmann et al. 2020) (see Sect. 4.3). As already mentioned, the four vignettes were randomly assigned to the respondents. Nevertheless, we included the order in which the vignettes were presented to the respondents in the regression models to check for possible learning effects.

4 Empirical findings

4.1 Descriptive results

According to the descriptive analysis, the respondents judged the minimum wage increase to be fair in approximately 38% of the scenarios described (Fig. 2). They considered the increase to be unfairly too low in approximately 32% of the vignettes and unfairly too high in approximately 30% of the vignettes. The first vignette dimension addressed the extent of a minimum wage increase from 9.35 euros per hour (which was the actual minimum wage in Germany in 2020) to a higher level. The values for minimum wage increases of 10, 11, 12 or 15 euros were taken from public and political discussions. While cautionary actors and conservative politicians argued for low growth rates, German trade unions and left-wing politicians proposed larger adjustments, to 12 and 15 euros, respectively. Figure 2 indicates that in our scenarios, approximately 55% of the respondents judged an increase to 10 euros as unfairly too low, while approximately 57% perceived an increase to 15 euros as unfairly too high. An increase to 12 euros was most often considered fair (by approximately 46% of employees).

Regarding the other vignette dimensions, minimum wage hikes were descriptively found to be fairest when all employees benefited from wage increases (41%), when the work intensity remained the same for all employees (43%), when only a hiring freeze occurred (43%), and when the economic situation of the company did not change (42%). In general, the values for the three fairness assessments across all the vignettes indicate that none of the varying elements in the vignette dimensions were irrelevant or inappropriate for the fairness ratings. Against this backdrop, we examined the factors

[7] The null hypothesis states that there is no difference in the coefficients between models. The omnibus test for the entire model gave a chi^2 value of 163.62 and a p-value of 0.000.

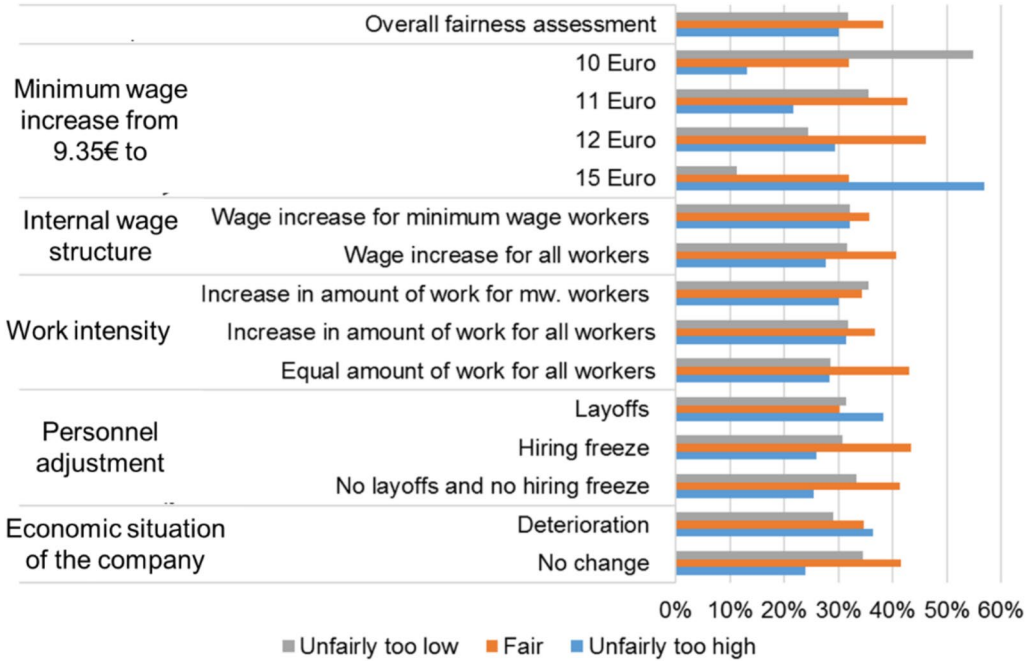

Fig. 2 Description of the fairness judgments (Notes: The figures are unweighted and include 3,549 judgments from 891 respondents.)

