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Article

Labor market risks and welfare preferences: a bounded rationality approach

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Abstract

This study introduces a bounded rationality approach to welfare preference formation under exposure to labor market risks. It argues that risk exposure only increases welfare demand when it is reasonable to assume that workers are aware of their risk exposure and when future-related concerns are currently salient. Empirical analyses of longitudinal data from Switzerland and 28 European countries support the theory. Swiss workers only optimize their welfare preferences in a forward-looking manner when they become unemployed, and only the national unemployment rate is found to increase welfare demand in European countries. In contrast, a variety of risks on the occupational and individual level drawn from previous research are found to be unrelated with welfare preferences. The implication is that the risk exposure of employed workers may matter less for their welfare preferences and downstream political phenomena such as voting behavior than commonly expected.

Key words: unemployment, redistribution, preferences, risk, political economy, welfare state

JEL classification: D31 personal income, wealth and their distributions, P16 political economy, J28 safety, job satisfaction and related public policy

1. Introduction

One of the primary functions of the welfare state is to insure against risk (Moene and Wallerstein, 2001). It redistributes income from those who generate income on the market to those who are less able to do so. Thereby, the welfare state stabilizes individuals' income over time and shelters against the loss of market income, for example caused by unemployment or old age (Jensen, 2012).

Political economists expect that people are well-aware of the insuring function of welfare, and that they finely condition their support for the welfare state according to their current risk exposure. Guided by the usual self-interest assumption, it can be expected that those who experience more risk should demand more welfare because the probability is higher

that they will become beneficiaries of welfare policies. Research primarily focused on exposure to labor market risks, above all regarding the probability of unemployment.

A voluminous body of work identified different risks that should affect demand for welfare. A first literature strand focuses on *aggregate risks*, which derive individual risk exposure from aggregate-level characteristics of workers' occupations: occupational unemployment (Cusack *et al.*, 2006; Rehm, 2009, 2011), skill specificity (Iversen and Soskice, 2001), the probability of job automation and digitization (Thewissen and Rueda, 2019; Dermont and Weisstanner, 2020; Busemeyer and Sahm, 2022; Gallego *et al.*, 2022), as well as globalization exposure (Walter, 2010, 2017). A second literature strand focuses on *individual risks*, that is, characteristics of individual workers such as atypical employment contracts (Burgoon and Dekker, 2010; Marx, 2014). Lastly, unemployment should be influential in future-oriented preference formation (Cusack *et al.*, 2006; Rehm, 2011; Margalit, 2013; Naumann *et al.*, 2016; Ahrens, 2022; Pahontu, 2022).

This study introduces a refined theoretical framework on the implications of labor market risk for welfare preferences that addresses the strong rationality assumptions underpinning common risk-focused theories. I argue that workers are boundedly rational, suggesting that they are not necessarily aware of the objective labor market risks they are exposed to. Furthermore, even when they are aware of their risk exposure, they do not necessarily consider this information in the formation of welfare preferences. While workers principally follow their material self-interest, labor market risks only shape welfare preferences when the risks are readily observable and when workers are primed to consider their future material wellbeing.

The bounded rationality theory predicts that especially unemployment and to a lesser extent individual risks such as temporary employment should be influential in future-oriented preference formation. These risks can be easily observed, and concerns about the future are especially salient in the case of unemployment. Aggregate risks, in contrast, should be unrelated to policy preferences because they are difficult to observe and exposure to them does not prime workers to consider their future welfare.

The theoretical expectations are largely confirmed with quantitative analyses of two survey datasets. Both datasets are longitudinal, which allows for more credible effect identification compared to the usual cross-sectional approach. I first use individual-level panel data from the Swiss Household Panel (SHP). The empirical analysis evaluates whether different objective risk factors are related to perceived risks, and whether different risks (both perceived and objective) are related to welfare preferences. The results show that aggregate risks such as occupational unemployment are only inconsistently and weakly related to perceived economic risk, while workers exposed to individual risks such as fixed-term contracts consistently feel more threatened. Furthermore, only unemployment consistently increases demand for welfare. The risks the currently employed are exposed to (aggregate risks, individual risks, and even perceived risks) leave welfare preferences unchanged.

I then analyze repeated cross-sections from 28 European countries provided by the European Social Survey (ESS). The aim is to validate the findings on aggregate risk exposure in a multi-country analysis. The analysis follows a similar empirical strategy as the SHP analysis since it assesses within-occupational changes in risk exposure over time (rather than within-individual changes). The results suggest that occupational unemployment and skill specificity are longitudinally unrelated to perceived risk, redistribution preferences, and support of unemployment assistance. However, the *national* unemployment rate increases

demand for unemployment assistance, which is consistent with bounded rationality theory because national unemployment is widely reported and politicized.

