When (Declaring) Work Doesn't Pay: The Effect of Transfer Withdrawal Rates on Formal and Informal Labor Supply

Preliminary draft, please do not cite or quote without the authors' permission

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This draft: 2026-05-27

Abstract

We study how marginal effective tax rates of means-tested social welfare programs affect labor supply in the formal and informal sector. In a conjoint experiment, German welfare recipients report which jobs they might accept under different policy scenarios, varied in a between-subjects treatment design. We find that high transfer withdrawal rates negatively affect labor supply in the formal sector and thus increase the relative attractiveness of informal work.These results provide novel evidence on the adverse implications of high transfer withdrawal rates and highlight the need for reform initiatives aiming at stronger labor supply incentives.

JEL classification codes: J22, J46, J48, H26, H31, H53
Keywords: Transfer Withdrawal Rates, Labor Supply, Undeclared Work, Conjoint Experiment
Ethics clearance: Ethics Commission, Department of Economics, University of Munich, Project 4180
Pre-Registration: AEARCTR-0013250

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1 Introduction

Minimum income support systems are designed to provide insurance against income risk while preserving incentives to participate in the labor market (Natili 2023; Almeida, De Poli, and Hernández 2022). This fundamental trade-off between insurance value and efficiency costs lies at the core of social protection policy. Means-tested schemes, in particular, offer targeted insurance by concentrating transfers on low-income households. As earnings rise, benefits are withdrawn. A large literature studies how welfare programs' marginal effective tax rates affect labor supply along the extensive and intensive margins. Yet, these incentives may not only shape decisions regarding formal employment. When formal earnings are heavily taxed through benefit withdrawal, minimum income support can also distort employment choices toward informal work (Liepmann and Pignatti 2024). Such shifts undermine efficiency by reducing tax revenues, weakening social insurance financing, and slowing formal labor market integration. Understanding the effect of benefit withdrawal on informality is central for assessing the overall efficiency of minimum income schemes.

The effect of benefit withdrawal in social assistance on informal labor supply has so far primarily been studied in developing countries, where usually benefits are lost entirely as soon as people enter formal employment. Bergolo and Cruces (2021) study a social assistance program in Uruguay where individuals lose the benefit entirely when they report income above a cutoff point and show that this notch leads to 6ppts lower formal employment. Pritadrajati (2023) shows that an unconditional cash transfer in Indonesia leads to significant decreases in employment and job formality. Gerard and Gonzaga (2021) use changes in the Brazilian unemployment insurance to assess efficiency costs of insurance, including informality responses.

These studies typically take the underlying institutional design as given and exploit natural experiments for identification. They do not allow for a clean analysis of gradual benefit withdrawal or systematic variation in marginal effective tax rates. Yet, in many developed countries earnings are gradually taxed away through phased benefit withdrawal, such as in the United States, the United Kingdom, France, the Netherlands, and Belgium (Immervoll 2009). In such settings, the central policy problem is not whether to impose work incentives, but how to set marginal tax rates that optimally trade off insurance provision against efficiency losses.

We complement the existing literature by directly varying marginal effective tax rates in a controlled setting, allowing us to isolate the causal effect of work incentives from other institutional features. To this end, we conduct an online survey in which welfare recipients evaluate job offers in a conjoint experiment. Offered jobs include formal employment as well as informal employment, introduced as "jobs without registration". Such signal words are commonly used to negotiate undeclared work (Doerr and Necker 2021; Burgstaller, Doerr, and Necker 2023). Policy scenarios reflecting different marginal effective tax rates applied to earnings are varied in a between-subjects design.

Controlled experiments are particularly informative in this context, as natural variation in benefit withdrawal rates is often limited and policy reforms rarely permit fine-grained identification (Falk and Heckman 2009).

Our study was conducted in Germany, which provides a particularly suitable environment for studying work incentives under means-tested income support. Germany features a comprehensive safety-net system with gradual benefit withdrawal. For recipients of the country's main social assistance program ('Bürgergeld'), marginal effective tax rates remain high over substantial earnings ranges, even after recent reforms. While it has a well-developed formal labor market, informal work among welfare recipients is a recurrent topic in public discourse, framed as a concern about benefit fraud through undeclared work. Thus, Germany is an informative case for examining how work incentives shape the (relative) attractiveness of formal and informal work.

Our experiment is implemented in the online panel Working and Living in Germany (OPAL), which draws on random samples from comprehensive administrative labor market data and is representative of the registered labor force. Focusing on 1,800 recipients of means-tested income support, we experimentally vary transfer withdrawal rates in a between-subjects design and observe how respondents rate a sequence of hypothetical job offers that differ in key characteristics, including whether employment is formally registered or not. This design mirrors real-world job search, where individuals encounter job offers sequentially. It allows us to isolate the causal effect of work incentives on the attractiveness of formal and informal employment, holding constant other job attributes and institutional features.

Our results show that job offers involving undeclared work are rated significantly lower than comparable registered jobs. However, higher participation tax rates substantially lower the rating of formal jobs, and thus raise the relative attractiveness of informal employment. The negative baseline effect of undeclared work is substantially offset when the PTR is high. In terms of policy implications, our findings underscore the importance of designing marginal effective tax rates that avoid penalizing (formal) work, in particular in contexts where informal opportunities are readily available.

2 Conceptual Framework

Consider the decision of a welfare recipient who chooses whether to accept a job offer. The job can either be formal or informal. The alternative to not accepting a respective offer is to remain unemployed while continuing to receive welfare benefits.

Preferences are defined over consumption and leisure, and individuals compare the utility associated with either formal (F) or informal (I) employment with the utility associated with non-employment (N).

Non-employment yields utility

$$U(N) = u(b, t),$$

where b denotes income from social benefits, t is total available (leisure) time, and $u(.)$ is increasing in both arguments and concave.

Formal employment provides earned income that is subject to benefit withdrawal. The net additional income from formal work that requires h working hours and pays income y^F while receiving citizen's income b is given by $Y_{\text{add}}(y^F) = y^F(1 - \tau(y^F))$, where $\tau(y^F)$ is the participation tax rate. In our experiment, we have that

$$\tau(y^F) = 1 - \frac{Y_{\text{add}}(y^F)}{y^F} \tag{1}$$

and

$$Y_{\text{add}}(y^F) = \begin{cases} y^F & \text{if } y^F \leq 100 \\ 100 + (1-\theta)(y^F - 100) & \text{if } y^F > 100 \end{cases} \tag{2}$$

for formal income y^F and transfer withdrawal rate θ. Hence, note that for a given $y^F > 100$, Y_{add} is decreasing in the transfer withdrawal rate θ. Utility from formal work that requires h working hours and pays income y^F is thus given by

$$U(F) = u\big(b + y^F(1 - \tau(y^F)),\ t - h\big)\,, \tag{3}$$

where y^F denotes formal earnings, h denotes formal working hours, and $\tau(y^F) \in [0, 1]$ is the participation tax rate that captures the share of earnings effectively lost through benefit withdrawal.

Informal employment generates income that is not declared and, therefore, not subject to benefit withdrawal. Utility from informal work is thus

$$U(I) = u\big(b + y^I,\ t - k\big) - d, \tag{4}$$

where y^I denotes informal earnings, k denotes informal working hours, and d captures the expected disutility from informal work compared to formal work, such as moral costs, stress, or fear of detection.[1]

When choosing whether to accept a job offer, the welfare recipient selects the option that maximizes utility, i.e., either

$$j^* = \max_{j \in \{N,F\}} \{U(j)\}$$

if the job offer is formal, or

$$i^* = \max_{i \in \{N,I\}} \{U(i)\}$$

[1] Informal work may also be more attractive than formal work, e.g., if individuals expect higher flexibility from such jobs. In this case, d would be negative.

if it is informal.

From (1), (2) and (3) it follows that an increase in the transfer withdrawal rate θ increases the effective participation tax rate $\tau(y^F)$ (if $y^F > 100$) and thus reduces the net return to formal employment by lowering disposable income from declared earnings. This weakens the incentives to choose formal work relative to non-employment because $U(F)$ declines, whereas $U(N)$ is not affected. We thus derive the following testable hypothesis:

Hypothesis 1. *Higher transfer withdrawal rates decrease the likelihood that a job in the formal sector is accepted.*

In contrast, as neither the utility of informal work nor the utility of non-employment depends on τ, changes in the transfer withdrawal rate should not affect the attractiveness of informal jobs relative to non-employment. This implies the following second testable hypothesis:

Hypothesis 2. *Higher transfer withdrawal rates do not affect the likelihood that a job in the informal sector is accepted.*

While changes in the transfer withdrawal rate do not affect the attractiveness of informal work compared to non-employment, the relative attractiveness of formal versus informal employment is affected, as can be seen by inspecting the utility difference

$$\Delta U = U(F) - U(I) = u\big(b + y^F(1 - \tau(y^F)), t - h\big) - u\big(b + y^I, t - k\big) + d.$$

As the transfer withdrawal rate and thus the participation tax rate τ increases, ceteris paribus, the relative utility of formal work compared with informal work decreases. Higher transfer withdrawal rates, therefore, make informal employment *relatively* more attractive compared to formal employment. However, note that we do not explicitly test this in our experiment, since we only allow respondents to choose between a respective job offer (either formal or informal) and non-employment, and do not include direct choices between formal and informal work. Rather, this conclusion immediately follows from Hypotheses 1 and 2.