(Source: Survey "Acceptance of Social and Labor Market Programs and Regulations 2020"; own calculations)

influencing employees' fairness judgments by controlling for a set of covariates to test our hypotheses.[8]

4.2 Regression results

The regression results on the fairness judgments shown in Table 2 were obtained from partial proportional odds regressions (see Eq. 1).[9] The estimates indicate the average marginal effects of each regressor on the probability of each of the three fairness outcomes. We stratified in two steps using different blocks of variables in the model to identify possible changes in the explanatory power of the vignette elements. The estimation in Model 1 contains only the vignette dimensions; the full Model 2 additionally includes information on the respondents' personal characteristics, households, individual socioeconomic situations and political preferences. A comparison of the results of the two models shows that including the additional observer-specific variables had only a minor influence on the vignette element estimates, which indicates the high independent explanatory power of the vignette elements for the fairness assessments. In the following, we interpret our preferred full Model 2.[10]

The first vignette dimension (the minimum wage adjustment amount) reveals that a larger minimum wage increase reduces the perception that the minimum wage is unfairly too low. Here, a minimum wage increase from 9.35 euros to 12 euros (a 28% hike) was considered fairest. Accordingly, the probability that the minimum wage adjustment was judged as unfairly too high increased by approximately 44 percentage points when the new level was set to 15 euros compared to 10 euros. Thus, these findings support the first hypothesis, which states that observers are likely to consider moderate minimum wage increases as fairer than no increase or very small increases, while they are likely to judge more substantial minimum wage increases, which are higher than what is necessary to ensure a decent living, as less fair.

The next set of vignette dimensions examines observers' fairness judgments of the significance of changes at the company level to the exogenously set wage floor. Accordingly, changes in the internal wage structure seem to play a crucial role. Raising the wages of minimum wage workers but not those of other employees causes a minimum wage hike to be considered less fair and more often results in an unfairly too high judgment in comparison to wage growth for the total workforce. These findings support our second hypothesis that only for those employees directly affected by the new minimum are wage increases assessed as less fair. Compared to an unchanged work

[8] Descriptive statistics on the covariates can be found in Appendix Table 3.

[9] The estimation was performed using Stata ado gologit2 (Williams 2006).

[10] After having imposed constraints for parallel lines, the Wald test on the proportional odds assumption for Model 2 resulted in a value of 22.12, which was not significant ($p=0.78$). Thus, the partial proportional odds model no longer violates the parallel regression assumption.

Table 2 Estimates of partial proportional odds regressions. Source: Survey "Acceptance of Social and Labor Market Programs and Regulations 2020"; own calculations

	Model 1			Model 2		
	Unfairly too low (AME)	Fair (AME)	Unfairly too high (AME)	Unfairly too low (AME)	Fair (AME)	Unfairly too high (AME)
Vignette dimensions						
Minimum wage increase from 9.35 euros to (Ref.: 10 euros)						
11 euros	−0.185*** (0.020)	0.081*** (0.011)	0.105*** (0.012)	−0.179*** (0.020)	0.075*** (0.010)	0.104*** (0.012)
12 euros	−0.304*** (0.021)	0.131*** (0.021)	0.172*** (0.017)	−0.301*** (0.021)	0.126*** (0.021)	0.175*** (0.017)
15 euros	−0.437*** (0.019)	0.000 (0.017)	0.437*** (0.020)	−0.434*** (0.018)	−0.006 (0.016)	0.439*** (0.019)
Internal wage structure (Ref.: Wage increase for all workers)						
Wage increase for minimum wage workers	0.000 (0.015)	−0.050** (0.016)	0.050*** (0.015)	−0.004 (0.014)	−0.050** (0.015)	0.054*** (0.014)
Work intensity (Ref.: Same amount of work as before for all workers)						
Increase in amount of work for minimum wage workers	0.064*** (0.018)	−0.081*** (0.020)	0.017 (0.017)	0.064*** (0.017)	−0.082*** (0.019)	0.017 (0.017)
Increase in amount of work for all workers	0.022 (0.018)	−0.053** (0.020)	0.031 (0.017)	0.022 (0.018)	−0.059** (0.020)	0.037* (0.017)
Personnel adjustment (Ref.: No layoffs and no hiring freeze)						
Hiring freeze	−0.008 (0.014)	0.001 (0.002)	0.007 (0.013)	−0.020 (0.014)	0.002 (0.002)	0.018 (0.013)
Layoffs	−0.002 (0.018)	−0.122*** (0.017)	0.124*** (0.018)	−0.005 (0.017)	−0.120*** (0.017)	0.125*** (0.017)
Economic situation of the company (Ref.: No change)						
Deterioration	−0.054*** (0.016)	−0.066*** (0.016)	0.120*** (0.015)	−0.059*** (0.015)	−0.063*** (0.016)	0.122*** (0.015)
Respondents' own socioeconomic status						
Hourly wage (Ref.: 10 euros and more)						
Less than 10 euros				0.046 (0.062)	-0.005 (0.011)	-0.040 (0.051)
Do not know/no indication				0.033 (0.059)	-0.003 (0.009)	-0.030 (0.051)
Worries about own financial situation (1 = some or substantial worries)				0.057* (0.023)	-0.043* (0.019)	-0.015 (0.021)
Observations (judgments)	3549			3549		
Number of respondents	891			891		
Pseudo R^2	0.105			0.137		
AIC	6976.201			6755.106		
BIC	7081.167			7051.207		
Wald chi^2	616.226			704.77		
p-value	0.000			0.000		

