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Short-time allowances in times of crisis: a survey experiment

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Abstract

During the COVID-19 pandemic, many countries used short-time work schemes, i.e., subsidies for temporary working hours reductions due to production drops. In Germany, regulations on entitlements and benefits have been much more generous during the pandemic than they were in noncrisis times. This paper conducts a factorial survey experiment among the workforce to investigate which amounts of short-time benefits and which associated replacement rates were perceived as appropriate during the pandemic. We interpret our findings in the context of the deservingness theory. Our results show that the assessments are partly consistent with the legal design features in Germany. One of our key findings is that, according to respondents, the short-time allowance should decrease slightly with an increasing duration of short-time work. In Germany, however, with the onset of the pandemic, a rule was temporarily implemented that step-wise increased short-time work benefits with the duration of short-time work.

Keywords Short-time work, Short-time allowance, COVID-19, Deservingness theory, Factorial survey

JEL Classification J38, J68

1 Introduction

The COVID-19 pandemic has had a major impact on economic activity and labor markets worldwide. In the face of a demand shock, short-time work offers companies an alternative to layoffs in times of economic crises. These job retention schemes entail public income support by covering part of the salary for workers who must temporarily reduce their working hours or stop working altogether, while their employment contract continues. Short-time work benefits can be funded either by the unemployment insurance (and state support for the insurance) or from tax revenues (Konle-Seidl 2020). Generally, the economic aim of short-time work benefits is to secure employment, support firms affected by economic downturns, mitigate the social consequences of the crises and support domestic demand. Indeed, aggregate figures point to an inverse relationship between increases in short-time work and unemployment (Eichhorst et al. 2020). Since the outbreak of the pandemic, many countries in the Organisation for Economic Co-operation and Development (OECD) have extended such schemes and simplified their access requirements (Konle-Seidl 2020; OECD 2020). In a recent study gathering available evidence for Europe, Giupponi et al. (2022) conclude from an economic perspective that policy-makers probably did the right thing when resorting to an extensive use of short-time work schemes during the pandemic because

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this social policy instrument mitigates the social costs created by large-scale layoffs.[1]

Welfare state institutions—such as short-time work regulations and the unemployment insurance system—affect not only benefit recipients but also the broad number of citizens who contribute to the system. For the legitimacy of the welfare state, it is thus important that citizens accept and support the measures and regulations decided at the political level (Liebig and Sauer 2016; Sachweh 2016; van Oorschot 2000). A number of studies have investigated justice perceptions regarding the amount of welfare benefits (e.g., Buss 2019; Castillo et al. 2019; Hörstermann and Andreß 2015) or the length of unemployment benefits (e.g., Osiander et al. 2022; Senghaas et al. 2023). However, the level of short-time benefits or sectoral and regional accumulations in the use of the instrument can also have a strong distributional impact.

In this context, important questions concern the level of the short-time allowance that is assessed as appropriate and the ideas of deservingness that underlie these assessments. We analyze these questions based on a survey experiment, conducting a factorial survey among individuals randomly drawn from the German labor force. Our analysis thus provides the first results on the justice perceptions of the short-time allowance and the design features of this specific welfare state institution. We are particularly interested in the assessment of the specific regulations that were introduced ad hoc at the onset of the pandemic, e.g., a lower minimum labor shortage among the applying firms, an increase in the allowance amount with the duration of the short-time work, and extended opportunities to earn additional income during benefit receipt.

In the following, Sect. 2 presents information on the use and design of the short-time work allowance in Germany during the pandemic. Sections 3 describes the applied method, Sect. 4 discusses the theoretical background, and Sect. 5 introduces the data. Section 6 presents the results of the empirical analysis, and Sect. 7 concludes.

2 Short-time work in Germany during the pandemic

The German labor market has come through the COVID-19 pandemic surprisingly robustly. The fact that unemployment has not increased substantially is due to the massive use of short-time work: During the COVID-19 pandemic, at the peak of its use, one in five employees in Germany was working short-time (Statistics of the Federal Employment Agency 2020). Working hours substantially declined due to short-time work (Herzog-Stein et al. 2022). For May 2020 and based on survey data, Kruppe and Osiander (2020) found that nearly a quarter of those on short-time work were entirely on leave.

In Germany, companies with employees who are subject to social insurance contributions can register for short-time work at the Federal Employment Agency if the firm experiences a significant temporary drop in working hours due to economic reasons or an "unavoidable" event and if certain conditions are met. The amount of the short-time allowance paid by the unemployment insurance is then based on the amount of the net income lost. With a view to other European countries, the design of short-time allowances ranges from absolute lower limits for the receipt of short-time allowances to a higher percentage of income replacement for low-income earners (Konle-Seidl 2020; Müller and Schulten 2020; Müller et al. 2022).

Short-time work was already an important labor market policy instrument in Germany during the 2008/2009 financial crisis (e.g., Brenke et al. 2013, Gehrke and Weber 2020). At the peak of the financial crisis in May 2009, 5 percent of employees were working short-time. Regarding previous crises, the results on the efficacy of the German short-time work scheme are mixed. Balleer et al. (2016), Boeri et al. (2011) and Niedermayer and Tilly (2016) found positive effects of short-time work on employment. With regard to firms, Kopp and Siegenthaler (2021) pointed to the fact that short-time work increases the chance of survival for establishments and prevents the dismissal of workers at a low cost. In contrast, Bellmann and Gerner (2011) and Bellmann et al. (2015) established no effects on employment, and Calavrezo et al. (2010) and Kruppe and Scholz (2014) state even negative effects.

Due to the COVID-19 pandemic, from March 1, 2020, new regulations were temporarily implemented in Germany that simplified the use of the short-time allowance for companies and provided support that was more generous. Table 1 provides an overview on the design of important regulations in pre-pandemic times and on changes in regulations that were enacted during the pandemic.

In normal times—i.e., absent specific regulations during the COVID-19 pandemic—at least one-third of the employees must be affected, and a working time reduction is also considered "avoidable" if it can be absorbed by reductions in working time accounts. Since March 2020, companies can report short-time work if at least 10 percent of employees have a loss of pay of more than 10 percent. The build-up of negative working time balances prior to the payment of the short-time allowance

[1] However, short-time allowances, like many other public benefits, can involve some extent of free-riding (Bossler et al. 2023).

Table 1 Important institutional regulations for short-time work in Germany

	Pre-pandemic regulations	Regulations (at least partly) during the pandemic
General condition	Significant temporary drop in working hours due to economic reasons or "unavoidable" event	
Affected share of workforce	At least 1/3	At least 1/10
Use of working time accounts	Required	Waived
Maximum duration	Up to 12 months	Up to 28 months
Net wage replacement rate without (with) children	60 (67) percent	Month 1–3: 60 (67) percent
		Month 4–6: 70 (77) percent
		Since month 7: 80 (87) percent
Offsetting income from secondary employment	Continued job: No	Continued job: No
	New job: Yes	New job: Threshold

was completely waived. Furthermore, in normal times, companies can receive short-time compensation for up to 12 months for employees who are subject to social insurance contributions. During the pandemic, subject to certain conditions the maximum period of entitlement to the short-time allowance was increased to up to 28 months.

The amount of the short-time allowance in normal times is essentially the same as the amount of the unemployment benefit from the unemployment insurance system: The Federal Employment Agency reimburses companies 60 percent of net wages for employees without children and 67 percent for employees with at least one child, up to the unemployment insurance threshold. Regulations became more generous during the pandemic: If employees have to reduce their working hours by at least 50 percent, the short-time allowance for persons without children increased from 60 to 70 percent of the lost net wage from the fourth month on and to 80 percent from the seventh month on. Employees with children received 67 percent, followed by 77 percent and 87 percent of the lost net wages.[2]

In pre-pandemic times, earnings from a secondary or side job in place before the short-time work started were not offset against the short-time allowance. Earnings from secondary jobs taken up during short-time work, however, were deducted from the short-time allowance. This also became more generous during the pandemic: From May 1, 2020, until the end of 2020, income from side jobs taken up during short-time work did not reduce an employee's short-time allowance provided that the sum of the short-time allowance and the secondary job did not exceed the previous monthly net income. Afterwards, the earnings from a secondary job with marginal employment have not been deducted from the short-time allowance at all.[3]

In our empirical investigation, we aim to assess in particular how several of these, rather ad hoc, newly introduced design features for the receipt of the short-time work allowance are perceived.

3 Method

To empirically analyze the perceived appropriate amount of the short-time allowance, we conducted a factorial survey experiment (see, e.g., Auspurg and Hinz 2015) included in an online survey. The theoretical considerations underlying the design of the experiment are outlined in Sect. 4.