3 Experimental Design

3.1 Overview

We implement a conjoint experiment in combination with a treatment design within an online survey of welfare recipients. Choice experiments or vignette studies have been used to study a wide array of domains (an overview of examples can be found in Stantcheva 2023), including attitudes towards questionable behaviors (e.g., Lane, Nosenzo, and Sonderegger 2023; Chopra et al. 2024). They have been shown to provide consistent preference estimates (Jenke and Hangartner 2021) and reduce social desirability bias (e.g., Horiuchi, Markovich, and Yamamoto 2022).

Our experiment is embedded in the second wave of the online panel *"Working and Living in Germany"* (*"Arbeiten und Leben in Deutschland"*, OPAL, see Coban et al. (2024)), which was conducted between January and March 2024. The experiment was conducted with 1,815 respondents who reported that they or their household were receiving citizens' basic income at the time of the interview. At the beginning of the experiment, respondents are informed that they will be shown six hypothetical job offers and asked to rate how likely they would be to accept each of these job offers (see Section 3.2). They are randomly assigned to a policy scenario in a between-subjects design (see Section 3.3). Information on the policy scenario is included in the description of the choice task. After the choice experiment, they answer post-experimental questions inquiring about their behavior in the choice task, their understanding and perceptions, and their attitudes towards undeclared work. The wording of the questionnaire (translated to English) can be found in Section B.

3.2 Conjoint experiment

In the conjoint experiment, participants are informed that they will evaluate six hypothetical job offers and indicate how likely they would be to accept each offer. The job profiles vary along five attributes, summarized in Table 1. Most importantly, we vary the type of employment, distinguishing between jobs that are registered with the authorities and those that are not. Consistent with previous research, we use commonly understood signal terms for undeclared work that mirror language used in real-world transactions (Doerr and Necker 2021; Burgstaller, Doerr, and Necker 2023). In addition, we vary four further job characteristics that are central to recipients' employment decisions: weekly working hours (1–8 hours), commuting distance (nearby versus further away), skill requirements (below or matching the respondent's qualifications), and monthly net wage (determined by an hourly wage between 12–18 EUR and working hours). The selection of these attributes is guided by their relevance for job choice among welfare recipients according to previous surveys.

To simplify decisions, the additional income a participant would receive if they accepted a job is displayed in the last row of the table. It is directly calculated from the realization of the other attributes in that vignette and depends on the monthly net wage, the type of job (with or without registration), and the transfer withdrawal rate in case the job is in the formal sector (see Section 3.3). In the description of the choice task, we further clarify to respondents that choosing a registered job will reduce their welfare benefits by a portion of their earnings.

We choose the levels of weekly working hours and hourly wages such that the resulting job offers fall below the mini-job earnings threshold. Earnings above this threshold would typically trigger social security contributions or income taxation, requiring more complex calculations and potentially detailed knowledge of the tax system and respondents' household characteristics (marital status, number of children) to determine net income. In contrast, mini-jobs are exempt from taxation and employee social security contributions,

Table 1: Attributes in the conjoint experiment

Job attributes	**Possible values**
Weekly working time	2; 3; 4; 5; 6; 7; 8
Type of work	declared; not declared
Commuting time	nearby; further away
Requirement level	below professional skills; roughly corresponds to professional skills
Monthly gross wage (=net wage)	*weekly working time * hourly wage * 4,33* (with hourly wage between 12-22 EUR and resulting monthly gross wage ranging between 100-480 EUR)
Additional net income	*100+(monthly gross wage - 100) * (1-TWR)* (if registered); *monthly gross wage* (if not registered)

so gross and net earnings coincide, apart from any reductions in social transfers. While this restriction primarily serves to ensure transparency, it also reflects the empirical relevance of marginal employment: a substantial share of welfare recipients who engage in paid work do so in mini-jobs.

To ensure the comparability of responses across participants, we provide several clarifications. Respondents are asked to imagine that they are currently not employed. Although this introduces a hypothetical element, it ensures that all participants evaluate job offers from the same baseline situation, independent of their actual employment status. We further clarify that rejecting a job offer implies no additional earnings but also no reduction in welfare benefits, thereby making the financial consequences of each decision transparent and comparable across respondents.

Respondents evaluate each job offer individually rather than choosing between competing alternatives. For each job offer, respondents are asked how likely it is that they would accept the job offer. The answer scale ranges from -5 (very unlikely) to +5 (very likely). This design allows us to directly observe whether a given job would be accepted, rather than forcing respondents into a relative comparison (Hainmueller, Hopkins, and Yamamoto 2014). In our context, the relevant behavioral margin is not which of a set of offered jobs is preferred, but whether a specific job would be accepted at all. Our focus is thus on causal comparisons of job acceptance ratings across treatment conditions.

3.3 Policy scenarios

Respondents are randomly assigned to four groups that face different transfer withdrawal rates when they accept a job that is formally registered (between-subjects design). We choose four different rates (henceforth referred to as "regimes") that include the current rate (80%) and rates discussed in recent reform proposals: 60%, 70%, 80%, and 90%. Respondents are informed about the effect of the transfer withdrawal rate on their total income (earnings + additional basic income) and how this effect interacts with a job being registered at the job center or not. To stay close to the actual German setting, we clarify that respondents will keep the first €100 of their earnings without any reduction. If the employment is registered with the authorities, every additional euro earned will reduce their welfare benefits by €1 times x% (as defined by their treatment). We explain that this implies that they will retain (100-x)% of the income above €100. If the employment is not registered, there will be no reduction in welfare benefits.

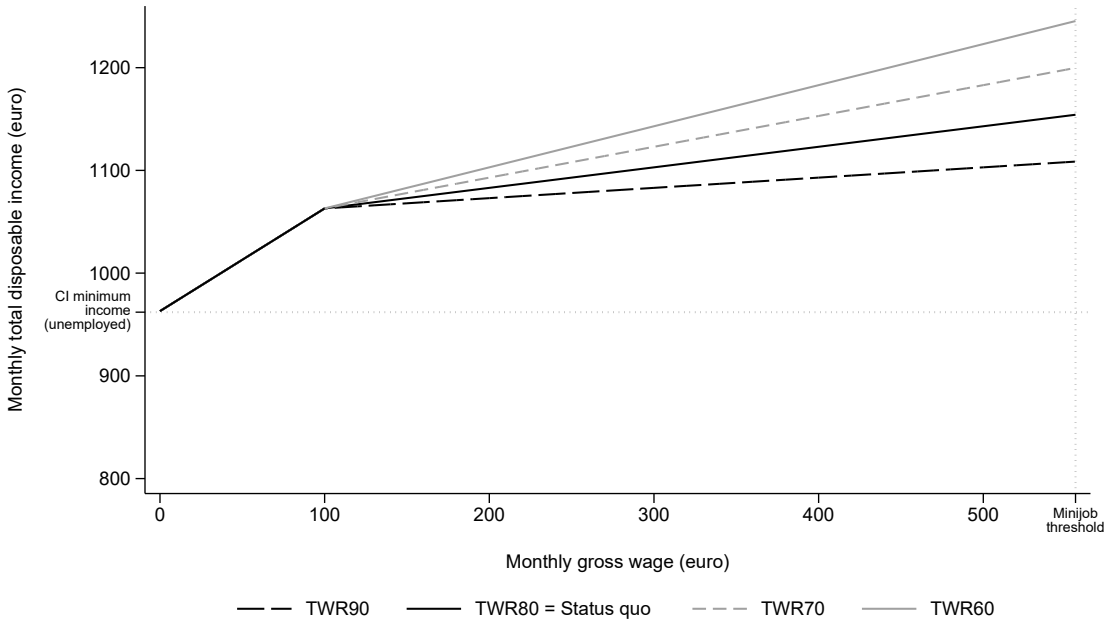
Figure 1 shows the relationship between the wage when a job is registered and total disposable income from welfare benefits and net wages for a single person in the Status quo and the treatment groups. The financial incentive to accept a job offer is determined by comparing the income without a job (i.e., the welfare benefits for a single person) and total net income upon acceptance of the job offer. Hence, the additional net income for each job shown in the job offer vignette measures the financial incentive to accept the job offer.[2] Figure 1 demonstrates that (i) the additional net income does not vary across policy regimes for earnings below €100, and (ii) the differences between the net incomes in different policy regimes are not equidistant for different net wages above €100. Since the first €100 are not taken into account, both the absolute difference in disposable income between the regimes and the difference between disposable income and gross wages increase with rising wages. Thus, the percentage gap between additional net income and gross wages varies not only between the treatment groups but also within treatments (i.e., for a given transfer withdrawal rate regime) depending on the wage offered in the respective job.