Average marginal effects of each regressor on the probability of each of the three outcomes indicated. Further control variables included in Model 2 are the following respondents' personal characteristics (see also the complete model in Table B1 in Additional Appendix B): gender, age, age squared, place of residence, nationality, household size, children in household, highest vocational qualification, worries about the economy in, party preference, and order of vignettes

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; cluster-robust standard errors appear in parentheses

intensity, a minimum wage-induced increase in the amount of work for minimum wage workers causes the new minimum wage to be perceived as significantly less fair and makes it more likely to be judged as unfairly too low. Thus, hypothesis 3, that an increase in work intensity for employees whose minimum wage is raised will

be judged to be fair, must be rejected. In contrast, if the minimum wage increase leads to a greater amount of work for the entire workforce, the minimum wage hike is perceived as less fair and too strong, which is in line with hypothesis 4. An argument frequently put forward in the professional public debate concerns employment effects. While a minimum wage-related hiring freeze does not influence fairness judgments, the probability that respondents will rate a minimum wage increase to be fair decreases by 12 percentage points when layoffs are involved. Simultaneously, respondents perceive the minimum wage hike as unfairly too high, ceteris paribus. These results confirm hypothesis 5, which states that a minimum wage hike will be considered less fair when minimum wage-related layoffs occur. In addition, respondents take the overall economic situation of the company into account regarding their fairness judgments. If a minimum wage increase negatively affects the economic situation of the company, it will be rated less fair or even unfairly too high compared to an unchanged economic situation, which corresponds to the sixth hypothesis.

Furthermore, the empirical estimations examine whether an observer's own economic situation influences their fairness judgments. Thus, the indicator representing whether a respondent earns less than 10 euros has no independent explanatory power. In contrast, the direct question about a respondent's perceived economic deprivation indicates that those who are somewhat or even very concerned about their own financial situation are less likely to judge a minimum wage increase as fair; they are more likely to judge it as unfairly too low compared to those not concerned about their financial situation. This finding is in line with hypothesis 7.

4.3 Robustness tests

To ensure the robustness of our findings, we conducted several robustness checks. First, we estimated alternative types of models that can be used for ordinal dependent variables. An approach that relies on the proportional odds assumption is the ordered logistic model, while a nonordinal alternative is the multinomial logit model. Both estimations are shown in Table B1 in Additional Appendix B. Second, we test the robustness of the results by performing the estimation for the dependent variable with five categories instead of the aggregated three categories (Table B2). Third, another way to address the hierarchical structure of data, since observations are nested within judging persons, is by adopting multilevel models and fixed-effects techniques. The estimates of a random-effects model for ordered responses with a random intercept at the respondent level (Hedeker and Gibbons 1994) and a fixed-effects ordered logit model (Baetschmann et al. 2020) can be found in Table B3 in Additional Appendix B. Fourth, we test whether, beyond the main effects presented in Table 2, respondent characteristics also influence the relative importance of the vignette dimensions. To this end, we estimate interaction effects in Tables B4 to B8 in Additional Appendix B.

The first robustness test shows that the estimates of the ordinal regression for the vignette elements in part differ significantly from those of the partial proportional odds estimation. This is most often the case for the vignette dimension of work intensity and for respondents' own socioeconomic status. However, it must be kept in mind that the ordinal estimation is of only limited significance due to the violation of the proportionality assumption. In contrast, the results of the multinomial logit estimation, which is subject to fewer assumptions, confirmed our main results. The second robustness check examines the consequences of combining the categories of the dependent variable. Only for the increase in the amount of work for all workers do the coefficients that express the minimum wage increase as unfairly too high become insignificant. Furthermore, there is a shift in the case of some or substantial worries about one's own financial situation, since minimum wage increases are less likely to be considered as unfairly too high. The third robustness test again pointed to some deviations of the random-effects ordered logit model, especially regarding work intensity and one's own financial situation. Furthermore, the random-effects and fixed-effects estimations indicated that observers judge a minimum wage hike significantly less often as unfairly too low when the wages of only minimum wage workers increase. This significant effect, when compared to the main results from the partial proportional odds regression, corroborates our findings regarding content. The fourth test examined interaction effects between person characteristics and vignette dimensions. Only a few significant effects emerged. Compared to Germans, foreigners rated a minimum wage increase as unfairly too low. In the case of an increase in the amount of work for all employees, the perception of unfairness increased with the age of the judging person. Observers who had some or substantial worries about their own financial situation were more likely to rate the minimum wage increases as unfairly too low in the case of a hiring freeze. In addition to the absence of main effects of sociodemographic characteristics in our main specification, there are largely no group-specific influences on the

vignette dimension. Thus, there appears to be a consensus among the different socioeconomic groups regarding fairness judgments.