The survey participants were each provided with four scenarios ("vignettes") describing different situations, for which they were asked to indicate how high they thought the short-time allowance should be. These vignettes varied along a series of dimensions (describing the affected employees and the company) that could take on different levels. These levels were randomly varied as in an experiment. In this way, the causal effect of employee and company characteristics on respondents' assessments can be analyzed. The key advantage of this method is that the respondents are not asked for their assessment

[2] Of course, employers can supplement the short-time allowance to compensate for employees' losses, and collective bargaining agreements or company-specific agreements sometimes contain provisions on supplemental payments.

[3] At the time of the survey, marginally employed persons were allowed to earn up to 450 euros gross per month. Since October 2022, the threshold for marginal employment has been increased to 520 euros.
Additionally, some further changes were temporarily enacted: Marginally employed persons (with a monthly income of 450 euros or less), are generally not eligible to participate in the short-time scheme. During normal times, the same applies to employees whose employment relationship has already been terminated or who are receiving sick pay or who are in temporary agency work. During the pandemic, however, temporary agency workers have also been able to receive short-time allowances. Finally, during the pandemic the Federal Employment Agency reimbursed firms for the social security contributions for lost working hours (until the end of December 2021, to 100 percent; until the end of March 2022, to 50 percent), which is not the case in normal times.

Table 2 Vignette dimensions, levels, and potential justice principles applied

Dimension	Levels	Potential deservingness principles applied and related hypothesis
Share of workforce affected by labor shortage	• 10 percent • One third • 100 percent	No hypothesis
Employee gender	• Male • Female	Control (H1)
Monthly net earnings	• 1500 euros • 2000 euros • 2500 euros • 3000 euros	Need (replacement rate, H2a) Reciprocity (absolute amount, H2b)
Fixed costs (housing etc.)	• Low • High	Need (H3a) Attitude (H3b)
Additional job or further training during short-time work	• 200 euros from new additional job taken up because of short-time work • 500 euros from new additional job taken up because of short-time work • 1000 euros from new additional job taken up because of short-time work • 200 euros from continued additional job conducted before short-time work • 500 euros from continued additional job conducted before short-time work • 1000 euros from continued additional job conducted before short-time work • Full-time further training • Neither secondary job nor further training	Need (additional income, H4a) Reciprocity (continued job, H4b) Attitude (further training, H4c)
Answer category: Amount by duration of short-time pay	• First to third month • Fourth to sixth month • From the seventh month	Need (H5)

by means of single—often relatively abstract—items but based on a specific, easily comprehensible situation about which the respondents should assess several aspects simultaneously.

The survey participants were first given some elementary information on the short-time allowance, such as that the Federal Employment Agency reimburses companies for part of their wage costs and that the federal government has eased the conditions for receiving the short-time allowance in response to the economic crisis (see Appendix A). Some of the respondents were then randomly assigned to receive information on the amount of the short-time allowance and its increase during the COVID-19 pandemic from the fourth month of receipt. In this way, it is possible to examine the extent to which information on the current legal situation serves as an "anchor" upon which the respondents might base their assessments.

The introductory information was followed by the vignettes. The vignette universe—consisting of all possible combinations of levels—contained 384 possible different scenarios. The vignette design is an improved and adapted follow up on a small-scale pre-study (Stephan et al. 2021), which was published as a German-language policy report. We use the entire range of level combinations as none of these were illogical or unrealistic. As mentioned above, the respondents each assessed four scenarios (see Table 2) that were randomly drawn from the vignette universe. An example scenario follows (see the Appendix A for the original German version), with the bolded text varying and being visually highlighted for the respondents:

> *"A company sends **10 percent of the workforce** on short-time work due to the COVID-19 crisis. A single, full-time **male** employee of the company normally earns **2000** euros net per month. He has **high**, fixed monthly expenses (including for his apartment). The company registers him for short-time work with the Federal Employment Agency and releases him completely from work. He receives the short-time allowance. As a result of the short-time work, **he takes on a part-time job** in which he earns an additional **200** euros net per month."*

How much do you think the short-time benefit from unemployment insurance should be for this employee?

In the first to the third month: __ __ __ __ euros per month

In the fourth to the sixth month: __ __ __ __ euros per month

From the seventh month: __ __ __ __ euros per month

After each scenario, the respondents indicated how much they thought the monthly short-time unemployment insurance benefit should be for the person described (who was 100 percent exempt from work in each scenario). A maximum four-digit amount (in euros) could be entered for each of the first three months, for months four to six, and for the period from the seventh month onward, so each respondent could have up to twelve responses.

Each respondent evaluated thus (up to) four vignettes and provided (up to) three assessments for each vignette. The multivariate analysis therefore must consider the hierarchical structure of the data. We cannot assume that a respondent's assessments are independent of each other. First, focusing on the vignettes, we present the results from mixed models with random intercepts at the individual and vignette levels. Second, we extended the mixed model by controlling for a high number of additional individual characteristics, in particular for variables also relevant for survey participation.

As a caveat, we would like to mention that a total release of work is not the standard case for employees working short-time, but easier for respondents to understand than partial reductions of working hours. However, with nearly a quarter of such cases in May 2020, the scenario is not exceptional. Furthermore, we cannot exclude that the chosen dimensions of the vignettes could potentially have an impact on the assessments. In particular, the mere mention of a side job may evoke the association that employees should look for such additional jobs.

4 Theoretical considerations

In the run-up to the new regulations, the amount of short-time allowance was the subject of much controversy in politics and business. As public funding is a scarce good, this discussion raises questions of distributive justice (Austin and Walster 1975; Leventhal 1976; Jasso 1978). Different normative principles might shape the perceptions of the appropriate amount or wage replacement rate of short-time pay. As we are interested in the question if these amounts or replacement rates vary with characteristics of the recipient and the situation, we base our theoretical considerations on the deservingness theory (Reeskens and van Oorschot 2013, Meuleman et al. 2020).

Deservingness theory builds on the notion that benefit recipients, based on different principles, might be perceived as more or less deserving. It is rooted in classical principles of distributive justice, in particular equity (Adams 1965) and need. Furthermore, it encompasses further important heuristics that empirical studies have identified to be significant for justice assessments. The so-called CARIN model (van Oorschot 2000; van Oorschot et al. 2017; Meuleman et al. 2020, Reeskens and van der Meer 2019) summarizes these as the principles of control, attitude, reciprocity, identity, and need: (1) Persons or groups who have more *control* over their situation have better chances of coping with the situation on their own or overcoming a difficult situation, and are thus perceived as less deserving (the reverse is true for groups with less perceived control). (2) *Attitude* displays the gratefulness and also compliance with the system; a "better" attitude makes individuals or groups more deserving of social benefits. (3) *Reciprocity* implies that those who contributed more to the system should receive greater benefits. "Contributions" can be financial (e.g. taxes, social security contributions) or intangible (e.g. volunteering). (4) *Identity* refers to a person's group membership or perceived proximity to those assessing deservingness. (5) According to the *need* principle, groups with greater needs should receive more resources (e.g. people with a low income).

In the following, we discuss the dimensions varied in our vignettes in the order they appear in the scenarios with respect to these principles. We do not formulate a hypothesis on the share of affected workers as this dimension is not directly related to the individual recipient.

Gender is a central category with regard to economic inequalities; e.g., women are discriminated against in terms of wages (Blau and Kahn 2017). However, the control principle implies that neither the appropriate individual replacement rate nor benefit amount should—at least for singles—vary with the gender of the potential recipients (H1).

When assessing the appropriate replacement rate for individuals with *varying labor incomes,* respondents might be guided by the need principle. As employees with lower incomes must often spend a higher share of their earnings on essential expenses as housing and nutrition, a higher replacement cost for them might be deemed appropriate (H2a). However, also the reciprocity principle might be considered when assessing the appropriate amount of short-time work benefits: Employees with higher incomes pay more in social security contributions in absolute terms, and higher contributions justify higher absolute amounts of short-time work benefits, reflecting the principle of reciprocity (H2b). Here the reciprocity principle could, but does not necessarily have to conflict with applying the need principle: Higher replacement rates for low-wage earners might be reconciled with higher absolute amounts for high-wage earners.

To individuals with a high *share of fixed costs* (e.g. for housing), the need principle might be applied, if these costs are considered as "unavoidable". In this case, we might expect that respondents would grant such individuals more short-time pay (H3a). However, high fixed costs might also signal a luxury stile of living and thus show-off attitudes (H3b). In this case, the attitude principle might conflict with the need principle and we might expect less short-time pay for those individuals.

Individuals with *additional earnings from secondary* jobs may be better able to compensate for their income losses. The need principle would thus imply that the perceived appropriate short-time pay might in general decrease with earnings from a side job (H4a). Secondary jobs held before the start of the short-time work, however, might be considered also from the viewpoint of the reciprocity principle. Individuals have contributed to the economy earlier through this side job (potentially also paying social benefits) and thus deserve a return for this (H4b). This would imply that suggested deductions might be smaller for continued side jobs. Furthermore, engaging in further full-time training during times of short-time work with zero working hours could be interpreted as a positive attitude to use the free time during short-time work in a productive way and thus justify higher net replacement rates (H4c).