To obtain a precise measure of the financial incentives that the respondents faced when evaluating the job offers, we calculate the respective implied participation tax rate. The participation tax rate (PTR) is an established indicator in the study of the monetary incentives of the tax system for the extensive margin of labor supply (Blundell 2011) and measures the share of earnings effectively lost from accepting a job due to withdrawn benefits:

$$\mathrm{PTR}(y^F) = \tau = 1 - \frac{Y_{\mathrm{add}}(y^F)}{y^F} \tag{5}$$

[2]It should be noted that household structure only influences the level of the minimum income, while the additional net income from marginal employment is the same for all household types according to the rules in the respective policy regime.

Figure 1: Total disposable income for a single person resulting from different gross wages in the status quo (2025) and under different policy regimes



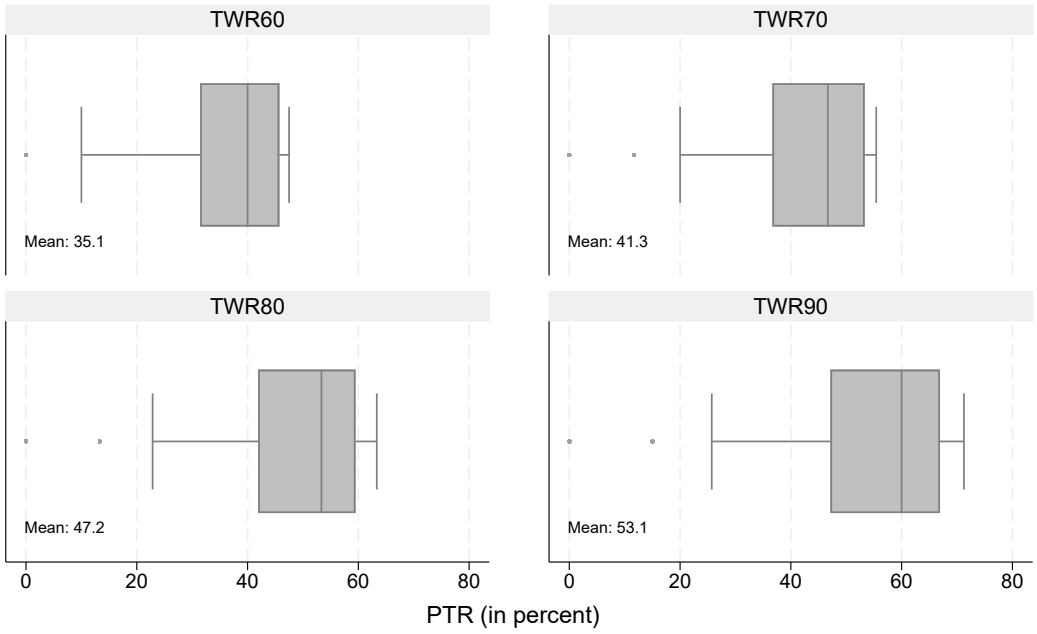
Notes: Total income of a single person resulting from CI payments and net wages (if gross wages > 0). Gross wages in marginal employment up to €556 (minijob threshold 2025), on which the employee is not subject to social security contributions or income tax (gross wage = net wage). UB II payments include the benefit for living expenses (€563) and housing costs (€400 assumed). The benefit decreases with increasing wage income according to the transfer withdrawal rate in the respective policy regime. The first €100 earned do not reduce the benefit.

where y^F is the income from formal employment and $Y_{\text{add}}(y^F)$ is the additional net income when employed formally, determined by the transfer withdrawal rate in the respective policy regime ($\theta = 0.6, 0.7, 0.8, 0.9$):

$$Y_{\text{add}}(y^F) = \begin{cases} y^F & \text{if } y^F \leq 100 \\ 100 + (1-\theta)(y^F - 100) & \text{if } y^F > 100 \end{cases} \tag{6}$$

Figure 2 summarizes the variation of the PTR within and between the policy regimes. In all four policy regimes, a lower outside value of 0 percent can be identified, which corresponds to the registered job offers with a net wage of 100 euros. The average participation tax rate increases from 35 percent in the regime with a transfer withdrawal rate of 60 percent above 100 euros (TWR60) to 53 percent in the TWR90 regime.

Figure 2: Box plots of the distributions of the participation tax rate (PTR) by policy regimes (TWR60-TWR90)



Notes: Variation of the PTR within and between policy regimes. N=1712 (TWR60), 1804 (TWR70), 1816 (TWR80), 1763 (TWR90).

For a given net wage of a declared job offer, different participation tax rates apply to respondents in the different treatment groups, reflecting the different financial incentives in the policy regimes. For jobs that are not registered, the additional net income always corresponds to the wage income, and the participation tax rate is 0. To estimate the effects of the participation tax rate including non-registered offers, we impute the PTR calculated for the corresponding net wage and policy regime of a registered job offer.

3.4 Sampling

Our respondents are sampled from the administrative data of the Integrated Labor Market Biographies (IEB) of the Institute for Employment Research (IAB) of the Federal Employment Agency.[3] The panel used in our study, OPAL, consists of a subsample of the labor

[3]The IEB combines administrative data from different sources and is representative of employees subject to social security, marginal part-time employees, recipients of unemployment insurance benefits and CI benefits (before 2023: Unemployment Benefit II), participants in training or employment measures, and

force registered in the IEB (excluding welfare (Bürgergeld) recipients) and a second subsample of individuals who were receiving welfare benefits at the last available IEB month. The second sample was drawn to overrepresent welfare recipients and facilitate research targeting this group. Our study is based on this second sample. Individuals have to be 18 to 64 years old to participate. To make the sample representative of the target population, weights are calculated.

Our questions were part of a broader questionnaire in which respondents were asked about demographic information, professional and educational qualifications, working and living conditions, as well as labor market and social policy issues. Our block constituted the final part of the questionnaire. Our experiment was conducted with 1,815 respondents who reported that they or their household were receiving welfare benefits at the time of the interview (see Table A1). General questions about undeclared work that complement our experiment were asked of all 6,931 participants.

192 CI recipients did not assess any of the six vignettes, and 58 CI recipients answered questions for only one to five job offers. To test our hypotheses in the regression analysis, we only use the data from the remaining 1,565 individuals who responded to all 6 displayed job offers, which gives a total of 9,390 realized vignettes.

3.5 Estimation approach

Our main question of interest elicits whether respondents think they would accept a job offer in the conjoint experiment or not. The question reads:

How likely is it that you would accept this job? Please indicate your answer on the following scale, which ranges from "very unlikely" (-5) to "very likely" (+5).

3.5.1 Identification

Since our research design fully randomizes the attributes of the job offers under consideration, we can estimate the effect of variation in any given attribute of a job offer on respondents' ratings of the job offer. Specifically, we run the following OLS regression to examine average treatment effects and the relative importance of the job attributes for job acceptance,

$$Y_{ij} = \alpha + \beta PTR_{ij} + \gamma D_{ij} + \delta X_i + \varepsilon_{ij} \tag{7}$$

other job seekers registered at the Federal Employment Agency (Schmucker and Berge 2023). The randomly selected individuals were asked by letter whether they would like to register on an online portal to take part in the online survey. For the first wave, 176,000 people received a postal invitation, of which 18,000 (11.7 percent) participated in the first wave. For our wave, those registered on the online portal were invited to the surveys by email. Further information on the survey is available at the following website: `https://iab.de/en/project/?id=12449605`.

where Y_{ij} is our outcome variable of interest (respondent i's assessment of their likelihood of accepting job offer j $\in \{1, 2, 3, 4, 5, 6\}$ on a scale from 1 to 11, treated as a continuous variable), PTR_{ij} is the participation tax rate, a continuous variable affected both by the monthly gross wage of job offer j and the [hypothetical] transfer withdrawal rate respondent i faced throughout the experiment (see Section 3.3), D_{ij} is a dummy matrix capturing all categories of the job attributes (with one reference category left out per attribute), and X_i is an (optional) vector of individual controls. We run the regressions with and without controls and show that the results are equivalent. In the regressions without controls, we optionally include respondent fixed effects δ_i. However, we consider the specification without controls and without fixed effects to be our main specification of interest since it best exploits all experimental variation in the PTR (both within and across respondents). To account for the possible non-independence of ratings from the same respondent we cluster the standard errors by respondent.

In this regression, β provides an estimate of the ATE (average treatment effect) of the size of the participation tax rate on job offer acceptance, and γ provides estimates of the AMCE (average marginal component effect) for each category of each attribute relative to the omitted category of the respective attribute. δ provides an estimate of the correlation between socio-demographic control variables and job offer acceptance ratings.