This study suggests that risk can be important in the formation of welfare preferences, but this is not always the case. Only realized unemployment and the national unemployment rate are found to increase welfare demand. In contrast, the risk exposure of employed workers, especially on the aggregate level, may matter less than commonly expected. This finding runs counter to a large literature on the political implications of labor market risks. Its substantial implication is that political phenomena related to policy preferences such as voting behavior or policymaking may also depend less on the distribution of risks among the employed than various theories suggest (e.g. Rehm, 2011; Marx, 2014; Abou-Chadi and Kurer, 2021).

2. Labor market risks and policy preferences

2.1 Theoretical argument

Political economists typically expect that individuals follow their material self-interest in their demand for redistributive welfare policies. In particular, people aim to optimize their disposable income. The most immediate implication of this argument is that there should be a negative relationship between current market income and support for redistributive policies (Meltzer and Richard, 1981). But it can also be theorized that people optimize their *future* income, which implies a negative relationship between expected income and support for redistributive policies (Benabou and Ok, 2001; Alesina and La Ferrara, 2005; Ahrens, 2022).

A large literature on the implications of labor market risks employs the future-oriented self-interest approach, arguing that workers use the welfare state to insure against possible market income loss in the future. Those who experience more risk for income loss due to unemployment or underemployment already demand more welfare in the present (Iversen and Soskice, 2001; Rehm, 2009; Marx, 2014; Alt and Iversen, 2017).

The theory can be broken down into a causal mediation model, in which the relationship between risk exposure and preferences is mediated by individual risk perceptions (see Figure 1). People have an objective risk exposure (i.e. the *actual* probability of income shocks) as well as a subjective risk exposure (i.e. the *perceived* probability of income shocks). As arrow 1 indicates, people are theorized to adapt their policy preferences directly to their objective risk exposure. However, I argue that workers can only act in response to risks they are aware of, that is, their subjective risk. Put simply, one must know about a risk to insure against it (Cusack *et al.*, 2006; Anderson and Pontusson, 2007; Walter, 2010, 2017; Gallego *et al.*, 2022). Therefore, objective risk first influences subjective risk (arrow 2), which then impacts

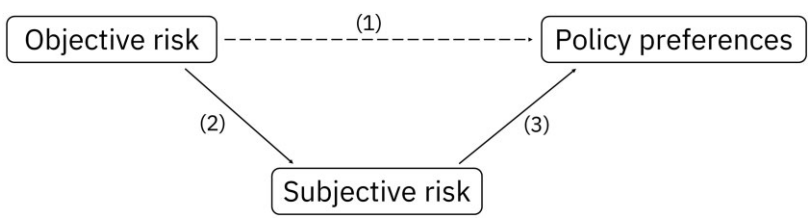

Figure 1 Causal mediation model of risk-focused self-interest theory.

policy preferences (arrow 3). This mediation via subjective risk is only acknowledged by part of the literature, but I argue that it is in the spirit of self-interest theory.[1]

2.2 Literature overview

The literature identified several objective risks that should affect welfare preferences. It can be broadly categorized into studies focusing on *aggregate risks*, which derive individual risk exposure from workers' membership in pooled categories such as occupations and industries; *individual risks*, which derive risk exposure from the attributes of specific workers and their jobs; and *unemployment* (c.f. Marx and Picot, 2020; Vlandas, 2020). These studies will be discussed consecutively.

The first aggregate risk is *occupational unemployment* (Cusack *et al.*, 2006; Rehm, 2009, 2011; Alt and Iversen, 2017; Vlandas, 2020). The argument is that workers can most easily switch between jobs in the same occupational category because human capital and social networks are tied to occupations. Therefore, higher unemployment within an occupation indicates higher risk exposure, which should be associated with higher demand for social protection. The concept was developed against the backdrop of *industry-specific unemployment*, which derives risk exposure from the unemployment rate within an industry. However, it was shown that occupations are the more relevant category, presumably because being able to switch jobs depends on skills, which are mapped by occupational categories rather than industries (Iversen and Cusack, 2000; Rehm, 2009, p. 860). Therefore, occupational unemployment, rather than industry-specific unemployment, is associated with policy preferences. Cusack *et al.* (2006) also show that occupational unemployment correlates with perceived job insecurity, which supports the causal mediation model displayed in Figure 1.