In summary, the robustness tests revealed that the alternative specifications mainly confirm the results of the preferred estimation. The sole exception concerns the vignette dimension of work intensity, as the effects of the preferred specifications became mostly nonsignificant in the alternative specifications. Therefore, the negative effect of an increasing amount of work for only minimum wage workers or for all workers on the minimum wage fairness assessment in the preferred specification must be interpreted cautiously.

5 Discussion of the results and conclusions

This article contributes to justice research on social policy measures by focusing on minimum wages, which have become popular policy instruments for addressing issues of wage and income inequality or in-work poverty (ILO 2017; Leventi et al. 2017; Wilson 2017). We started from theories of social justice (Deutsch 1975, 1985; Jasso et al. 2016; Konow 2001) and emphasize that company adjustments play a significant role in the response to minimum wages. Therefore, we extended previous research in two aspects. First, we conceptually included companies in the three-actor model as relevant allocators regarding minimum wages (Jasso 1980; Jasso et al. 2016). Second, we examined the conditions under which employees judge minimum wage increases to be fair by focusing on adjustments at the company level.

In terms of content, our results revealed that judgments are strongly dependent on companies and their actions, which is in line with previous qualitative minimum wage (Koch et al. 2018) and organizational justice (Cropanzano and Ambrose 2015; Konow 2001) research. In contrast to our hypothesis derived from the equity principle (Adams 1965; Deutsch 1985; Austin and Walster 1975), an increase in the work intensity of those benefiting from a minimum wage increase was assessed as less fair. This result is more in line with the need principle (Deutsch 1985; Konow 2001), according to which employees who receive a higher minimum wage should not experience any simultaneous disadvantages through higher work intensity. However, minimum wage-induced changes in internal wage structures were rated critically. In accordance with the equity principle (Adams 1965; Austin and Walster 1975; Deutsch 1985), the maintenance of internal pay grids seems to be important to observers because they ensure merit-based wage differentials. Accordingly, a reduction or even elimination of internal wage differentials, which can result from minimum wage-induced wage compression without spillovers to higher ranges of the internal wage distribution, was considered less fair. Interestingly, in line with the efficiency principle (Konow 2001, 2003), observers also accounted for the returns and burdens of the whole organization. Thus, personnel adjustments involving layoffs were rated as inappropriate, but hiring freezes, which are not a direct burden for organizational members, were not rated as inappropriate. Finally, from the efficiency point of view (ibid.), a minimum wage increase that resulted in deterioration of the economic situation of the company, which implies burdens for the organization as a whole and its workforce, was assessed as less fair.

Furthermore, the extent of a minimum wage increase is an important aspect of observers' judgments. Among the minimum wage hikes mentioned, a 28% increase to 12 euros was most often rated as fair compared to a comparatively small 7% increase to 10 euros. This finding is consistent with the need principle (Deutsch 1985; Konow 2001) in view of the current debates in OECD countries or against the backdrop of the EU's directive on adequate minimum wages to push minimum wages to considerably higher levels to combat in-work poverty, poverty in old age and welfare receipt. In the United States, prominent Democrats wanted to push the federal minimum wage up to 17 US dollars. However, our findings also showed that minimum fairness assessments are not monotonic; they have an inverted-U shape. There is clearly an inflection point because a 60% increase to 15 euros was regarded as unfairly too high by most observers.

Moreover, while sociodemography and household composition did not influence the fairness evaluations, according to our findings, observers' self-interest (Montada and Maes 2016; Rutström and Willams 2000; Trump 2020) played a crucial role. Regarding the former, an observer's socioeconomic situation was operationalized by the observer's hourly earnings and a direct assessment of worries about his or her own financial situation. While an observer's low earnings (less than 10 euros per hour) did not constitute a predictor, having some or serious worries about his or her own financial situation influenced the observers' judgments of fairness. The zero effect of personal income can be explained by the fact that low-wage earners often live in households with a (usually better-paid) second earner (Bruckmeier and Bruttel 2021). However, self-interest became evident in the fact that a minimum wage increase was obviously regarded as helpful in improving the problematic financial situations of the respective observers.

From a conceptual point of view, minimum wage increases represent a specific case for justice research on social policy measures. It deviates from typical social policy measures, such as unemployment benefits, because they are set and paid by the state or federal institutions that serve as allocators. Regarding minimum wages, however, companies play a significant role. Accordingly, our conceptual modification of the well-known key actor model (Jasso 1980; Jasso et al. 2016), as introduced in Fig. 1, has proven to be applicable and accurate. Thus, in addition to being a political actor who serves as an allocator in the reward process and sets the minimum wage, companies also take on an important function as executing allocators. They must deal with the exogenously set actual reward at the lower end of their internal wage distribution and implement organizational adaptations. In turn, observers consider these company-level changes during the just reward process to reach their justice evaluations. Consequently, theoretical considerations on factors that are likely to influence judgments of fairness regarding social and labor market policy measures must explicitly take into account organizations and companies in cross-level contexts. In addition, independently of justice principles, self-interest is an important theoretical explanation for fairness judgments on the results of distribution.