With respect to the *duration* of short-time work, people can bridge the first few months on short-time work with a lower income, e.g., by liquidating their savings. Doing so could become more difficult if short-time work lasts longer. In this way, the need principle could result in a higher wage replacement rate being considered appropriate as the duration of short-time work increases (H5).

Finally, characteristics of the respondents might also have an impact on their assessments. The identity principle reflects that individuals perceive persons with similar features as themselves as more deserving. This fact might display a tendency toward homophily but can also result from self-interest. We thus presume that individuals who have or expect to have *experience with short-time work* are more generous in their assessments of the appropriate amount or replacement rate during short-time work (H6a). Furthermore, one could speculate that in particular individuals with a lower *household income* might prefer short-time work replacement rates to decline with increasing earnings (H6b).

5 Data

The analyses are based on an online survey of individuals who were randomly drawn from a two-percent sample of the so-called Integrated Employment Biographies (IEB) of the Institute of Employment Research. The IEB contain information on all periods of employment subject to social security contributions, unemployment benefit receipt from the unemployment insurance system, means-tested basic income receipt from the tax system, unemployment, job search and participation in labor market programs. IEB V14.01.00–190927, available at the time of sampling, encompassed all the registered episodes in these states until the end of 2018. The sampling frame contained individuals living in Germany who were between 18 and 70 years old at the time of the data collection and had at least one IEB term during 2018 (see Stephan et al. 2021 for details). It should be noted that it does not contain self-employed persons and civil servants. Both groups might have different views about short-time pay than individuals in dependent work or unemployment.

During November 2, 2020, and December 17, 2020, the potential participants received either an email invitation (if an email address was available in the operative database of the Federal Employment Agency) or an invitation by a postal letter to participate in the survey. Half of the sample randomly received the vignettes described above about short-time work, the other half questions about the fair amount of in-work benefits while receiving means-tested unemployment benefits (Senghaas et al. 2022). Respondents were additionally asked for their consent

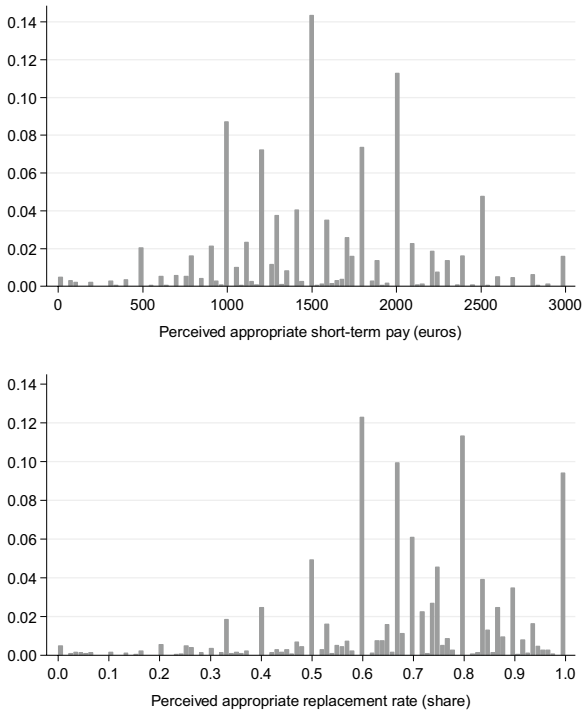

Fig. 1 Distribution of the perceived appropriate amounts and replacement rates of short-time pay (shares). Source: Authors' own calculations. 9,424 observations for 789 persons. 101 bins. Means: 1569 euros and share of 0.70

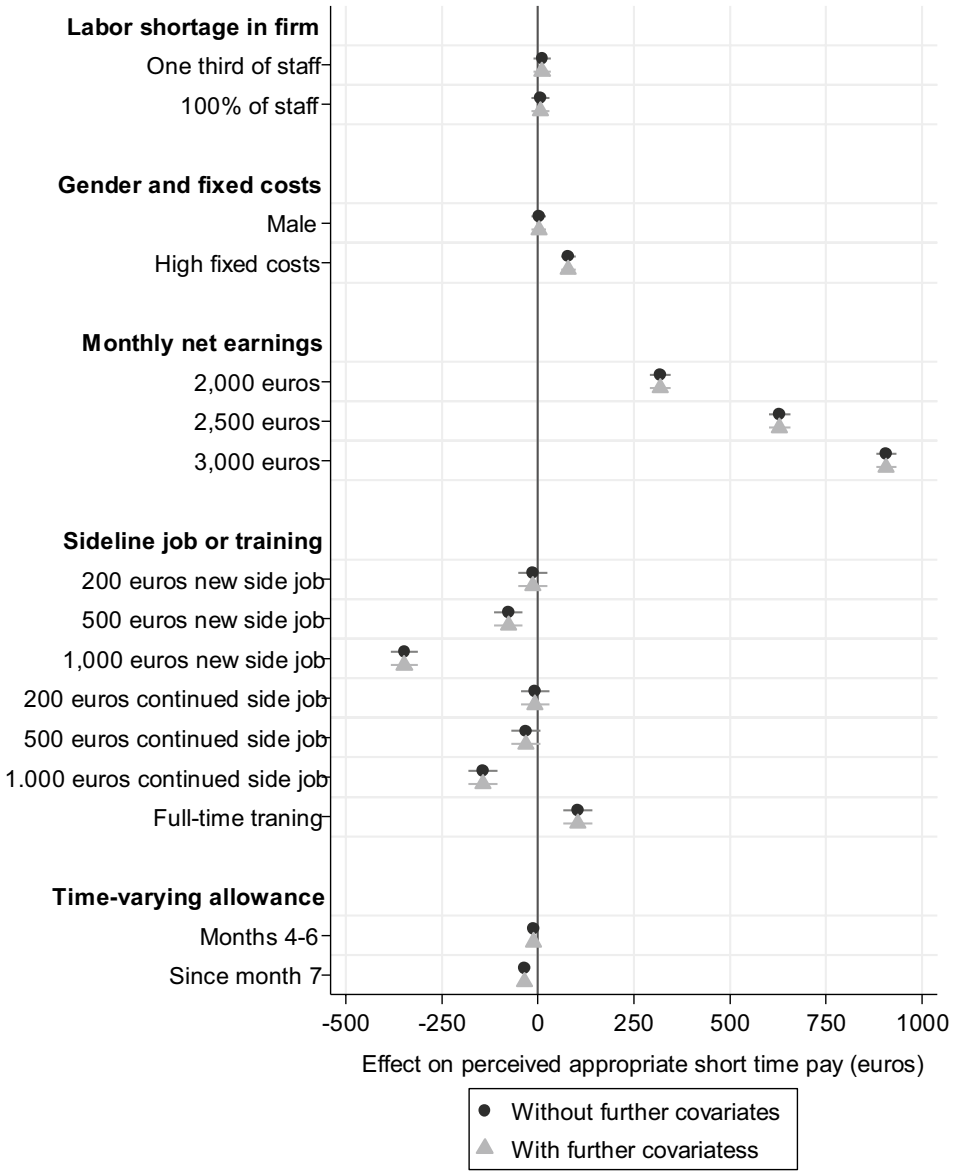

Fig. 2 Estimated effects of the vignette characteristics on the appropriate amount of the short-time allowance. Dependent variable: Perceived appropriate amount of the short-time allowance in euros. Mixed effects models with random intercept at the individual and vignette levels with vignette features only, confidence intervals at $\alpha = 0.05$. Reference vignette features: Labor shortage 10 percent, female worker, low monthly fixed costs, monthly net earnings 1500 euros, neither secondary job nor training, allowance during months 1 to 3 of short-time work. Estimated constants: 1135 and 1194 Euros. Source: Authors' own calculations. 9424 observations for 789 persons

to record linkage, i.e., to merge their answers with the IEB data, which contain detailed information about the respondents' labor market history. From a gross field sample of approximately 42,500 persons drawn from the register data, 30,000 of whom were contacted by email and 12,500 of whom were contacted by post, a final sample of 1120 completed questionnaires was obtained, and 75 percent agreed to merge their survey answers with the IEB information available for them.[4]

At a first glance, the response rate may be perceived as low. However, we contacted the respondents without prior notice, and many of the non-respondents would probably also not participate in other surveys. More importantly, this procedure has the great advantage that

[4] Such consent for record linkage is necessary due to German data protection regulations.