To test our hypotheses about the PTR's effect on the acceptance ratings of formal and informal job offers, we run a second OLS regression where we additionally include the interaction of the participation tax rate with the job attribute "undeclared work":

$$Y_{ij} = \beta_0 + \beta_1 PTR_{ij} + \beta_2 D_{ij} + \beta_3 PTR_{ij} * U_{ij} + \beta_4 X_i + \varepsilon_{ij} \tag{8}$$

where we add an interaction term between the participation tax rate and U_{ij}, a dummy indicating whether the job offer is undeclared. Again, we run the regressions with and without controls and show that the results are equivalent. In the regressions without controls, we optionally include respondent fixed effects δ_i. As discussed above, the specification without controls and without fixed effects is our main specification of interest. To account for the possible non-independence of ratings from the same respondent we cluster the standard errors by respondent.

In this regression, β_1 provides an estimate of the ATE (average treatment effect) of the size of the participation tax rate (PTR) on job offer ratings for formal jobs. β_2 provides estimates of the AMCE (average marginal component effect) for each category of each attribute relative to the omitted category of the respective attribute.[4] β_3 provides an estimate of the interaction effect between our treatment (i.e. the size of the participation tax rate) and the dummy indicating whether the job attribute is undeclared.

[4]More precisely, due to the included interaction of the PTR with undeclared work, it provides estimates for the AMCE of the undeclared work attribute given a PTR of zero, and for each other attribute averaged across all PTRs

Because of the panel structure, we can retrieve and link socio-demographic information about the respondents, such as their age, gender, education, household income, and employment status. Moreover, we elicit attitudinal variables regarding undeclared work and trust in politicians at the end of our question block. Other attitudinal variables, such as risk aversion, are available because they were elicited in previous waves of the survey. We analyze heterogeneity in treatment effects/AMCEs in Section 4.2. In particular, we study treatment effect heterogeneity with respect to employment status, attitudinal variables (whether respondents state that they would be willing to work in an undeclared job and how likely respondents think it is that undeclared work will be detected and penalized), as well as with respect to respondents' recent job search behavior and risk aversion.

4 Results

4.1 Main results

Table 2: Effects of the PTR and job characteristics on job offer acceptance

	OLS
Treatment	
PTR	-0.011**
	(0.005)
Job attributes	
Undeclared work	-0.668***
	(0.109)
Weekly working time	-0.202***
	(0.047)
Job location nearby	1.562***
	(0.079)
Requirement level below professional skills	-0.340***
	(0.069)
Net wage	0.005***
	(0.001)
Observations	9390
Adj. R-squared	0.06
Outcome (mean)	5.8

Notes: Estimates from a simple OLS model regressing the job offer acceptance likelihood on the participation tax rate (PTR [in percent], treatment) and all single job attributes. The outcome variable "Job offer acceptance" varies between 1 ("very unlikely") to 11 ("very likely") and is treated as a continuous variable.
Asterisks */**/*** denote statistically significant results using clustered standard errors at the significance level of 0.1/0.05/0.01. Standard errors in parentheses.
Source: IAB-OPAL, core data wave 2, v2.0.

Table 2 reports the estimates of equation (7) (without controls or fixed effects) for the full regression sample of 9,390 evaluated job offers. The coefficient on the participation

Table 3: Effects of the PTR and job characteristics on job offer acceptance

	OLS
Treatment	
PTR	-0.015***
	(0.006)
Treatment x Undeclared work	
PTR x Undeclared	0.016***
	(0.005)
Job attributes	
Undeclared work	-1.364***
	(0.245)
Weekly working time	-0.201***
	(0.047)
Job location nearby	1.564***
	(0.079)
Requirement level below professional skills	-0.338***
	(0.069)
Net wage	0.005***
	(0.001)
Observations	9,390
Adj. R-squared	0.07
Outcome (mean)	5.8

Notes: Estimates from a simple OLS model that includes the participation tax rate (PTR [in percent], treatment), the interaction between the participation tax rate and the job attribute "undeclared work" and all single job attributes. The outcome variable "Job offer acceptance" varies between 1 ("very unlikely") to 11 ("very likely") and is treated as a continuous variable.
Asterisks */**/*** denote statistically significant results using clustered standard errors at the significance level of 0.1/0.05/0.01. Standard errors in parentheses.
Source: IAB-OPAL, core data wave 2, v2.0.

tax rate is negative and significant, implying that higher PTRs, on average, reduce the likelihood of accepting job offers, ceteris paribus. The coefficient on the PTR amounts to -0.01, indicating that an increase in the PTR by ten percentage points leads to a decrease in the job acceptance likelihood by 0.1 points.

Turning to the average marginal component effects (AMCEs) of the job attributes, we find statistically significant effects of the expected sign for all attributes.

First, undeclared job offers are rated significantly less favorably than registered jobs on average. In the pooled OLS model, the coefficient on the undeclared job indicator is -0.67, indicating a substantial baseline aversion to informal employment.

Second, job location has a strong and positive effect on acceptance. Offers that are located nearby increase the job acceptance rating by 1.56 points on average. This suggests that commuting distance plays an important role in respondents' evaluation of marginal

employment opportunities.[5]

Third, a ceteris paribus increase of one hour in weekly working time lowers the job acceptance likelihood rating by 0.2 points.

Fourth, jobs that require a skill level below respondents' professional qualifications are rated less favorably. The coefficient amounts to -0.34 in the pooled OLS model, indicating that mismatches in qualification requirements reduce job attractiveness.

Finally, the net wage significantly increases the job rating. An increase of 100 Euros translates into a 0.5 point higher rating on average.

To test our hypotheses concerning the relationship between the PTR and formal and informal work, we resort to Table 3 which displays the results of estimating equation (8). Column (1) presents simple OLS estimates exploiting the full experimental variation in the participation tax rate (PTR), while column (2) reports estimates from a specification including respondent fixed effects. As discussed above, our preferred specification is the pooled OLS model without fixed effects, since the PTR varies both across and within respondents through the randomized policy regimes and wage realizations.[6]

The coefficient on the participation tax rate is negative and significant. In the pooled OLS model, the estimate amounts to -0.015, indicating that higher effective participation tax rates reduce job offer acceptance of formal jobs. An increase in the PTR by ten percentage points thus leads to a 0.15 point decline in the average job acceptance rating of formal jobs.

To assess whether financial disincentives generated by the participation tax rate operate differently for registered and unregistered jobs, we turn to the interaction term.

The interaction between the participation tax rate and the undeclared job attribute is positive and statistically significant in both specifications. In the pooled OLS model, the coefficient is 0.016. This positive interaction indicates that the effect of the participation tax rate on job acceptance is significantly more positive (or rather: less negative) for undeclared jobs than for declared jobs. In other words, increases in the participation tax rate reduce acceptance of registered employment, but this reduction is significantly attenuated for undeclared employment. In fact, Figure 3, which plots the predicted job-offer acceptance ratings for formal and informal job offers at increasing PTRs, shows that the effect is not only attenuated but actually offset. The size of the participation tax rate does not significantly affect job ratings for undeclared jobs. Therefore, the absolute ratings of undeclared jobs do not vary with the size of the PTR.

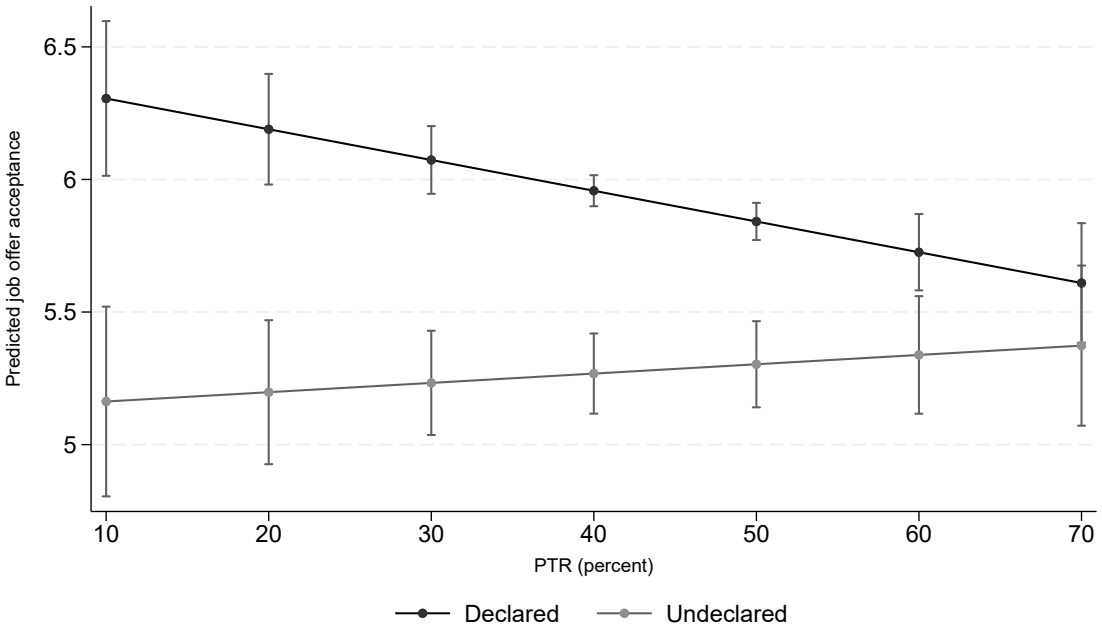
Taken together, the negative effect of the PTR on job offer acceptance of formal jobs and the null effect on acceptance ratings of informal jobs imply that there is a shift in *relative* attractiveness toward undeclared jobs when participation tax rates are higher.