Sociopolitically, our findings indicate that balancing both aspects—the size of a minimum wage increase and company-level adaptations—is a challenge for political decision-makers, who must ensure broad public legitimacy of social policy instruments. This is particularly true with reference to the current public debates about comparatively strong adjustments of minimum wages in OECD countries. This balancing is also crucial for companies, as many studies have illustrated that ensuring justice is important for organizations because it positively influences employee attitudes such as satisfaction with their outcomes and their jobs in general as well as their degree of organizational commitment (Cropanzano and Ambrose 2015; Greenberg and Colquitt 2005; Konow 2001).

Against this backdrop, our findings on the perceived fairness of minimum wage increases can be seen as complementary to causal evaluation studies because they enable the latter to be interpreted in terms of justice. The slight losses of employment in marginal employment that have been identified in causal studies (Dütsch et al. 2025) must be carefully monitored further, as individuals consider such negative employment effects as important in their fairness judgement. The reluctance to hire new staff, as observed in causal studies (Isphording et al. 2022), is not perceived critically. However, the slight decline in corporate profits and the mixed findings on insolvencies so far (Dütsch et al. 2025) must be carefully evaluated in the future, as they shape fairness judgements. The compression of the wage grid, which has been demonstrated in empirical studies based on internal wage differentials (Isphording et al. 2022), is also considered important. These substantive findings suggest that, while a minimum wage that ensures a decent living is important to the respondents, they implicitly express in their fairness judgements that they are aware of differences between the companies and that these should be taken into account. Accordingly, sectoral, regional or even company-specific heterogeneities should be considered, as implemented in collective agreements in the traditional system of industrial relations. To achieve this, the collective bargaining coverage would have to be significantly increased again, contrary to the general trend of decreasing collective bargaining coverage and in some cases even the complete absence of collective agreements. EU's directive on adequate minimum wages is aimed at achieving this.

As a caveat, importantly, the generalizability of our results is limited by the fact that our data are based on a cross-sectional survey and that participants in the survey may differ from nonparticipants in terms of unobserved characteristics. Further research could therefore increase our knowledge about the dependence of fairness judgments on minimum wages on company adjustment.

Appendix

See Table 3.

Table 3 Descriptive statistics of the dependent variables and covariates. Source: Survey "Acceptance of Social and Labor Market Programs and Regulations 2020"; own calculations

Variables	Characteristic	N	Mean	Std. Dev	Min	Max
Vignettes						
Fairness judgment	Unfairly too low	3549	0.318	0.466	0	1
	Fair	3549	0.382	0.486	0	1
	Unfairly too high	3549	0.3	0.458	0	1
Respondents						
Gender	Male	891	0.564	0.496	0	1
	Female	891	0.436	0.496	0	1
Age	(in years)	891	43.82	11.14	20	69
Age (squared)	(in years squared)	891	2044.1	977.08	400	4761
Place of residence	West Germany	891	0.787	0.41	0	1
	East Germany	891	0.213	0.41	0	1
Nationality	German	891	0.923	0.267	0	1
	Foreign	891	0.077	0.267	0	1
Size of household	One-person household	891	0.224	0.417	0	1
	Two-person household	891	0.39	0.488	0	1
	Three-person household	891	0.178	0.382	0	1
	Four-person household	891	0.172	0.378	0	1
	Five-person household and larger	891	0.036	0.186	0	1
Children in household	No	891	0.562	0.496	0	1
	Yes	891	0.438	0.496	0	1
Highest vocational degree (Ref.: No vocational qualification)	No vocational qualification	891	0.029	0.169	0	1
	Vocational qualification	891	0.435	0.496	0	1
	Master craftsman/technician	891	0.075	0.264	0	1
	University degree	891	0.427	0.495	0	1
	Other degree	891	0.034	0.181	0	1
Professional position	Unskilled/semiskilled	891	0.127	0.332	0	1
	Skilled	891	0.429	0.495	0	1
	Highly skilled	891	0.444	0.497	0	1
Own wage	Less than 10 euros	891	0.03	0.17	0	1
	10 euros and more	891	0.937	0.243	0	1
	Do not know/no indication	891	0.033	0.179	0	1
Worries about general economic situation	Substantial worries	891	0.334	0.472	0	1
	Some worries	891	0.471	0.499	0	1
	A few worries	891	0.158	0.365	0	1
	No worries at all	891	0.037	0.189	0	1
Worries about own financial situation	Substantial worries	891	0.09	0.287	0	1
	Some worries	891	0.298	0.457	0	1
	A few worries	891	0.373	0.484	0	1
	No worries at all	891	0.239	0.426	0	1
Party preference	Christian Democratic Union/Christian Social Union (CDU/CSU)	891	0.172	0.377	0	1
	Social Democratic Party of Germany (SPD)	891	0.105	0.306	0	1
	Alliance 90/The Greens (BÜNDNIS 90/DIE GRÜNEN)	891	0.231	0.422	0	1
	Free Democratic Party (FDP)	891	0.03	0.169	0	1
	LEFT PARTY (DIE LINKE)	891	0.072	0.258	0	1
	Alternative for Germany (AfD)	891	0.032	0.175	0	1
	Other party	891	0.036	0.185	0	1
	No party	891	0.297	0.457	0	1
	Do not know/no indication	891	0.027	0.163	0	1