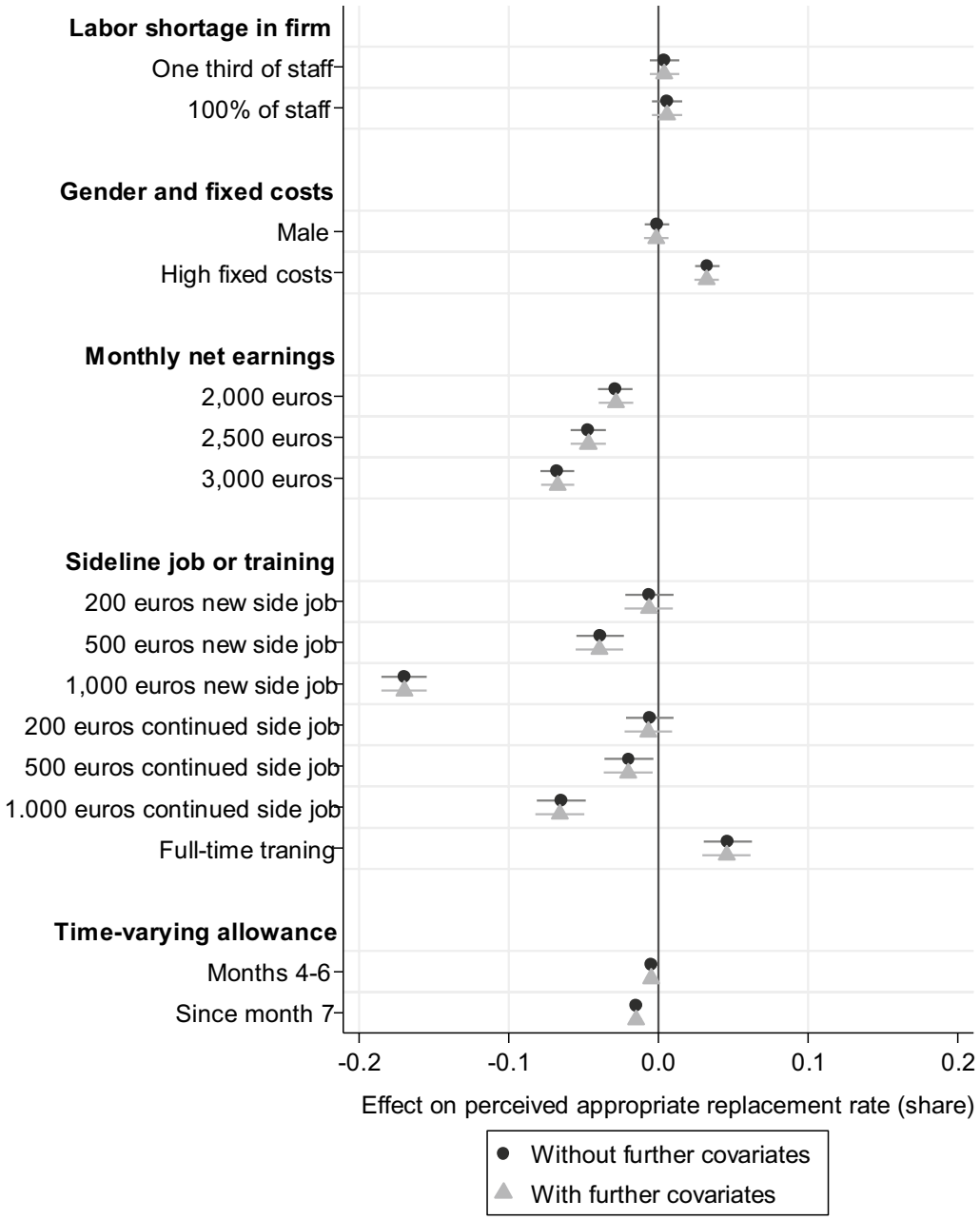

Fig. 3 Estimated effects of the vignette characteristics on the appropriate replacement rate of the short-time allowance. Dependent variable: Perceived appropriate replacement rate as a share. Mixed effects model with random intercept at the individual and vignette levels, vignette features only, confidence intervals at $\alpha = 0.05$. Reference vignette features: Labor shortage 10 percent, female worker, low monthly fixed costs, monthly net earnings 1500 euros, neither secondary job nor training, allowance during months 1 to 3 of short-time work. Estimated constants: 0.76 and 0.79. Source: Authors' own calculations. 9424 observations for 789 persons

it allows us to investigate in detail the selection into the survey participation and to control in the estimates for the factors driving this selection. These factors are usually unknown when working, e.g., with an online commercial panel. For instance, we found that participation probabilities were higher for persons with German nationality and increased with educational levels, the requirement levels of the latest job, years spent in employment and unemployment benefits (see Stephan et al 2021). We included such variables as the controls in our estimates. Nonetheless, non-respondents might still differ significantly from the respondents in terms of unobserved characteristics.

Thus, their opinions may not accurately represent the population being studied. This limits the generalizability of our findings.

The subsequent analysis is restricted to the respondents who answered at least one of the four vignettes presented to them, had no missing values for the relevant variables, and who agreed to merge their survey answers with the IEB information available on them. We merged the information from the IEB V15.00.00-201912, which encompasses the period until the end of 2019, with the survey data. Furthermore, we excluded a few answers where the assigned short-time allowance would have been higher than the original earnings. These individuals might not have taken the task seriously, or they might have misunderstood the question. The resulting final sample encompassed 789 persons.

Column (1) in Table 3 in Appendix B provides information on the composition of the survey sample. While the sample is not representative of the population, the focus of the study is also not on descriptive findings but on the effects of the vignette and respondent characteristics on the responses. A majority of the respondents (58 percent) were male, of German nationality (95 percent), and from West Germany (83 percent). According to the questionnaire self-reports, 76 percent were employed at the time of the survey; 7 percent were attending school, in vocational training or were students; 7 percent were unemployed; and 6 percent were retired. The respondents were therefore mainly employees who paid unemployment insurance contributions as part of their employment subject to social insurance contributions and who could be recipients of the short-time allowance themselves.

The theoretical considerations partly refer to the absolute amount of the short-time work allowance and partly to the wage replacement rate. In the following, we present the results for both outcomes. In the survey, we asked for the absolute amount of the short-time work benefit deemed appropriate. The wage replacement rate was computed as the proportion of the previous net income of the person described. With the exception of the net income variables, the replacement rate was thus a nonlinear transformation of the original outcome variable.

6 Results

Figure 1 shows the distributions of the perceived appropriate absolute amounts and replacement rates. The answers were distributed over the entire available spectrum of answers, with bunching in particular at multiples of 500 and 0.1. The average specified amount over all the answers was 1569 euros, and the mean implicated replacement rate was 70 percent. This is somewhat higher than the factual replacement rate for persons without children, which amounts to 60 percent, or for workers with at least one child, which is 67 percent. This finding should, however, not be overstated, as it displays the mean for the situations presented to the respondents—and as predicted on the base of the deservingness theory, we find that assessments of the appropriate amounts and replacement rates vary across scenarios.

Figures 2 and 3 present our main results. For each outcome variable, we first estimated a model containing only the vignette features and the time-varying allowance as explanatory variables. A second model extends the random intercept model by including a broad number of additional control variables (see also Table 3 in Appendix B). These include the anchoring information and information on the respondent (own short-time work benefit receipt, gender, nationality, age group, household net income category, educational level, actual labor market state, tasks in last job, and years in particular labor market states during the previous six years). Estimation results are displayed in detail in Table 4 in Appendix B.

The estimated effects of the vignette characteristics are qualitatively rather stable across both models. In line with our theoretical considerations, neither the appropriate amount of short-time allowance nor the replacement rate varied with the *gender* of the described person. This finding is compatible with H1 and the consideration that with respect to gender (at least for singles), the control principle is applied.

There is some support that the need principle was considered by the respondents when assessing the appropriate amount of short-time work benefits. In accordance with H2a, the *monthly net earnings* played a role when determining the perceived appropriate replacement rate (Fig. 3), which fell by 2 to 3 percentage points with 500 euros of additional income. With respect to the reciprocity principle, however, we presumed that—in appreciation of previous social security contributions—higher net monthly earnings should justify higher amounts of short-time work compensation. Indeed, Fig. 2 shows that the perceived appropriate amount increased by approximately 300 euros per 500 euros additional earnings, which is in line with H2b. The additional amount, however, slightly decreased with income, as was reflected in the replacement rate. Thus, two different principles seem to apply, which are, however, not necessarily at odds with each other.

We noted in the theory section that in the case of high *fixed costs*, there is a possible trade-off between the needs and the attitude principle. As we presumed in H3a, individuals with high, fixed monthly costs were granted approximately 80 euros or 3 percentage points more of a short-time allowance compared to those with low monthly fixed costs. For this dimension, needs considerations empirically obviously dominated any possible

conclusions about a more luxurious life style and related attitudes (H3b).