The second aggregate risk is *skill specificity*. Iversen and Soskice (2001) argue that workers who invested in specific skills tied to their occupations are at higher risk of being unable to find work that is appropriate for their skills in the case of unemployment. Their higher expected cost of unemployment leads workers to feel insecure (Cusack *et al.*, 2006) and to demand more social protection from the government (Iversen and Soskice, 2001; Cusack *et al.*, 2006; Rehm, 2009).

The third aggregate risk relates to *technological risk*. Workers who perform routine tasks must fear that their job may be replaced by automation or digitalization, and they should demand more welfare as a result. Accordingly, Gallego *et al.* (2022) show that workers performing more routine tasks feel more insecure, and several studies find a positive relationship with welfare and redistribution preferences (Thewissen and Rueda, 2019; Dermont and Weisstanner, 2020; Busemeyer and Sahm, 2022). However, two experimental studies find no effect of technological risk primes on support for compensatory welfare policies (Zhang, 2019; Gallego *et al.*, 2022).[2]

The fourth aggregate risk is *globalization exposure*. Those who face a higher probability of losing their job due to job offshoring or international trade should demand more

1 Some studies discuss that there may be alternative causal pathways between objective risk and preferences, such as self-esteem (Walter, 2010; Gallego *et al.*, 2022). While these pathways may exist, they do not reflect the utility optimization argument made by risk-focused theories.

2 While Gallego *et al.* (2022) find no effect of a technological risk prime on support for compensatory welfare policies, they do find that it increases support for slowing down technological advancement.

protection (Rodrik, 1998; Genschel, 2004). Walter's (2010, 2017) empirical analyses support this argument based on an assessment of all paths of the causal mediation model in Figure 1. Workers in tradable industries and in jobs that can be more easily offshored report higher subjective insecurity and they demand more redistribution and welfare.

I now turn to individual risks, which relate to worker-specific characteristics (Marx and Picot, 2020).[3] First, workers with *atypical employment contracts*, that is, those deviating from permanent full-time employment, are exposed to more risk and should demand more social protection. In support of this argument, two studies find a positive relationship between temporary employment and different welfare preferences (Burgoon and Dekker, 2010; Marx, 2014). The evidence on part-time employment is mixed, with Burgoon and Dekker (2010) finding positive effects on perceived insecurity and support for public unemployment benefits but Vlandas (2020) finding no effect on welfare preferences. Furthermore, Pahontu (2022) finds that workers who work part-time, have low job tenure, or have low subjective job security demand more social protection.

Second, individuals with *recent unemployment* are exposed to more risk because unemployment spells hinder future employment possibilities. Accordingly, Green *et al.* (2001) find that past unemployment spells increase subjective insecurity and Burgoon and Dekker (2010) find that they also strengthen welfare demand.

Third, previous research also shows that *perceived risk* is related to policy preferences. Those who fear that they may become unemployed demand stronger welfare and more redistribution (Walter, 2010; Pahontu, 2022; Busemeyer *et al.*, 2023; Busemeyer and Tober, 2023); but this finding is refuted by studies employing longitudinal designs (Margalit, 2013; O'Grady, 2019).

Lastly, *unemployment* should be pivotal in preference formation. Unemployment is conceptually different because it is a realized event, whereas the literature surveyed so far focused on the probability of not-yet-realized events. Unemployment therefore suits present-oriented self-interest theory, with an effect on welfare preferences that is transmitted via unemployment-induced loss in current market income. That is, the unemployed should support more welfare because they *currently* expect to benefit from welfare. At the same time, unemployment not only decreases current market income but is also a future-related risk in itself as becoming unemployed decreases the probability and quality of future employment. Employers place a penalty on unemployment spells in hiring and compensation; and, at some point, the unemployed may be forced to settle for employment that is incongruent with their skills or desired working hours. The unemployed should therefore demand more welfare in a forward-looking manner even after accounting for their income loss, which is supported empirically by several studies (Cusack *et al.*, 2006; Rehm, 2011; Margalit, 2013, 2019; Naumann *et al.*, 2016; Vlandas, 2020; Pahontu, 2022).

2.3 Critique

I argue that the literature on labor market risks and welfare preferences has two shortcomings. First, the theoretical argument relies on strong and partly unrealistic rationality assumptions. Individuals must be aware of the objective labor market risks they face, and

3 It is important to note that I will solely consider risks that relate to labor market contracts because this is what the political economy literature focuses on; there are more individual-level risks than those reviewed below, such as bad health.

they must be able and willing to derive welfare preferences that optimize their *future* welfare from this risk exposure. This requires considerable sophistication that cannot consistently be expected from humans. It is well known that information required for utility optimization is often not available (Engelhardt and Wagener, 2018; Shin, 2018; Jensen and Zohlnhöfer, 2020; Bublitz, 2022) and that human decision-making is less profound than political economy models suggest (Simon, 1985; Jones, 1999). To be sure, it is uncontroversial that human rationality is limited; political economists use full rationality assumptions to simplify their models, and it is unlikely that any theorist places high faith in them. But as I will argue, when one takes the limits to rationality seriously, the effects of labor market risks on policy preferences should be less consistent than previously suggested.