[5]Especially for the mini-jobs with very low monthly wages presented in our experiment, it can be assumed that commuting costs play an important role in the decision-making process.

[6]Table A3 displays the result of estimating (8) with socio-demographic controls (and without fixed effects). The results are almost identical to our main specification in Column 1 of Table 3, which suggests that our treatment randomization strategy was successful.

Importantly, however, this shift does not result from respondents' higher willingness to resort to undeclared work as the PTR increases (the PTR does not affect this willingness) but rather from a lower likelihood of accepting formal jobs.

Figure 3: Job offer acceptance of undeclared and declared jobs at different PTR levels



Notes: Predicted outcome (job offer acceptance) for undeclared and declared jobs at different PTR levels in comparison and 99% confidence intervals.

4.2 Treatment effect heterogeneity

Next, we examine whether the estimated effects of the participation tax rate (PTR) and its interaction with undeclared work differ across relevant subgroups. All specifications follow the baseline model and report OLS estimates, including the PTR, its interaction with the undeclared job attribute, and the full set of job characteristics.

Table 4: Effects of the PTR and job characteristics on the job offer acceptance by subgroups

	Full sample	Unemployed/ ALMP	Employed	Sign. Diff.	In Education/Else	Sign. Diff.
Treatment						
PTR	-0.015***	-0.027***	0.004	*	-0.005	*
	(0.006)	(0.007)	(0.017)		(0.010)	
Treatment x Undeclared work						
PTR x Undeclared	0.016***	0.019***	0.024*		0.007	
	(0.005)	(0.007)	(0.013)		(0.009)	
Job attributes						
Undeclared work	-1.364***	-1.659***	-1.870***		-0.696	*
	(0.245)	(0.338)	(0.580)		(0.427)	
Weekly working time	-0.201***	-0.190***	-0.179		-0.236***	
	(0.047)	(0.065)	(0.126)		(0.081)	
Job location nearby	1.564***	1.537***	1.409***		1.663***	
	(0.079)	(0.107)	(0.232)		(0.131)	
Requirement level below professional skills	-0.338***	-0.296***	-0.203		-0.458***	
	(0.069)	(0.090)	(0.205)		(0.121)	
Net wage	0.005***	0.006***	0.002		0.003*	
	(0.001)	(0.001)	(0.003)		(0.002)	
Observations	9,390	5,178	1,308		2,904	
Adj. R-squared	0.07	0.07	0.06		0.07	
Outcome (mean)	5.8	5.9	5.1		5.7	

Notes: Estimates from OLS models that include the participation tax rate (PTR [in percent], treatment), the interaction between the participation tax rate and the job attribute "undeclared work", as well as all other job attributes (not shown) and all single job attributes. The outcome variable "Job offer acceptance" varies between 1 ("very unlikely") to 11 ("very likely") and is treated as a continuous variable.
Column 1 shows the estimates for the full sample, column 2 for respondents who state that they are currently unemployed or participating in an active labour market policy (ALMP) program offered by the employment agency or a local job centre, column 3 for respondents who report that they are currently in dependent employment or self-employed, and column 5 for for respondents who indicate other activities, such as vocational training, school, or maternity leave. Respondents were asked about their main activity that best fits to their current situation.
Columns 4 and 6 indicate statistically significant differences in the estimated coefficients between the groups "Employed" and "In Education/Else" in comparison to the group "Unemployed/ALMP".
Asterisks */**/*** denote statistically significant results, using clustered standard errors at the significance level of 0.1/0.05/0.01. Standard errors in parentheses.
Source: IAB-OPAL, core data wave 2, v2.0.

First, as documented in Appendix A.2, there is no heterogeneity with respect to standard socio-demographic characteristics (gender, age, education, region). Conversely, Table 4 shows that there are notable differences in our coefficients of interest with respect to respondents' employment characteristics. The results we find for the full sample seem to be mainly driven by unemployed respondents. The estimates for this subgroup are consistent with those obtained from the full sample and are qualitatively similar. For respondents who are currently in education or training, neither the coefficient on the PTR, nor the interaction between PTR and undeclared work, nor the coefficient on undeclared work are significantly different from zero. The same holds for the coefficient on the PTR for respondents who are currently employed. Furthermore, this coefficient is significantly different for employed respondents and those in education compared to unemployed respondents (where it is negative and highly significant). This might be either because the sample sizes for the former two are too small for the respective coefficients to be estimated precisely. Another possibility is that our vignette experiment worked best for unemployed respondents, who did not need to "imagine a situation in which they currently have no job", whereas the choice situation might have been more abstract and hypothetical for the other groups.

Table 5 splits the sample by respondents' stated willingness to work in an undeclared job and by perceived detection probability. Across both willingness groups, the size of the PTR has a negative effect on the ratings of formal job offers. The interaction between the PTR and undeclared work remains positive and statistically significant, and the negative effect of increasing PTRs is similarly offset for undeclared job offers in both groups. Hence, job ratings for informal jobs do not vary with the size of the PTR in either group.

Notably, the negative effect of undeclared work on job ratings (for a PTR of 0) differs markedly between the groups. For respondents willing to work informally, the coefficient on the undeclared job attribute is small and statistically insignificant, whereas it is strongly negative among those unwilling to do so (-1.88). This pattern confirms that stated attitudes toward informal work are closely aligned with behavioral responses in the conjoint experiment.

When splitting the sample by perceived detection probability, no significant differences between the effect of the PTR, undeclared work, and their interaction on job ratings can be detected between the two groups. In both groups, the point value for the estimated coefficient on the PTR is negative and of a similar (absolute) size to the (positive) coefficient on the interaction term, implying the same qualitative pattern as in the full sample (i.e., that the size of the PTR negatively affects formal job ratings but does not affect informal ones). Note, however, that not all of the estimated coefficients are significantly different from zero in the second subgroup (low perceived detection probability). This might be because this subgroup is too small to allow for a precise estimation of our effects.

Table 6 presents heterogeneity by risk aversion and recent job search behavior. Again, the qualitative pattern remains the same as for the full sample, and there are no significant differences in the estimated effects of the PTR, undeclared work, and their interaction across the respective two groups. The PTR effect (on declared jobs) remains negative

across all subgroups (although it is not statistically significant in the two smaller samples). The qualitative pattern - that higher PTRs lower the job acceptance likelihood of formal jobs - is thus consistent with the full-sample results.

Across all subgroup analyses, two robust findings emerge. First, undeclared jobs are, on average, rated less favorably than registered jobs. Second, higher participation tax rates systematically decrease the attractiveness of formal employment, as reflected in the negative and generally statistically significant coefficient on the PTR. This effect is not present for informal jobs, as can be seen from the positive interaction between PTR and the undeclared job attribute. The job acceptance ratings of informal jobs do not vary significantly with the PTR. These patterns are qualitatively similar for all subgroups and consistent with the full-sample results. Thus, while baseline levels of informal job acceptance differ across subgroups - particularly with respect to stated willingness to work informally and perceived detection probability - the marginal response to financial incentives seems to operate in a consistent direction throughout.

Table 5: Effects of the PTR and job characteristics on the job offer acceptance by subgroups

	Full sample	Undeclared job: yes	Undeclared job: no	Sign. Diff.	High detection prob.	Low detection prob.	Sign. Diff.
Treatment							
PTR	-0.015***	-0.021*	-0.012*		-0.016**	-0.017	
	(0.006)	(0.011)	(0.007)		(0.007)	(0.012)	
Treatment x Undeclared work							
PTR x Undeclared	0.016***	0.025**	0.011**		0.016***	0.016	
	(0.005)	(0.010)	(0.006)		(0.006)	(0.011)	
Job attributes							
Undeclared work	-1.364***	0.024	-1.878***	***	-1.543***	-0.885*	
	(0.245)	(0.471)	(0.270)		(0.276)	(0.523)	
Weekly working time	-0.201***	-0.247***	-0.17***		-0.198***	-0.205**	
	(0.047)	(0.083)	(0.056)		(0.053)	(0.103)	
Job location nearby	1.564***	2.004***	1.388***	***	1.39***	2.052***	***
	(0.079)	(0.142)	(0.093)		(0.089)	(0.164)	
Requirement level below professional skills	-0.338***	-0.313***	-0.365***		-0.334***	-0.367**	
	(0.069)	(0.120)	(0.081)		(0.078)	(0.144)	
Net wage	0.005***	0.005***	0.004***		0.005***	0.005**	
	(0.001)	(0.002)	(0.001)		(0.001)	(0.002)	
Observations	9,390	2,646	6,720		7,002	2,340	
Adj. R-squared	0.07	0.12	0.07		0.06	0.09	
Outcome (mean)	5.8	6.1	5.6		5.8	5.8	

Notes: Estimates from OLS models that include the participation tax rate (PTR [in percent], treatment), the interaction between the participation tax rate and the job attribute "undeclared work", as well as all other job attributes (not shown) and all single job attributes. The outcome variable "Job offer acceptance" varies between 1 ("very unlikely") to 11 ("very likely") and is treated as a continuous variable.
Column 1 shows the estimates for the full sample, columns 2 and 3 for respondents who state that they would be willing (or not) to work in an undeclared job (respondents who answered "maybe" were subsumed into the 'yes" 'group here), and columns 4 and 5 for respondents who perceive the detection probability of working in an undeclared job as high and low, respectively (the answer scale for perceived detection probability was ranging from 1 [very unlikely] to 4 [very likely], respondents who answered 1 or 2 are in group "low" here).
Asterisks */**/*** denote statistically significant results, using clustered standard errors at the significance level of 0.1/0.05/0.01. Standard errors in parentheses.
Source: IAB-OPAL, core data wave 2, v2.0.