The effects of having a *secondary job* depended on the amount of additional income, which also indicates that respondents take the need principle (H4a) into account (although not in a linear fashion). They were not in favor of deductions from the short-time allowance for new or continued secondary jobs with earnings of 200 euros per month. For 500-euro jobs during short-time pay, the point estimates also indicated that low (new job) or insignificant (continued job) deductions were perceived as appropriate. For side jobs with 1,000 euro per months, however, respondents felt that higher deductions should take place. This implies that H4a is at least partly supported. Furthermore, there is some support for H4b, which presumed that workers have contributed to the economy earlier through this side job and might just keep more earnings from continued than from new side jobs: If side jobs with earnings of 1000 euros existed before the short-time work started, the perceived appropriate reduction amounted to approximately 140 euros or 7 percentage points. For new 1000-euro secondary jobs, the perceived appropriate deduction more than doubled and accounted to approximately 350 euros or 17 percentage points. As stated in H4c and in line with the attitude principle, the respondents actually honored taking up a productive activity *full-time further training* during the free time, with an additional compensation of approximately 100 euros or 5 percentage points per month.

With respect to the *potential benefit duration*, an important result of our study is that we find no evidence that the short-time allowance should increase over time, as the need principle could be supposed to imply. In contrast, the survey participants were in favor of small decreases in the short-time allowances over time. Thus, H5 must be rejected.

Figures 4 and 5 in Appendix B display the results from the basic random intercept model (without further covariates), distinguishing by the survey participants who *have already received, are receiving or expect to receive short-time compensation and all other respondents.* The first group may identify more closely with the individuals described in the vignettes and have a greater self-interest in more generous short-time pay regulations. The identity principle might thus apply. Comparing both groups, however, only few differences can be observed in the determinants of the absolute amount (Fig. 4) or the replacement rate (Fig. 5). Only those without short-time pay experience considered it appropriate to reduce the short-time allowance with the duration of the short-time work. Thus, hypothesis H6a is partly confirmed. We furthermore differentiate between respondents with a monthly net household income up to 3,999 euros (37 percent of the sample) and those with 4,000 euros and more per month (45 percent of the sample); for the remaining share this information is missing. It might be presumed that respondents with a higher household income would opt for larger absolute benefits with increasing monthly wages and would be less inclined to shorten the replacement rate with increasing wages. Figures 6 and 7 in Appendix B indicate indeed small differences in the point estimates, but none of these differences is statistically significant. We thus find no support for H6b.

Finally, the results for the further covariates used in the extended random intercept model are shown in Columns (2) and (3) of Table 3 in Appendix B. We did not detect any effect for the anchoring information when controlling for a high number of additional individual characteristics of the respondent. Only one of these variables had a significant impact on the assessments of the amount and replacement rate of short-time pay: Individuals without a vocational degree would pay approximately 270 euros or 11 percentage points less. However, the share of this group among the respondents was only 3 percent, and most of the survey participants did have either a vocational or a university degree.

7 Conclusions

In the wake of the COVID-19 pandemic, short-time work schemes have become arguably the most important labor market policy instrument in many OECD countries. However, the specific regulations differ among the countries (e.g., Konle-Seidl 2020; OECD 2020). Germany, a country with long experience in the use of short-time work, has made the regulations much more generous in the course of the crisis than they have been in "normal" times. This paper examines the extent to which various design features are regarded as appropriate by people from the German workforce. For this purpose, we conducted a factorial survey experiment and interpret our findings against the background of the deservingness theory.

We find that assessments of the appropriate amounts and replacement rates do indeed vary with the perceived deservingness of recipients. Thus, we summarize our findings along the CARIN dimensions of deservingness theory: First, the fact that the gender of recipients makes no difference to the respondents is in line with the *control principle*. In accordance with the *attitude principle,* respondents perceive individuals participating in further training during short-time work as more deserving. Consistent with the *reciprocity principle*, the respondents consider an increase in short-time compensation in absolute terms to be appropriate if earnings—and thus social security contributions—increase. It is also compatible

with this principle that workers with a continued secondary job might—from the viewpoint of survey participants—keep a larger part of the earnings than those with a new side job. The *identity principle* could explain the fact that only respondents without short-time pay experience render it appropriate to reduce the short-time allowance with the duration of the short-time work. Finally, the respondents considered the *need principle* in many respects: They grant a greater short-time allowance to persons with high monthly fixed costs, they preferred a higher wage replacement rate for employees with lower earnings, and they partially counted higher additional earnings from secondary jobs against the short-time allowance. However, as the duration of short-time work increased, the respondents, on average, prefer to reduce short-time pay slightly. This is in contrast to what the need principle implies.

Over all scenarios, respondents assessed the mean appropriate replacement rate to be about 70 percent; the factual replacement rate in Germany for persons without children amounts to 60 percent, and 67 percent for employees with children. We would, however, not overstate this finding as our scenarios are quite specific and the findings show that assessments vary across scenarios. Compared with further statutory regulations in Germany, the respondents in our empirical study would design some features of the short-time allowance differently. First, the statutory regulations generally stipulate that the amount of the short-time allowance is based on current earnings (up to the contribution assessment ceiling). From a policy perspective, according to our results, a wage replacement rate that (slightly) decreases with income or a minimum amount of short-time allowance for low-wage earners should be considered. Second, with regard to the crediting of side jobs, the respondents do not seem to be oriented toward absolute limits for newly taken up secondary jobs. While German legislation allowed for a deduction-free additional income of 450 euros from such activities, respondents would leave more than 650 euros from an additional income of 1000 euros. For continued side jobs, the respondents tended to be somewhat stricter than the legislature, who in this case would not count the additional earnings toward the short-time allowance. Finally, a very clear difference emerged in the development of the wage replacement rate over time: During the pandemic, legislation provided for rising wage replacement rates over time, which was not reflected in the respondents' assessments.

As a caveat, we would like to mention that the generalizability of our results is limited by the fact that our data are based on a survey with a rather low response rate and that survey participants might differ from non-participants in terms of unobserved characteristics. Further research on this topic might thus enrich our knowledge about the determinants of the assessed appropriate amount and replacement rate of short-time pay.

Appendix A

Information text (always shown)

Translated version

During the COVID-19 crisis, many companies registered for short-time work. When employees are affected by a loss of work, the Federal Employment Agency reimburses part of the wage costs. The employees do not have to pay taxes or make social security contributions on the short-time allowance. During the COVID-19 crisis, the German government eased the conditions for receiving short-time work.

We would like you to tell us how you think the short-time allowance should be designed. To this end, we describe below four situations in which employees receive short-time working benefits. The situations are partly similar but not identical. Please indicate which benefits you consider appropriate in each situation described. There is no "right" or "wrong". We are interested in your assessment.

Original German version

In der Corona-Krise haben viele Betriebe Kurzarbeit angemeldet. Wenn Beschäftigte von Arbeitsausfall betroffen sind, erstattet die Bundesagentur für Arbeit einen Teil der Lohnkosten. Die Beschäftigten müssen das Kurzarbeitergeld weder versteuern noch Sozialversicherungsbeiträge dafür zahlen. In der Corona-Krise hat die Bundesregierung die Bedingungen für den Bezug von Kurzarbeit erleichtert.

Wir möchten gerne von Ihnen wissen, welche Ausgestaltung des Kurzarbeitergeldes Sie für angemessen halten. Wir beschreiben dazu im Folgenden vier Situationen, in denen Beschäftigte Kurzarbeitergeld beziehen. Die Situationen sind teilweise ähnlich, aber nie gleich. Bitte geben Sie an, welche Leistungen Sie in der jeweils beschriebenen Situation für angemessen halten. Es gibt kein „richtig " oder „falsch ". Wir sind an Ihrer Einschätzung interessiert.

Anchor information (shown to half of the respondents)

Translated version

In the case of short-time benefits, the Federal Employment Agency usually pays 60 percent of the lost net wages for the first three months (67 percent for employees with children). In the COVID-19 crisis, the short-time allowance increased to 70 percent from the fourth month (77 percent for employees with children) and to 80 percent

from the seventh month (87 percent for employees with children).

Income from a secondary job is usually counted toward the short-time allowance if the secondary job was taken up while the employee was receiving the short-time allowance. If the income existed prior to the receipt of the short-time allowance, it was not counted. In the COVID-19 crisis, the following applied until the end of 2020: Income from secondary employment was not counted toward the short-time allowance under any circumstances, provided the income from the secondary employment and the short-time allowance did not exceed the total income from employment prior to the short-time allowance.

Original German version:

Beim Kurzarbeitergeld übernimmt die Bundesagentur für Arbeit üblicherweise in den ersten drei Monaten 60 Prozent des entgangenen Nettolohns (67 Prozent bei Beschäftigten mit Kind). In der Corona-Krise steigt das Kurzarbeitergeld derzeit ab dem vierten Monat auf 70 Prozent (77 Prozent für Beschäftigte mit Kind) an, ab dem siebten Monat auf 80 Prozent (87 Prozent für Beschäftigte mit Kind).