Second, the bulk of previous empirical evaluations relied on cross-sectional data, where causal effects are possibly not identified. Cross-sectional estimates rely on covariate-adjusted comparisons of welfare preferences between people exposed to more and less risk. However, it is not difficult to imagine that the stronger welfare support of those exposed to more risk can be attributed to other causes. Most importantly, it has been shown that socialization during childhood and early adolescence can introduce major bias to cross-sectional evaluations of self-interest theories (O'Grady, 2019; Wehl, 2019).

To tackle these shortcomings, this study introduces a refined theoretical approach to labor market risks and policy preferences that acknowledges the limits to human rationality. The theoretical implications are then tested in an empirical analysis that evaluates all steps of the causal mediation model depicted in Figure 1. It uses longitudinal data, which rests on more credible assumptions compared to the usual cross-sectional approach.

3. Preference formation under bounded rationality

3.1 Theoretical framework

Self-interest theory on labor market risks requires the following assumptions: (a) people care about their future disposable income; (b) workers possess information about the objective labor market risks they face as well as information about welfare policies and how they affect their beneficiaries; and (c) workers use the information they possess to optimize their future disposable income in their policy preferences. Optimizing policy preferences in line with material self-interest is not possible if even one of these assumptions fails to hold.

I argue that these assumptions only hold under certain conditions because humans are only boundedly rational (Simon, 1985; Jones, 1999). Bounded rationality theory expects that humans are indeed rational; they have goals and they behave in a way that is appropriate in a given situation to achieve these goals. Thus, I continue to expect that workers are interested in receiving and maintaining disposable income, and that they adapt their policy preferences accordingly (assumption a). However, workers' rationality is bounded, that is, limited. They possess incomplete information (assumption b) and an imperfect ability to utilize their information (assumption c). As a result, preferences are often not utility-optimizing.

First, workers do not necessarily know about the objective labor market risks that they face, and they do not always possess information about the functioning of welfare programs (Shin, 2018; Jensen and Zohlnhöfer, 2020). The central driver of this information deficiency is that humans only store a limited amount of information because their attention is highly limited (Simon, 1985). It is crucial that it is not my aim to argue that workers possess no

relevant information; rather, information availability differs significantly between various labor market risks and welfare programs. Generally, I expect that workers are more likely to possess information on risks and the alleviating impact of welfare programs when the information is easily observable and associated with little uncertainty.

Second, workers do not necessarily consider all relevant information in preference formation. Preference formation is a complex process, which humans simplify by using heuristics. One such heuristic is to consider only a limited amount of information in a decision (Simon, 1985; Shin, 2018). What information is considered depends on what information is currently salient. The implication is that even when workers principally know about their risk exposure, they do not necessarily use this information to optimize their policy preferences. This is an especially important point because self-interest theory expects that workers optimize their *future* welfare, which requires substantial and often unrealistic attention to detail. I expect that future-related concerns are salient in preference formation when it is abundantly clear for an individual worker that their future material wellbeing is at stake (i.e. workers face a pronounced economic risk that is clearly cushioned by the welfare state).

3.2 Theoretical expectations for different labor market risks

This section applies the bounded rationality framework to the different labor market risks identified in the literature. I begin with what labor market risks workers should be especially aware of (in other words, the relationship between objective and subjective risk). This relationship is important because workers must be aware of their risk exposure to conduct future-oriented utility optimization. As aforementioned, workers should be especially aware of their objective risk exposure when information is readily available and associated with little uncertainty.

I expect that workers should be most aware of their exposure to *realized unemployment* and to *individual risks* such as temporary employment. Such worker-specific characteristics are readily observable and directly relevant for individuals' particular circumstances. In contrast, it is uncertain to what extent workers are aware of their exposure to *aggregate risks*, such as occupational unemployment. These are substantially important risks, but they are difficult to observe and assess because they relate to aggregate characteristics of the labor market. For example, unlike the national unemployment rate, occupational unemployment rates are not reported and cannot be observed directly.

I now move on to the relationship between subjective risks and demand for welfare. The bounded rationality framework expects that being aware of a risk is not sufficient to boost welfare demand. Future-related concerns must also be salient during preference formation.