Table 6: Effects of the PTR and job characteristics on the job offer acceptance by subgroups

	Full sample	Low risk aversion	High risk aversion	Sign. Diff.	Job search: yes	Job search: no	Sign. Diff.
Treatment							
PTR	-0.015***	-0.009	-0.018***		-0.017**	-0.015**	
	(0.006)	(0.011)	(0.007)		(0.008)	(0.008)	
Treatment x Undeclared work							
PTR x Undeclared	0.016***	0.021**	0.014**		0.017**	0.015**	
	(0.005)	(0.010)	(0.006)		(0.008)	(0.007)	
Job attributes							
Undeclared work	-1.364***	-1.247***	-1.432***		-1.663***	-1.153***	
	(0.245)	(0.474)	(0.287)		(0.371)	(0.325)	
Weekly working time	-0.201***	-0.238**	-0.181***		-0.246***	-0.159**	
	(0.047)	(0.093)	(0.055)		(0.071)	(0.063)	
Job location nearby	1.564***	1.409***	1.626***		1.677***	1.476***	
	(0.079)	(0.149)	(0.093)		(0.116)	(0.107)	
Requirement level below professional skills	-0.338***	-0.401***	-0.316***		-0.384***	-0.313***	
	(0.069)	(0.125)	(0.082)		(0.100)	(0.093)	
Net wage	0.005***	0.004**	0.005***		0.006***	0.004***	
	(0.001)	(0.002)	(0.001)		(0.001)	(0.001)	
Observations	9,390	2,736	6,612		4,194	5,184	
Adj. R-squared	0.07	0.05	0.07		0.08	0.05	
Outcome (mean)	5.8	5.90	5.7		6.02	5.5	

Notes: Estimates from OLS models that include the participation tax rate (PTR [in percent], treatment), the interaction between the participation tax rate and the job attribute "undeclared work", as well as all other job attributes (not shown) and all single job attributes. The outcome variable "Job offer acceptance" varies between 1 ("very unlikely") to 11 ("very likely") and is treated as a continuous variable.
Column 1 shows the estimates for the full sample, columns 2 and 3 for respondents with low and high risk aversion respectively (the answer scale for risk aversion was ranging from 1 [low] to 7 [high], respondents who answered <=4 are in group "low" here), and columns 4 and 5 for respondents who state that they have been searching (or not searching) for a job in the last four weeks.
Asterisks */**/*** denote statistically significant results using clustered standard errors at the significance level of 0.1/0.05/0.01. Standard errors in parentheses.
Source: IAB-OPAL, core data wave 2, v2.0.

5 Conclusion

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A Additional Tables and Figures

Table A1: Sample size and realized vignettes in the experiment

	Individuals	Realized vignettes	Total number of realized vignettes
Without CI benefits	5,116		
With CI benefits	1,815		
thereof:			
	192	0	0
	10	1	10
	8	2	16
	7	3	21
	7	4	28
	26	5	130
	1,565	6	9,390
= Regression sample	**1,565**		**9,390**

Table A2: Summary statistics and balancing tests

	No. of obs.	Mean values				p-value
		TWR60	TWR70	TWR80	TWR90	
Female	1801	0.55	0.59	0.59	0.52	0.13
Age (years)	1810	41.3	40.2	40.9	40.2	0.43
1st or 2nd generation immigrant	1815	0.56	0.56	0.52	0.55	0.61
Secondary school leaving qualification	1810					
No/special needs school degree		0.05	0.05	0.06	0.04	0.83
Lower sec. degree		0.18	0.15	0.18	0.19	0.3
Intermediate sec. degree		0.28	0.31	0.29	0.26	0.43
Upper sec. degree		0.41	0.39	0.35	0.39	0.36
Other		0.09	0.1	0.12	0.12	0.31
Labor market status	1815					
Full-/part-time employment		0.11	0.08	0.08	0.08	0.42
Marginal empl./self-employed		0.06	0.07	0.05	0.05	0.37
Unemployment		0.39	0.33	0.43	0.4	0.02
ALMP		0.16	0.19	0.15	0.15	0.45
Education/vocational training		0.09	0.13	0.08	0.13	0.01
Else		0.2	0.2	0.21	0.2	0.98
Observations	1815	445	462	455	453	

A.1 Results with socio-demographic controls

Table A3: Effects of the PTR and job characteristics on the job offer acceptance, models including control variables and fixed effects

	OLS with controls (1)	OLS-FE (2)
Treatment		
PTR	-0.012**	-0.012**
	(0.006)	(0.004)
Treatment x Undeclared work		
PTR x Undeclared	0.015***	0.015***
	(0.005)	(0.004)
Job attributes		
Undeclared work	-1.363***	-1.33***
	(0.259)	(0.205)
Weekly working time	-0.24***	-0.207***
	(0.049)	(0.038)
Job location nearby	1.564***	1.67***
	(0.083)	(0.067)
Requirement level below professional skills	-0.35***	-0.351***
	(0.072)	(0.056)
Net wage	0.005***	0.004***
	(0.001)	(0.001)
Control variables		
Gender (ref.: male)		
female	0.326**	
	(0.138)	
divers	0.542	
	(0.855)	
Age (years)	-0.02***	
	(0.006)	
Vocational qualification (ref.: vocational training)		
In education	1.066	
	(0.692)	
No qualification	0.287	
	(0.184)	
Bachelor professional	0.383	
	(0.243)	
University degree	0.444**	
	(0.189)	
Else	0.693**	
	(0.295)	
Region	Yes	
Observations	8,292	9,390
Adj. R-squared	0.09	0.13
Outcome (mean)	5.8	5.8

Notes: Estimates from a OLS model that includes the participation tax rate (PTR [in percent], treatment), the interaction between the participation tax rate and job attributes (treatment x job attribute), the job attributes and personal characteristics (column 1: OLS with controls) / individual fixed effects (column 2: OLS-Fe) as control variables. Region controls for the respondent's place of residence at the level of the 16 German federal states. The outcome variable "Job offer acceptance" varies between 1 ("very unlikely") to 11 ("very likely"). Asterisks */**/*** denote statistically significant results using clustered standard errors at the significance level of 0.1/0.05/0.01. Standard errors in parentheses. *Source*: IAB-OPAL, core data wave 2, v2.0.

A.2 Results for socio-demographic subgroups

Table A4: Effects of the PTR and job characteristics on the job offer acceptance by subgroups

	Full sample	Males	Females	Sign. Diff.	Age below 45 years	45 years and older	Sign. Diff.
Treatment							
PTR	-0.015***	-0.018**	-0.011		-0.012*	-0.023**	
	(0.006)	(0.009)	(0.007)		(0.007)	(0.010)	
Treatment x Undeclared work							
PTR x Undeclared	0.016***	0.014*	0.016**		0.014**	0.021**	
	(0.005)	(0.008)	(0.007)		(0.006)	(0.009)	
Job attributes							
Undeclared work	-1.364***	-1.427***	-1.267***		-1.186***	-1.774***	
	(0.245)	(0.376)	(0.321)		(0.305)	(0.413)	
Weekly working time	-0.201***	-0.219***	-0.192***		-0.214***	-0.190**	
	(0.047)	(0.073)	(0.062)		(0.058)	(0.081)	
Job location nearby	1.564***	1.697***	1.475***		1.456***	1.801***	**
	(0.079)	(0.122)	(0.104)		(0.092)	(0.149)	
Requirement level below professional skills	-0.338***	-0.256**	-0.418***		-0.346***	-0.318***	
	(0.069)	(0.105)	(0.090)		(0.083)	(0.118)	
Net wage	0.005***	0.005***	0.004***		0.005***	0.005***	
	(0.001)	(0.001)	(0.001)		(0.001)	(0.002)	
Observations	9,390	4,098	5,208		6,270	3,108	
Adj. R-squared	0.07	0.08	0.06		0.06	0.08	
Outcome (mean)	5.8	5.6	5.9		5.9	5.4	