Einkommen aus einer Nebentätigkeit werden üblicherweise auf das Kurzarbeitergeld angerechnet, wenn die Nebentätigkeit während des Bezugs von Kurzarbeitergeld neu aufgenommen wurde. Haben die Einkünfte schon vor dem Bezug von Kurzarbeitergeld bestanden, werden sie nicht angerechnet. In der Corona-Krise gilt bis Ende des Jahres 2020: Einkommen aus Nebentätigkeiten werden in keinem Fall auf das Kurzarbeitergeld angerechnet, so lange die Einkünfte aus der Nebentätigkeit und das Kurzarbeitergeld in der Summe nicht höher sind als das Einkommen aus der Beschäftigung vor der Kurzarbeit.

Original German version of the vignettes

Ein Unternehmen schickt aufgrund der Corona-Krise 10 Prozent der Belegschaft / ein Drittel der Belegschaft/ die gesamte Belegschaft in Kurzarbeit. Eine alleinstehende Vollzeit-Beschäftigte/ein alleinstehender Vollzeit-Beschäftigter des Unternehmens verdient normalerweise monatlich 1.500/2.000/2.500/3.000 Euro netto (also nach Abzug von Steuern und Sozialversicherungsbeiträgen). Er / Sie hat monatlich hohe/geringe feste Kosten (unter anderem für seine/ihre Wohnung).

Das Unternehmen meldet für ihn / sie bei der Bundesagentur für Arbeit Kurzarbeit an und stellt ihn / sie vollständig von der Arbeit frei. Er / Sie erhält Kurzarbeitergeld.

Er/sie nimmt infolge der Kurzarbeit einen Nebenjob an, in dem er/sie 200/500/1.000 Euro netto monatlich dazuverdient. Er/sie hatte bereits vor der Kurzarbeit einen Nebenjob, in dem er/sie 200/500/1.000 Euro netto monatlich dazuverdient. Diesen Nebenjob übt er/sie weiter aus. Er/sie nimmt während der Kurzarbeit an einer ganztätigen beruflichen Weiterbildung teil. Er/sie hat keinen Nebenjob und nimmt während der Zeit in Kurzarbeit nicht an beruflicher Weiterbildung teil.

Wie hoch sollte Ihrer Ansicht nach das Kurzarbeitergeld (netto) aus der Arbeitslosenversicherung für diese Person sein?

Im ersten bis dritten Monat: _____Euro monatlich.
Im vierten bis sechsten Monat: _____Euro monatlich.
Ab dem siebten Monat _____Euro monatlich.

Appendix B

See Figs. 4, 5, 6 and 7 and Tables 3 and 4.

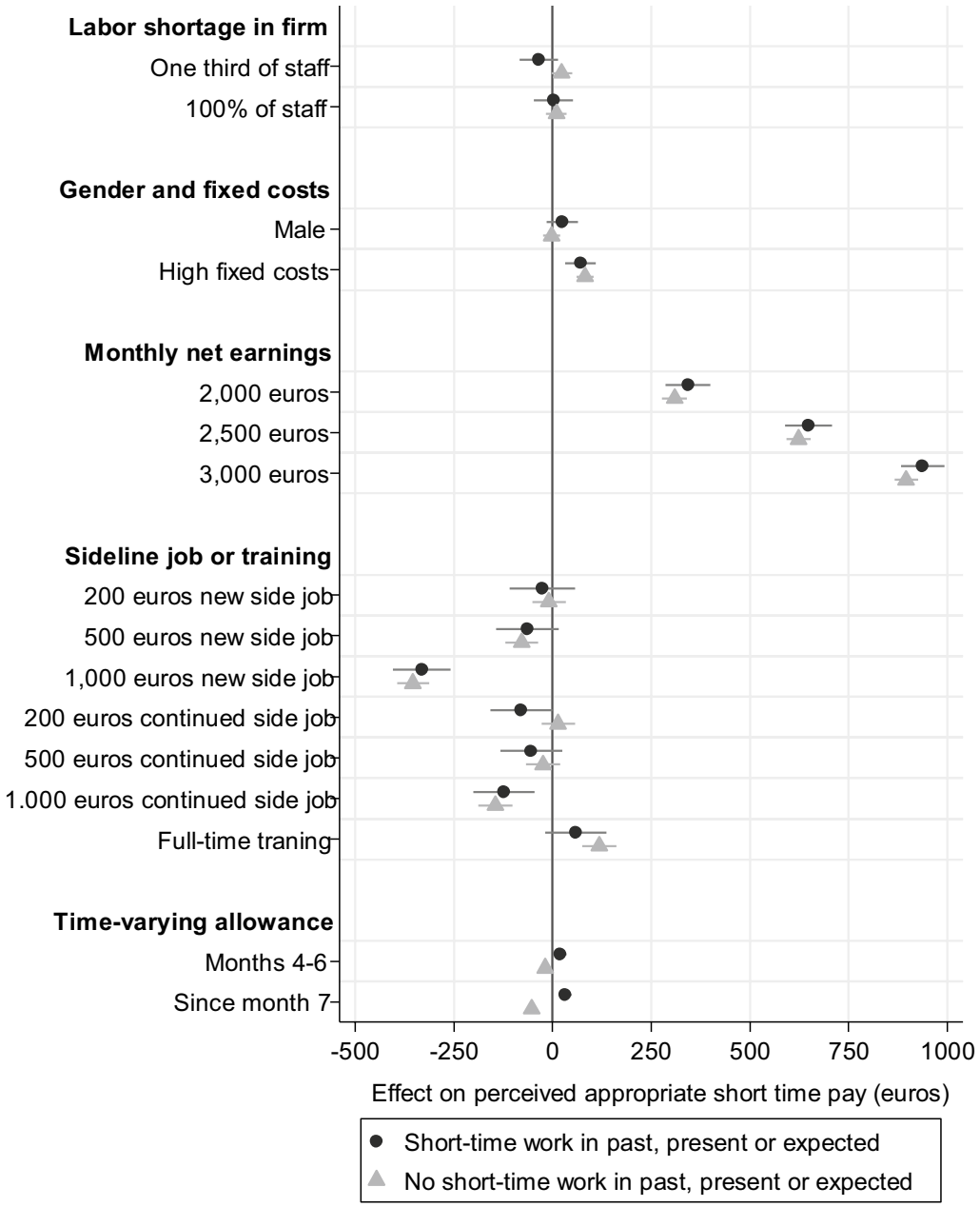

Fig. 4 Estimated effects of the vignette characteristics on the amount of the allowance by (potential) experience with short-time work. Dependent variable: Perceived appropriate amount of the short-time allowance in euros. Mixed effects model with random intercept at the individual and vignette levels. Vignette features only, confidence intervals at $\alpha = 0.05$. Reference vignette features: Labor shortage 10 percent, female worker, low monthly fixed costs, monthly net earnings 1500 euros, neither secondary job nor training, allowance during months 1 to 3 of short-time work. Source: Authors' own calculations. 9424 observations for 789 persons