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12651-025-00392-3.

Supplementary Material 1.

Acknowledgements
We would like to thank the editors and the anonymous referees for their valuable comments. The views expressed in this paper are those of the authors.

Author contribution
All authors contributed to the conception of the article and the design of the survey experiment. The programming ofthe questionnaire and the data collection was carried out by MS. The data analysis and drafting of the article was done by MD. All authors critically revised the article and contributed to the final approval of the version to be published.

Funding
This work was supported by the "Fördernetzwerk Interdisziplinäre Sozialpolitikforschung" (FIS) of the German Federal Ministry of Labour and Social Affairs (Bundesministerium für Arbeit und Soziales/BMAS) [grant number: FIS.00.00117.19].

Availability of data and materials
The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Competing interests
The authors declare that they have no competing interests.

Received: 2 July 2024 Accepted: 10 February 2025
Published online: 04 March 2025

References

AAPOR: Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys, 9th edn. AAPOR (2016)
Abraham, M.: Wann werden Löhne als gerecht eingeschätzt? Eine tauschtheoretische Betrachtung der Lohngerechtigkeit auf dem Arbeitsmarkt. J. Labor Mark. Res. **40**(1), 9–22 (2007)
Adams, J.: Inequity in social exchange. In: Berkowitz, L. (ed.) Advances in Experimental Social Psychology, pp. 267–299. Academic, New York (1965)
Adriaans, J., Sauer, C., Moya, C.: Pay justice and pay satisfaction: the influence of reciprocity, social comparisons, and standard of living. Soc. Psychol. Quart. **86**(1), 95–106 (2023)
Austin, W., Walster, E.: Equity with the world: the trans-relational effects of equity and inequity. Sociometry. **38**(4), 474–496 (1975)
Avram, S., Harkness, S.: The Impact of Minimum Wage Upratings on Wage Growth and the Wage Distribution. A Report Prepared for the Low Pay Commission. University of Essex and University of Bristol, Essex (2019)
Baetschmann, G., Ballantyne, A., Staub, K., Winkelmann, R.: feologit: a new command for fitting fixed-effects ordered logit models. Stata J. **20**(2), 253–275 (2020)
Bell, B., Machin, S.: Minimum wages and firm value. J. Law Econ. **36**(1), 159–195 (2018)
Borjas, G.: Labor Economics. McGraw-Hill Education, New York (2015)
Bossler, M., Gürtzgen, N., Börschlein, E.B., Wiemann, J.S.: Auswirkungen des Gesetzlichen Mindestlohns auf Betriebe und Unternehmen. Report: Institut für Arbeitsmarkt- und Berufsforschung, Nürnberg (2022)
Brockner, J., Higgins, T., Murray, L.: Regulatory focus theory and the entrepreneurial process. J. Bus. Ventur. **19**(2), 203–220 (2004)
Bruckmeier, K., Bruttel, O.: Minimum wage as a social policy instrument: evidence from Germany. J. Soc. Policy **50**(2), 247–266 (2021)
Bruckmeier, K., Schwarz, S.: Auswirkungen des Gesetzlichen Mindestlohns auf den Bezug von Sozialleistungen. Report: Institut für Arbeitsmarkt- und Berufsforschung, Nürnberg (2022)
Bruttel, O.: The effects of the new statutory minimum wage in Germany: a first assessment of the evidence. J. Labor Mark. Res. **53**(10), 1–13 (2019)
Caliendo, M., Schröder, C., Wittbrodt, I.: The causal effects of the minimum wage introduction in Germany: an overview. German Econ. Rev. **20**(3), 257–292 (2019)
Card, D., Krueger, A.: Minimum wages and employment: a case study of the fast-food industry in New Jersey and Pennsylvania. Am. Econ. Rev. **84**(4), 772–793 (1994)
Cengiz, D., Dube, A., Lindner, A., Zipperer, B.: The effect of minimum wages on low-wage jobs. Quart. J. Econ. **134**(3), 1405–1454 (2019)