Notes: Estimates from OLS models that include the participation tax rate (PTR [in percent], treatment), the interaction between the participation tax rate and the job attribute "undeclared work", as well as all other job attributes (not shown) and all single job attributes. The outcome variable "Job offer acceptance" varies between 1 ("very unlikely") to 11 ("very likely") and is treated as a continuous variable.
Column 1 shows the estimates for the full sample, columns 2 and 3 for respondents who state that they would be willing (or not) to work in an undeclared job (respondents who answered "maybe" were subsumed into the 'yes" 'group here), and columns 4 and 5 for respondents who perceive the detection probability of working in an undeclared job as high and low, respectively (the answer scale for perceived detection probability was ranging from 1 [very unlikely] to 4 [very likely], respondents who answered 1 or 2 are in group "low" here).
Columns 4 and 6 show statistically significant differences in the estimated coefficients between the groups "Employed" and "In education/Else" in comparison to the group "Unemployed/ALMP".
Asterisks */**/*** denote statistically significant results, using clustered standard errors at the significance level of 0.1/0.05/0.01. Standard errors in parentheses.
Source: IAB-OPAL, core data wave 2, v2.0.

Table A5: Effects of the PTR and job characteristics on the job offer acceptance by subgroups

	Full sample	Low qualification	High qualification	Sign. Diff.	Western Germany	Eastern Germany	Sign. Diff.
Treatment							
PTR	-0.015***	-0.014**	-0.019**		-0.013*	-0.008	
	(0.006)	(0.007)	(0.010)		(0.007)	(0.011)	
Treatment x Undeclared work							
PTR x Undeclared	0.016***	0.019***	0.008		0.014**	0.015	
	(0.005)	(0.006)	(0.008)		(0.006)	(0.011)	
Job attributes							
Undeclared work	-1.364***	-1.225***	-1.561***		-1.440***	-1.045*	
	(0.245)	(0.310)	(0.401)		(0.296)	(0.561)	
Weekly working time	-0.201***	-0.197***	-0.216***		-0.233***	-0.194*	
	(0.047)	(0.058)	(0.080)		(0.057)	(0.104)	
Job location nearby	1.564***	1.782***	1.150***	***	1.507***	1.893***	**
	(0.079)	(0.099)	(0.127)		(0.096)	(0.168)	
Requirement level below professional skills	-0.338***	-0.165**	-0.666***	***	-0.327***	-0.458***	
	(0.069)	(0.084)	(0.117)		(0.083)	(0.150)	
Net wage	0.005***	0.004***	0.006***		0.005***	0.003	
	(0.001)	(0.001)	(0.002)		(0.001)	(0.002)	
Observations	9,390	6,126	3,222		6,360	1,986	
Adj. R-squared	0.07	0.08	0.07		0.06	0.09	
Outcome (mean)	5.8	5.7	5.8		5.7	5.8	

Notes: Estimates from OLS models that include the participation tax rate (PTR [in percent], treatment), the interaction between the participation tax rate and the job attribute "undeclared work", as well as all other job attributes (not shown) and all single job attributes. The outcome variable "Job offer acceptance" varies between 1 ("very unlikely") to 11 ("very likely") and is treated as a continuous variable.
Column 1 shows the estimates for the full sample, columns 2 and 3 for respondents who state that they would be willing (or not) to work in an undeclared job (respondents who answered "maybe" were subsumed into the 'yes" 'group here), and columns 4 and 5 for respondents who perceive the detection probability of working in an undeclared job as high and low, respectively (the answer scale for perceived detection probability was ranging from 1 [very unlikely] to 4 [very likely], respondents who answered 1 or 2 are in group "low" here).
Asterisks */**/*** denote statistically significant results, using clustered standard errors at the significance level of 0.1/0.05/0.01. Standard errors in parentheses.
Source: IAB-OPAL, core data wave 2, v2.0.

A.3 Alternative treatment variable

An alternative empirical strategy. which we pre-registered in our pre-analysis plan, would be to regress the job ratings on the transfer withdrawal rates that respondents were informed about before the vignette experiment (the "regimes", i.e., 60, 70, 80, or 90%) instead of the actual PTR they faced in the respective job offer. As this specification does not exploit the full variation generated by the interaction of the regime and the offered gross wage (which resulted in a varying PTR also within respondent, despite keeping the regime constant), we regard it only as a second-best strategy, but since we pre-registered this approach, we report the results in the following subsection.

$$Y_{ij} = \alpha + \beta_1 T_i + \beta_2 D_{ij} + \beta_3 T_i * U_{ij} + \gamma X_i + \varepsilon_{ij} \tag{9}$$

where Y_{ij} is our outcome variable of interest (the assessment of respondent i's job offer j $\in \{1, 2, 3, 4, 5, 6\}$ on a scale from 1 to 11, treated as a continuous variable), T_i is a treatment dummy (indicating which [hypothetical] transfer withdrawal rate - 60, 70, 80 or 90% - respondent i faced in the [hypothetical] job offers), D_{ij} is a dummy matrix capturing all categories of the job attributes (with one reference category left out per attribute), U_{ij} is a dummy indicating whether job offer j was informal, and X_i is an (optional) vector of individual controls. In this regression, β_1 provides an estimate of the ATE (or - equivalently - of the AMCE (average marginal component effect) of the size of the transfer withdrawal rate (relative to the omitted category) for formal job offers. β_2 provides estimates of the AMCE (average marginal component effect) for each category of each attribute relative to the omitted category of the respective attribute. β_3 provides an estimate of the interaction effects between our treatment (i.e. the size of the transfer withdrawal rate) and the categories of the job attributes. We are particularly interested in β_3 (see Section 2).

Table A6 reports the results of estimating the alternative specification (9), in which treatment is captured by the randomly assigned policy regime rather than by the vignette-specific participation tax rate.[7] Relative to the reference category (TWR60), the coefficients on TWR70, TWR80, and TWR90 are negative for declared jobs, and the corresponding interaction terms with undeclared work are positive. Hence, the estimated interaction effects exhibit the expected sign pattern, consistent with higher transfer withdrawal rates reducing the attractiveness of formal employment and increasing the relative appeal of undeclared work. However, the interaction coefficients are not statistically significant at conventional levels. A likely explanation is that, compared to the specification described in the main part of the paper, this specification does not exploit the full variation in the participation tax rate that arises from the interaction between the assigned regime and

[7] Column (2) shows that the estimation results are almost identical when including socio-demographic controls, demonstrating that our randomization strategy was successful.

the offered net wage in the main specification. By relying solely on between-regime differences, it abstracts from the within-regime variation in implied PTRs across job offers and therefore yields less precise estimates of the incentive effects.

Turning to the job attributes, the estimated coefficients are largely in line with the main results described in Section 4.1. Undeclared jobs are rated significantly less favorably than registered jobs, although the magnitude of the coefficient is smaller than in the baseline specification. Weekly working time has a negative and statistically significant effect on job acceptance, while a nearby job location substantially increases acceptance. Jobs that require a skill level below respondents' qualifications are evaluated less favorably. Finally, higher net wages significantly raise the likelihood of job acceptance. Overall, the qualitative pattern of the job attribute effects closely mirrors the findings reported in Table 3, suggesting that our substantive conclusions are robust to the alternative treatment specification.

Table A6: Effects of the alternative treatment variable (policy regime) and job characteristics on the job offer acceptance

	(1)	(2)
Treatment (ref.: TWR60)		
TWR70	-0.064	-0.086
	(0.200)	(0.218)
TWR80	-0.159	-0.192
	(0.203)	(0.212)
TWR90	-0.212	-0.17
	(0.199)	(0.207)
Treatment x Undeclared work (ref.: TWR60 x Undeclared)		
TWR70 x Undeclared	0.118	0.095
	(0.304)	(0.319)
TWR80 x Undeclared	0.036	-0.08
	(0.306)	(0.324)
TWR90 x Undeclared	0.449	0.453
	(0.298)	(0.314)
Job attributes		
Undeclared work	-0.821***	-0.836***
	(0.207)	(0.217)
Weekly working time	-0.206***	-0.242***
	(0.047)	(0.049)
Job location nearby	1.566***	1.606***
	(0.079)	(0.084)
Requirement level below professional skills	-0.338***	-0.351***
	(0.069)	(0.072)
Net wage	0.003***	0.004***
	(0.001)	(0.001)
Personal characteristics		yes
Observations	9,390	8,292
Adj. R-squared	0.06	0.09
Outcome (mean)	5.8	5.8

Notes: OLS estimates that include a categorical variable indicating the treatment ("regime"), with a transfer withdrawal rate of 60% as the reference category , the interaction between the treatment and the job attribute"undeclared work", and all single job attributes. The outcome variable "Job offer acceptance" varies between 1 ("very unlikely") to 11 ("very likely") and is treated as a continuous variable. Column (2) includes socio-demographic controls (omitted).
Asterisks */**/*** denote statistically significant results using clustered standard errors at the significance level of 0.1/0.05/0.01. Standard errors in parentheses.
Source: IAB-OPAL, core data wave 2, v2.0.