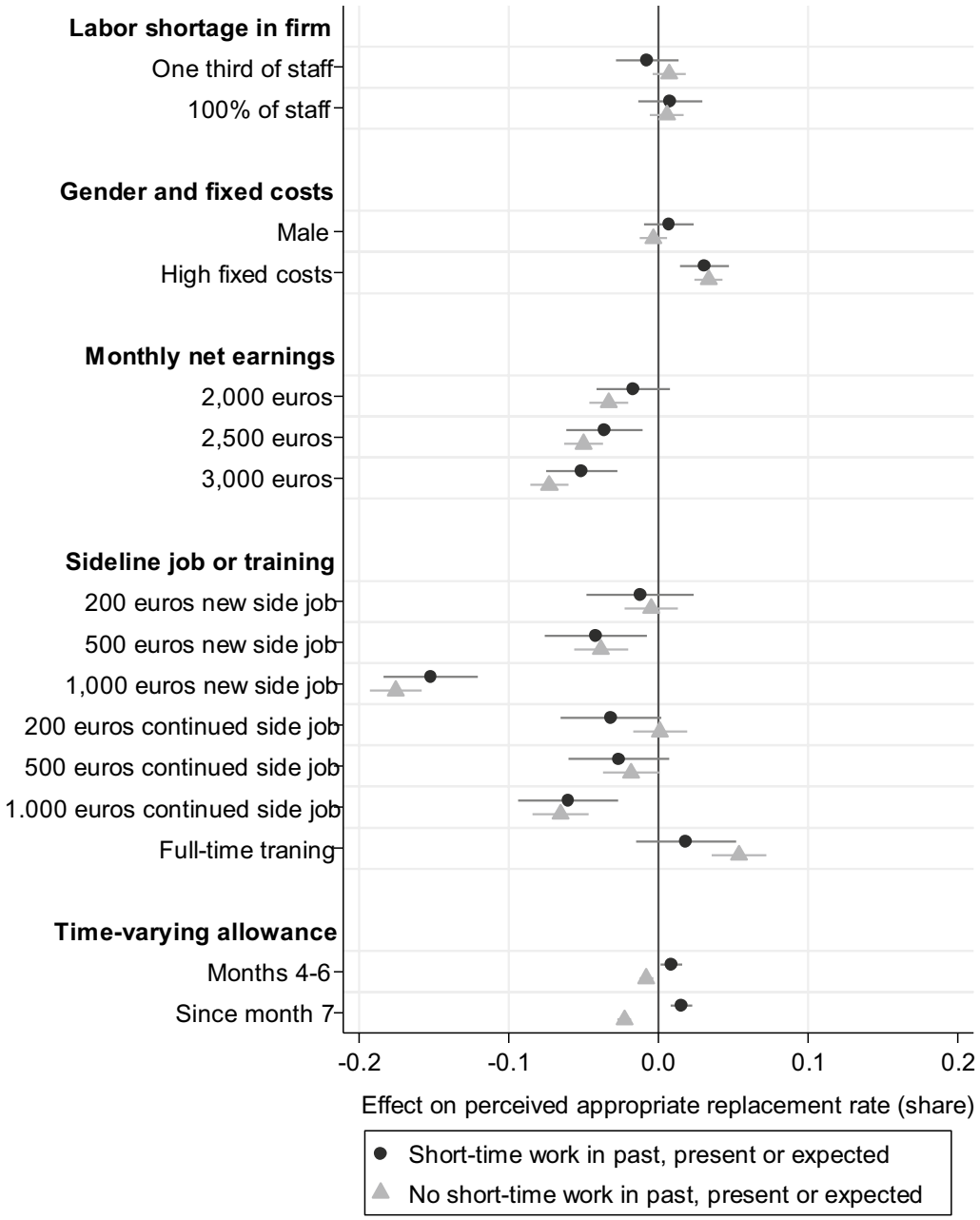

Fig. 5 Estimated effects of the vignette characteristics on the replacement rate by (potential) experience with short-time work. Dependent variable: Perceived appropriate replacement rate as a share. Mixed effects model with random intercept at the individual and vignette levels, vignette features only, confidence intervals at $\alpha = 0.05$. Reference vignette features: Labor shortage 10 percent, female worker, low monthly fixed costs, monthly net earnings 1,500 euros, neither secondary job nor training, allowance during months 1 to 3 of short-time work. Source: Authors' own calculations. 9,424 observations for 789 persons

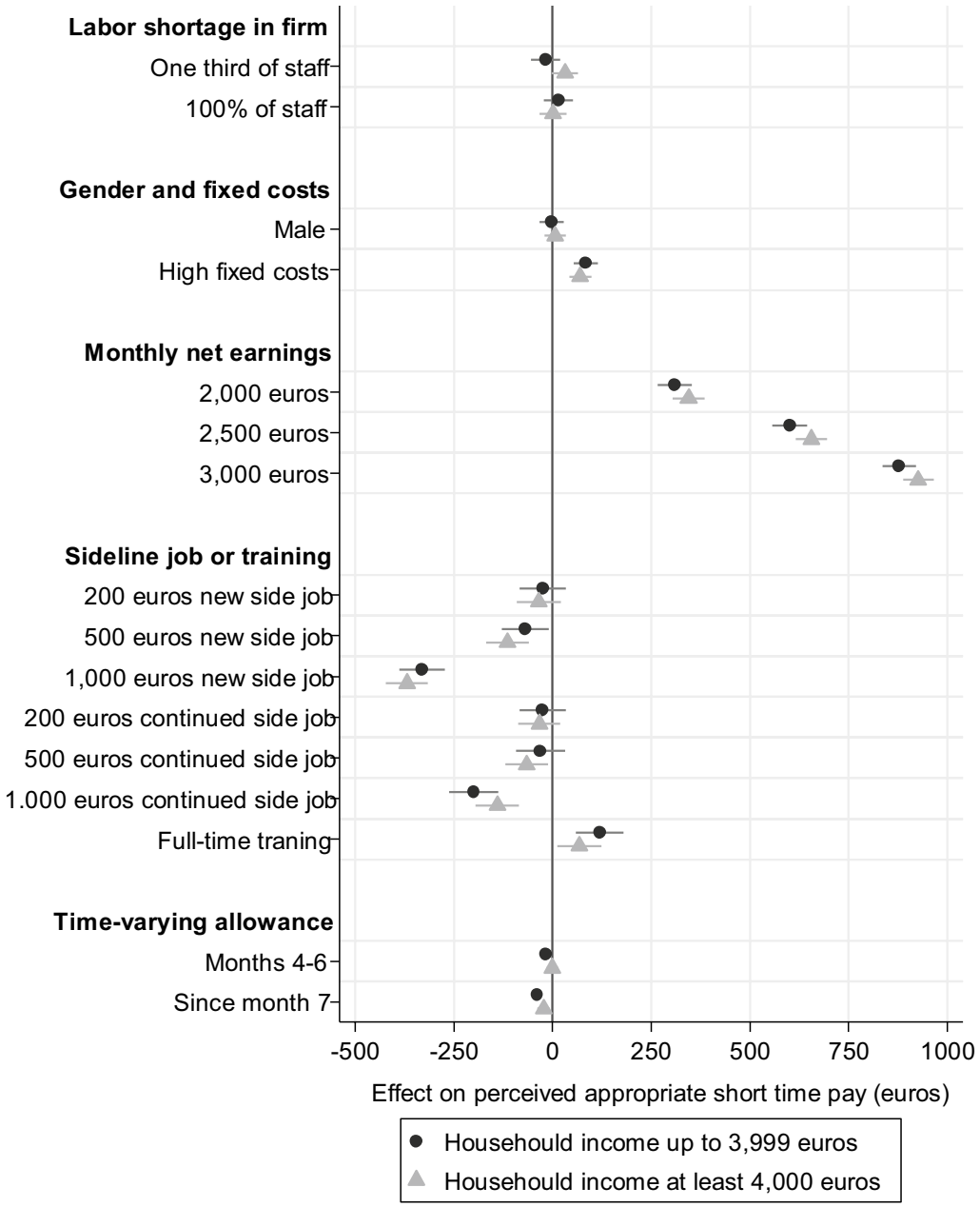

Fig. 6 Estimated effects of the vignette characteristics on the amount of the allowance by monthly household net income. Dependent variable: Perceived appropriate amount of the short-time allowance in euros. Mixed effects model with random intercept at the individual and vignette levels. Vignette features only, confidence intervals at $\alpha = 0.05$.Reference vignette features: Labor shortage 10 percent, female worker, low monthly fixed costs, monthly net earnings 1500 euros, neither secondary job nor training, allowance during months 1 to 3 of short-time work. Source: Authors' own calculations. 7741 observations for 2591 persons