Cropanzano, R., Ambrose, M.: The Oxford Handbook of Justice in the Workplace. Oxford University Press, Oxford (2015)
Datta, D., James, G., Dynah, B., Alankrita, P.: Causes and effects of employee downsizing: a review and synthesis. J. Manag. **36**(1), 281–348 (2010)
Deutsch, M.: Equity, equality, and need: what determines which value will be used as the basis of justice? J. Soc. Issues **31**(3), 137–149 (1975)
Deutsch, M.: Distributive Justice: A Social-Psychological Perspective. Yale University Press, New Haven (1985)
Dolton, P., Bondibene, C., Wadsworth, J.: Employment, inequality and the UK national minimum wage over the medium-term. Oxford Bull. Econ. Stat. **74**(1), 78–106 (2012)
Draca, M., Machin, S., Van Reenen, R.: Minimum wages and firm profitability. Am. Econ. J. Appl. Econ. **3**, 129–151 (2011)
Dube, A.: Minimum wages and the distribution of family incomes. Am. Econ. J. Appl. Econ. **11**, 268–304 (2019)
Dustmann, C., Lindner, A., Schönberg, U., Umkehrer, M., vom Berge, J.: Reallocation effects of the minimum wage. Quart. J. Econ. **137**(1), 267–328 (2022)
Dütsch, M, Ohlert, C, Baumann, A: The minimum wage in Germany: institutional setting and a systematic review ofkey findings. J. Econ. Stat. **245**,113–151 (2025)
Eurofound: Minimum Wages in 2023: Annual Review, Minimum Wages in the EU Series. Publications Office of the European Union, Luxembourg (2023)
Fedorets, A., Schröder, C.: Economic aspects of subjective attitudes towards German minimum-wage reform. Public Finance Anal. **75**, 357–379 (2019)
Greenberg, J., Colquitt, J.: Handbook of Organizational Justice'. Lawrence Erlbaum Associates, Hillsdale (2005)
Hedeker, D., Gibbons, R.: A random-effects ordinal regression model for multilevel analysis. Biometrics **50**, 933–944 (1994)
Hirsch, B., Kaufman, B., Zelenska, T.: Minimum wage channels of adjustment. Ind. Relat. **54**, 199–239 (2015)
ILO: Minimum Wage Policy Guide. International Labor Organization, Geneva (2017)
Isphording, I., Caliendo, M., Mahlstedt, R., Pestel, N., Zimpelmann, C: Auswirkungen des gesetzlichen Mindestlohns aufindividuelle Beschäftigungsbewegungen und betriebliche Lohnstrukturen in den Jahren 2015 bis 2020. Forschungsinstitut zur Zukunft der Arbeit (IZA) und Evaluation Office Caliendo, Bonn (2022)
Jasso, G.: On the justice of earnings: a new specification of the justice evaluation function. Am. J. Sociol. **83**, 1398–1419 (1978)
Jasso, G.: A new theory of distributive justice. Am. Sociol. Rev. **45**, 3–32 (1980)
Jasso, G.: Factorial survey methods for studying beliefs and judgments. Sociol. Methods Res. **34**, 334–423 (2006)
Jasso, G., Wegener, B.: Methods for empirical justice analysis: part 1. Framework, models, and quantities. Soc. Justice Res. **10**, 393–430 (1997)
Jasso, G., Törnblom, K., Sabbagh, C.: Distributive justice. In: Sabbagh, C., Schmitt, M. (eds.) Handbook of Social Justice Theory and Research, pp. 201–218. Springer, New York (2016)
Kaufman, B.: Expanding the behavioral foundations of labor economics. Ind. Labor Relat. Rev. **52**, 361–392 (1999)
Kaufman, B.: Institutional economics and the mimimum wage: broadening the theoretical and policy debate. Ind. Labor Relat. Rev. **63**, 427–453 (2010)
Koch A, Kirchmann A, Reiner M, Scheu T, Boockmann B, Bonin H. Verhaltensmuster von Betrieben und Beschäftigten im Zuge der Einführung des Gesetzlichen Mindestlohns. Institut für Angewandte Wirtschaftsforschung, Forschungsinstitut zur Zukunft der Arbeit und SOKO Institut für Sozialforschung und Kommunikation, Tübingen (2018).
Konow, J.: Fair and square: the four sides of distributive justice. J. Econ. Behav. Organ. **46**, 137–164 (2001)