A.4 Alternative outcome variable

Table A7: Effects of the PTR and job characteristics on the binary job offer acceptance

	Outcome: Strong acceptance	Outcome: Strong acceptance	Outcome: Weak acceptance	Outcome: Weak acceptance
PTR	-0.002**	-0.001*	-0.002***	-0.002**
	(0.001)	(0.001)	(0.001)	(0.001)
Treatment x Undeclared work				
PTR x Undeclared	0.002***	0.002***	0.002***	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)
Job attributes				
Undeclared work	-0.182***	-0.185***	-0.187***	-0.185***
	(0.034)	(0.035)	(0.035)	(0.038)
Weekly working time	-0.027***	-0.032***	-0.027***	-0.032***
	(0.007)	(0.007)	(0.007)	(0.008)
Job location nearby	0.214***	0.218***	0.210***	0.213***
	(0.012)	(0.012)	(0.012)	(0.012)
Requirement level below professional skills	-0.039***	-0.041***	-0.041***	-0.044***
	(0.010)	(0.011)	(0.010)	(0.011)
Net wage	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Personal characteristics		yes		yes
Observations	9,390	8,292	9,390	8,292
Adj. R-squared	0.06	0.08	0.05	0.07
Outcome (mean)	0.45	0.45	0.57	0.56
Calculated elasticity of job offer acceptance to PTR				
ϵ	-0.13	-0.10	-0.12	-0.10

Notes: Coefficients from OLS estimations of the binary job offer acceptance that include the participation tax rate (PTR [in percent]), the interaction between the participation tax rate and the job attribute "undeclared work" and all single job attributes (columns 2,4) and individual control variables (columns 3, 5). Personal characteristics include gender, age, vocational qualification and the respondent's place of residence at the level of the 16 German federal states. The binary outcome variable is based on the stated "Job offer acceptance" that varies between 1 ("very unlikely") to 11 ("very likely"). Strong acceptance counts values 1-6 as no acceptance (=0) and 7-11 as acceptance (=1). Weak acceptance counts values 1-5 as no acceptance (=0) and 6-11 as acceptance (=1). Asterisks */**/*** denote statistically significant results using clustered standard errors at the significance level of 0.1/0.05/0.01. Standard errors in parentheses.
Source: IAB-OPAL, core data wave 2, v2.0.

A.5 Interactions of the PTR with all job attributes

Table A8: Effects of the PTR and job characteristics on the job offer acceptance

	OLS	OLS-FE
Treatment		
PTR	-0.014**	-0.007
	(0.007)	(0.005)
Treatment x Job attributes		
PTR x Undeclared	0.016***	0.015***
	(0.005)	(0.004)
PTR x Weekly working time	-0.005	-0.003
	(0.004)	(0.003)
PTR x Job location nearby	-0.002	-0.005
	(0.004)	(0.003)
PTR x Requirement level below professional skills	0.000	0.001
	(0.004)	(0.003)
PTR x Net wage	0.000	0.000
	(0.000)	(0.000)
Job attributes		
Undeclared work	-1.369***	-1.333***
	(0.245)	(0.205)
Weekly working time	0.042	-0.074
	(0.215)	(0.172)
Job location nearby	1.653***	1.876***
	(0.203)	(0.164)
Requirement level below professional skills	-0.325*	-0.397***
	(0.193)	(0.152)
Net wage	0.000	0.004
	(0.004)	(0.003)
Observations	9,390	9,390
Adj. R-squared	0.07	0.13
ρ		0.55
Outcome (mean)	5.8	5.8

Notes: Estimates from simple OLS and fixed-effects OLS models (OLS-FE) that include the participation tax rate (PTR [in percent]), the interaction between the participation tax rate and all job attributes, and all single job attributes. The outcome variable "Job offer acceptance" varies between 1 ("very unlikely") to 11 ("very likely"). Asterisks */**/*** denote statistically significant results using clustered standard errors at the significance level of 0.1/0.05/0.01. Standard errors in parentheses.
Source: IAB-OPAL, core data wave 2, v2.0.

B Text of questionnaire

Now we turn to a different topic. The following section is about your evaluation of job offers. On the next pages, we will show you six job offers with various characteristics and then ask you how likely it is that you would accept each offer. Please review the job offers carefully and imagine that you are currently not employed. There are no "right" or "wrong" answers - we are only interested in your personal assessment.

Please note: If you do not accept a job, you will not earn any additional income on top of your citizen's allowance, but your citizen's allowance will also not be reduced.

[page break]

If you accept a job, you will earn some income on top of your citizen's allowance. However, your citizen's allowance will be reduced by a portion of your wage.

You may keep the first 100 of your earnings without any reduction. If the employment is registered with the Jobcenter and other authorities, every additional euro earned will reduce your citizen's allowance by [if VIGTFE = 1: 60 cents; if VIGTFE = 2: 70 cents; if VIGTFE = 3: 80 cents; if VIGTFE = 4: 90 cents].

In the end, for every euro above 100, you will retain [if VIGTFE = 1: 40 cents; if VIGTFE = 2: 30 cents; if VIGTFE = 3: 20 cents; if VIGTFE = 4: 10 cents].

If the employment is not registered, there will be no reduction of the citizen's allowance.

To make your decision easier, the additional income you would receive if you take a job will be displayed.

[page break]

Table B9: Job Offer [X]

Attribute	**Value**
Hours per Week	[Weekly working hours]
Type of Employment	[With/without registration with authorities]
Commute Time	[Commute time]
Professional Requirements	[Requirements]
Net Monthly Wage	[Gross/net wage]
Additional Net Income per Month	[Additional net income per month]

Please make your decision now: How likely is it that you would accept this job?

Please answer using the following scale. The scale ranges from "very unlikely" (-5) to "very likely" (+5). [no response possible] You can use the numbers from -4 to +4 to provide a more nuanced response.

Please click or tap on the bar below the numbers.

[page break]

[if at least one offer was rejected]
You indicated that it is unlikely you would accept this job offer:

Attribute	**Value**
Hours per Week	[Value from last rejected vignette]
Type of Employment	[Value from last rejected vignette]
Commute Time	[Value from last rejected vignette]
Professional Requirements	[Value from last rejected vignette]
Net Monthly Wage	[Value from last rejected vignette]
Additional Net Income per Month	[Value from last rejected vignette]

What are the reasons why you would rather reject the offer? You may select multiple options. [Categories in random order]

Reasons for Rejection (multiple selections possible):

☐ A I am looking for full-time employment

☐ B I already have a job

☐ C Health reasons

☐ D The offered job is not attractive enough

☐ E I have previously searched without success

☐ F My financial situation would not or hardly improve

☐ G My current income is sufficient

☐ H Childcare / caregiving responsibilities

☐ I I already have another job prospect

☐ J I am participating in a program

☐ K I am in training

☐ L [if last rejected vignette = "without registration"]:
A job without registration with the authorities is not an option for me

☐ -2 No response

[page break]

In your opinion, what applies to employment without registration with the authorities? You may select multiple options. [Categories in random order]

☐ A Employers have less paperwork

☐ B Employees have legal protection against dismissal

☐ C Employers pay wages in cash

☐ D Employers do not report the employment to the tax office

☐ E Employees have a statutory right to vacation

☐ F For recipients of citizen's allowance, the amount of benefits does not decrease

☐ G Employers do not report the employment to social insurance agencies

☐ -2 No response

If you had the opportunity: Could you imagine working in an unregistered (undeclared) job?

☐ 1 Yes

☐ 2 No

☐ 3 Maybe

How likely do you think it is that unregistered (undeclared) employment will be discovered and punished?

☐ 1 Very likely

☐ 2 Rather likely

☐ 3 Rather unlikely

☐ 4 Very unlikely

☐ -2 No response

[page break]

There are various reasons why someone might work in an unregistered job. Please indicate for each possible reason how important you think it is.

"[insert item text here]" "0" means the reason has no importance in your opinion. "6" means it has high importance. You can use the numbers in between to give a more nuanced assessment.

Programming: Use a slider. Each item should be shown in random order, on separate pages, and be displayed in bold.

Scale: 0 = no importance, 6 = high importance

Reason	**0**	**1**	**2**	**3**	**4**	**5**	**6**
No deductions for taxes/social security	☐	☐	☐	☐	☐	☐	☐
Wages paid immediately in cash	☐	☐	☐	☐	☐	☐	☐
No paperwork	☐	☐	☐	☐	☐	☐	☐
More jobs available	☐	☐	☐	☐	☐	☐	☐
Greater flexibility (e.g., no notice periods, working hours)	☐	☐	☐	☐	☐	☐	☐