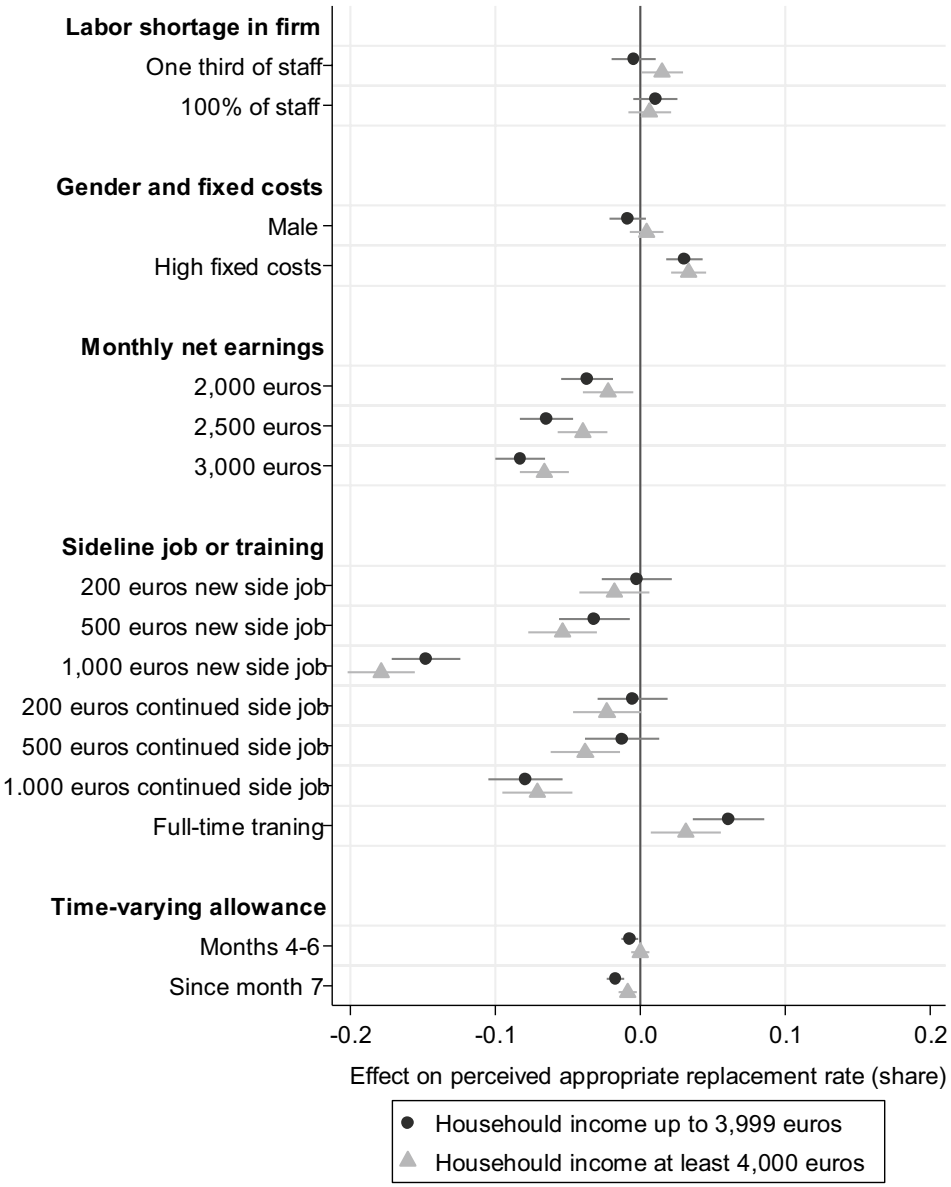

Fig. 7 Estimated effects of the vignette characteristics on the replacement rate by (potential) experience by monthly household net income. Dependent variable: Perceived appropriate replacement rate as a share. Mixed effects model with random intercept at the individual and vignette levels, vignette features only, confidence intervals at $\alpha = 0.05$. Reference vignette features: Labor shortage 10 percent, female worker, low monthly fixed costs, monthly net earnings 1500 euros, neither secondary job nor training, allowance during months 1 to 3 of short-time work. Source: Authors' own calculations. 7741 observations for 2591 persons

Table 3 Means and estimated coefficients of the anchoring information and the characteristics of the respondents

	Mean (1)	Amount (2)	Replacement rate (3)
Anchoring information (reference: none)			
Yes	0.440	14.759	0.006
	(0.496)	(23.351)	(0.010)
Short-time work pay receipt (reference: No)			
During past, present, or expected	0.205	23.699	0.010
	(0.404)	(30.024)	(0.013)
Male	0.584	− 22.225	− 0.009
	(0.493)	(23.928)	(0.010)
Non-German nationality	0.049	47.438	0.019
	(0.215)	(56.129)	(0.024)
East Germany	0.167	35.589	0.014
	(0.373)	(31.492)	(0.014)
Age group (reference: up to 29)			
Age 30–39	0.275	73.063	0.028
	(0.447)	(43.490)	(0.019)
Age 40–49	0.204	− 81.180	− 0.038
	(0.403)	(46.910)	(0.020)
Age 50–59	0.238	7.395	− 0.000
	(0.426)	(45.423)	(0.020)
Age 60 and older	0.128	− 51.833	− 0.026
	(0.335)	(56.618)	(0.024)
Monthly household net income (reference: up to 2,999 euros)			
3000 up to 3999 euros	0.228	− 69.983	− 0.029
	(0.420)	(37.026)	(0.016)
4000 up to 4999 euros	0.206	− 30.936	− 0.013
	(0.404)	(38.691)	(0.017)
At least 5000 euros	0.169	31.304	0.012
	(0.374)	(41.455)	(0.018)
Information missing	0.179	− 22.379	− 0.016
	(0.383)	(43.384)	(0.019)
Education (reference: vocational degree)			
No vocational degree	0.027	− 266.745**	− 0.114**
	(0.161)	(78.646)	(0.034)
University degree	0.432	− 40.602	− 0.016
	(0.495)	(28.274)	(0.012)
Other degree	0.063	− 34.918	− 0.022
	(0.244)	(62.156)	(0.027)
Actual labor market state (reference: employed)			
Unemployed	0.071	− 33.953	− 0.016
	(0.257)	(48.607)	(0.021)
In school, studies, training	0.065	22.668	0.005
	(0.246)	(60.613)	(0.026)
Retired	0.058	30.158	0.016
	(0.235)	(62.580)	(0.027)
Other state	0.044	87.265	0.029
	(0.205)	(59.389)	(0.026)
Tasks in last job (professional activities)			
Helper activities	0.080	31.623	0.009
	(0.272)	(46.896)	(0.020)
Complex specialist activities	0.194	24.113	0.010
	(0.396)	(32.693)	(0.014)
Highly complex specialist	0.254	− 3.968	− 0.003
	(0.436)	(32.645)	(0.014)
Years in particular states during the period 2014–2020			
Regular employment	4.548	− 5.953	− 0.003
	(1.843)	(9.257)	(0.004)
Marginal employment	0.591	− 2.427	0.000
	(1.290)	(9.874)	(0.004)
Unemployment benefits	0.191	18.956	0.007
	(0.425)	(29.622)	(0.013)
Welfare benefits	0.205	− 7.370	− 0.004
	(0.921)	(14.183)	(0.006)

Standard errors in parentheses.Columns (2) and (3): Mixed effects model with random intercept at the individual and vignette levels. Source: Authors' own calculations. 9424 observations for 789 persons.

*p < 0.05.

**p < 0.01

Table 4 Estimated effects of the vignette characteristic on the appropriate amount of short-time pay and the appropriate replacement rate

	Amount		Replacement rate	
	(1)	(2)	(3)	(4)
Share of staff affected by labor shortage (reference: 10%)				
One third	11.293	11.254	0.004	0.004
	(11.819)	(11.816)	(0.005)	(0.005)
100 percent	8.184	7.525	0.006	0.006
	(11.937)	(11.930)	(0.005)	(0.005)
Gender and fixed costs (independent categories; reference: Female and low fixed costs)				
Male	3.511	2.848	− 0.001	− 0.001
	(9.648)	(9.646)	(0.004)	(0.004)
High fixed costs	79.795**	79.347**	0.033**	0.032**
	(9.727)	(9.719)	(0.004)	(0.004)
Monthly net earnings (reference: 1,500 euros)				
2.000 euros	317.950**	318.902**	− 0.029**	− 0.028**
	(13.876)	(13.873)	(0.006)	(0.006)
2.500 euros	628.920**	629.295**	− 0.047**	− 0.047**
	(14.041)	(14.025)	(0.006)	(0.006)
3.000 euros	905.734**	906.453**	− 0.068**	− 0.067**
	(13.431)	(13.421)	(0.006)	(0.006)
Additional side job or further training during short time work (reference: neither)				
200 euros, new job	− 12.200	− -12.437	− 0.006	− 0.006
	(19.213)	(19.205)	(0.008)	(0.008)
500 euros, new job	− 75.944**	− 76.802**	− 0.039**	− 0.039**
	(19.046)	(19.036)	(0.008)	(0.008)
1000 euros, new job	− 346.944**	− 347.306**	− 0.170**	− 0.170**
	(18.167)	(18.160)	(0.008)	(0.008)
200 euros, continued job	− 4.932	− 6.877	− 0.006	− 0.007
	(19.009)	(19.008)	(0.008)	(0.008)
500 euros, continued job	− 30.688	− 31.369	− 0.020*	− 0.020*
	(19.493)	(19.477)	(0.008)	(0.008)
1000 euros, continued job	− 141.149**	− 143.212**	− 0.065**	− 0.066**
	(19.502)	(19.505)	(0.008)	(0.008)
Further training	105.670**	104.001**	0.046**	0.046**
	(19.370)	(19.365)	(0.008)	(0.008)
Time-varying allowance (reference: months 1 to 3)				
Months 4–6	− 10.608*	− 10.603*	− 0.005*	− 0.005*
	(4.604)	(4.604)	(0.002)	(0.002)
Since month 7	− 34.710**	− 34.712**	− 0.015**	− 0.015**
	(4.606)	(4.606)	(0.002)	(0.002)
Further controls	No	Yes	No	Yes
Constant	1134.758**	1193.968**	0.758**	0.790**
	(21.166)	(66.097)	(0.009)	(0.029)
R squared	0.601	0.601	0.239	0.239
AIC	131681	131684	− 14311	− 14306
ICC	0.811	0.803	0.807	0.799

Table 4 (continued)

Standard errors in parentheses. Mixed effects models with random intercept at the individual and vignette levels. Further controls in Columns (2) and (4): See Table 3. Source: Authors' own calculations. 9424 observations for 789 persons.

*p < 0.05

**p < 0.01

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Author contributions
The cited authors contributed insights in all parts of the paper. All authors read and approved the final manuscript.

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Availability of data and materials
As the data underlying our analysis are not completely proprietary, access to the data is restricted. The data used contain sensitive information and are subject to confidentiality regulations. Obtaining access through the research data center of the Institute for Employment Research (IAB) requires a contract with IAB. We will support researchers interested in replicating the results with the required formalities to receive data access.

Declarations

Ethics approval and consent to participate
Not applicable.

Consent for publication
Not applicable.

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

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