Konow, J.: Which is the fairest one of all? A positive analysis of justice theories. J. Econ. Lit. **41**, 1188–1239 (2003)
Lester, R.: Employment effects of minimum wages. Ind. Labor Relations Rev. **13**, 254–264 (1960)
Leventhal, G.S.: The distribution of rewards and resources in groups and organizations. Adv. Exp. Soc. Psychol. **9**, 91–131 (1976)
Leventi, C., Sutherland, H., Tasseva, I.: Improving Poverty Reduction in Europe: What Works Best Where? University of Essex, Colchester (2017)
Liebig, S., Sauer, C., Friedhoff, S.: Using factorial surveys to study justice perceptions: five methodological problems of attitudinal justice research. Soc. Justice Res. **28**, 415–434 (2015)
Long, S., Freese, J.: Regression Models for Categorical Dependent Variables Using Stata. Stata Press, College Station (2014)
Low Pay Commission: National Minimum Wage. Low Pay Commission Report 2019. Low Pay Commission, London (2020)
Manning, A.: Monopsony in Motion. Imperfect Competition in Labor Markets. Princeton University Press, Princeton (2013)
Mau, S.: Welfare regimes and the norms of social exchange. Curr. Sociol. **52**, 53–74 (2004)
MiLoG. Gesetz zur Regelung eines allgemeinen Mindestlohns (Mindestlohngesetz–MiLoG). (2014). https://www.gesetze-im-internet.de/milog/MiLoG.pdf.
Montada, L., Maes, J.: Justice and self-interest. In: Sabbagh, C., Schmitt, M. (eds.) Handbook of Social Justice Theory and Research, pp. 109–125. Springer, New York (2016)
Morrison, E., Robinson, S.: When employees feel betrayed: a model of how psychological contract violation develops. Acad. Manag. Rev. **22**, 226–256 (1997)
Neumark, D., Wascher, W.: Minimum Wages. MIT Press, Cambrigde (2008)
Rutström, E., Williams, M.: Entitlements and fairness: an experimental study of distributive preferences. J. Econ. Behav. Organ. **43**, 75–89 (2000)
Sabbagh C, Schmitt M. Past, present, and future of social justice theory and research. In: Sabbagh C, Schmitt M, editors. Handbook of Social Justice Theory and Research, p. 1–11. New York, NY (2016).
Sauer, C., May, M.: Determinants of just earnings: the importance of comparisons with similar others and social relations with supervisors and Coworkers in Organizations. Res. Soc. Stratification Mobility. **47**, 45–54 (2017)
Schmitt, J.: Explaining the small employment effects of the minimum wage in the United States. Ind. Relat. **54**, 547–581 (2015)
Stephan, G, Osiander, C, Senghaas, M, Struck, O: Acceptance of Social and Labor Market Programs and Regulations: Methodological Report on the Second Survey. IAB-Forschungsbericht. 04/2021, 34. Nürnberg (2021).
Stewart, M.: Quantile estimates of counterfactual distribution shifts and the effect of minimum wage increases on the wage distribution. J. Roy. Stat. Soc. **175**, 26–287 (2012a)
Stewart, M.: Wage inequality, minimum wage effects, and spillovers. Oxf. Econ. Pap. **64**, 616–634 (2012b)
Struck, O., Stephan, G., Köhler, C., Krause, A., Pfeifer, C., Sohr, T.: Arbeit Und Gerechtigkeit – Entlassungen Und Lohnkürzungen im Urteil der Bevölkerung. VS-Verlag für Sozialwissenschaften, Wiesbaden (2006)
Trevor, C., Nyberg, A.: Keeping your headcount when all about you are losing theirs: downsizing turnover rates and the moderating role of HR practices. Acad. Manag. J. **51**, 259–276 (2008)
Trump, K.: When and why is economic inequality seen as fair. Curr. Opin. Behav. Sci. **34**, 46–51 (2020)
van Dijke, M., De Cremer, D.: Justice in the work setting. In: Sabbagh, C., Schmitt, M. (eds.) Handbook of Social Justice Theory and Research, pp. 315–332. Schmitt, New York (2016)
van Oorschot, W., Roosma, F.: Introduction: the social legitimacy of targeted welfare: attitudes to welfare deservingness. In: van Oorschot, W., Roosma, F., Meuleman, B., Reeskens, T. (eds.) The Social Legitimacy of Targeted Welfare: Attitudes to Welfare Deservingness, pp. 3–34. Edward Elgar Publishing, Cheltenham (2017)
Williams, R.: Generalized ordered logit/partial proportional odds models for ordinal dependent variables. Stand. Genomic Sci. **6**, 58–82 (2006)
Williams, R.: Understanding and interpreting generalized ordered logit models. J. Math. Sociol. **40**, 7–20 (2016)
Wilson, S.: The politics of 'minimum wage' welfare states: the changing significance of the minimum wage in the liberal welfare regime. Soc. Policy Admin. **51**, 244–264 (2017)

Publisher's Note