My expectation is that primarily *realized unemployment* affects welfare preferences. Unemployed workers are primed to consider their future material circumstances because (a) their future income-generating capabilities are clearly threatened and (b) they can see clearly that welfare cushions this risk. In contrast, the effect of employed workers' risk exposure should be less consistent because workers are less primed to consider their future welfare and the alleviating impact of social policies in preference formation. I expect that especially the *individual risks* have potential to spur welfare demand. Above all, temporary employment conveys to respective workers that they may require public transfer income in the future. The *aggregate risks*, however, less clearly jeopardize future income, and the differential exposure to these risks between occupations does not tend be publicized. I therefore expect that aggregate risks are unrelated to welfare preferences.

Overall, I expect that labor market risks only inconsistently affect welfare preferences. This is because workers may not be aware of their risk exposure and/or because future-related concerns are not salient in preference formation. Especially realized unemployment and to a lesser extent the individual risks should increase welfare demand. Aggregate risks, in contrast, should leave preferences unaffected.

4. Individual-level evidence from Switzerland

This section presents the data, methods, and results of an empirical analysis of individual-level panel data from Switzerland. It presents disaggregated analyses of all pathways of the causal mediation model depicted in Figure 1: the relationship between objective and subjective risk, between objective risk and preferences, and between subjective risk and preferences.

4.1 Data

I use data from waves 1 to 19 of the SHP, which is a stratified random sample of Swiss households that is representative of residents in Switzerland. The data were collected between 1999 and 2017, including two sample refreshments in 2004 and 2013. I retain data from respondents in dependent employment or unemployment aged between 16 and 65 years. Overall, I use 78 676 observations from 15 274 individuals.

The SHP data are ideal to test the theoretical expectations because they contain high-quality measures of labor market participation, income, and welfare preferences. Furthermore, the SHP is a long-run panel that allows for precise effect estimation by virtue of the sheer amount of observations available for analysis. Lastly, Switzerland is a well-suited case to test the theoretical expectations because it is an open economy with weak employment protection, implying that workers' incentives to use the welfare state to insure against risk are high.

4.1.1 Welfare preferences

The first dependent variable measures general social spending preferences. Respondents were asked: '[a]re you in favor of a decrease or in favor of an increase in federal social spending?', which they could respond to on a three-point scale: 'in favor of an increase', 'neither', or 'in favor of a decrease'.

Using federal social spending preferences may be criticized because the most important welfare program used to insure against labor market risks, the unemployment insurance, is primarily financed via compulsory insurance payments in Switzerland. However, the federal government subsidizes the expenditures and absorbs financial shocks of the system. During the Coronavirus response, for example, expenditures financed by public subsidies exceeded those financed from insurance contributions. The federal social spending item is therefore a suitable measure.

I additionally use an item that specifically surveys preferences regarding unemployment benefits on the same three-point scale as the social spending item. This dependent variable is ideal because of its focus on unemployment benefits, but the item is available in only three survey waves (13, 16, and 19).

4.1.2 Aggregate risks

This section introduces the aggregate risk measures, which are sourced from multiple datasets and then merged to the SHP data based on the ISCO88 classification of workers' occupations. Further information on the exact calculation of these aggregate risks are available in the Supplementary Appendix.

Occupational unemployment rates are estimated from Eurostat Labor Force Surveys (LFS), which are available on a yearly basis between 1999 and 2009 and a bi-yearly basis from then on. They are calculated by assigning unemployed workers to the occupation of their previously held job and then calculating the share of unemployed workers in occupations. Following Rehm (2009), the main analyses rely on one-digit ISCO codes, but sensitivity tests include other possible specifications (two- and three-digit codes).

Skill specificity is measured with Iversen and Soskice's (2001) first relative skill specificity measure, which is also used in other studies (Cusack *et al.*, 2006; Rehm, 2009). It quantifies how many sub-categories an occupational category has relative to the share of the labor force working in that occupational category as well as the skill level of the occupation. The indicator 'is high if an individual is in a very specialized occupation, but has relatively low levels of education or skills' and it 'is low if the occupation is not very specialized, while the level of education or skills is high' (Cusack *et al.*, 2006, p. 371). Following previous studies, the main analyses use two-digit ISCO codes, but sensitivity tests also use one-digit codes. The required labor force shares are, again, estimated from LFS data.

Technological risk is measured with the routine task intensity (RTI) indicator by Autor and Dorn (2013), which is commonly used in the literature (Thewissen and Rueda, 2019; Dermont and Weisstanner, 2020; Gallego *et al.*, 2022). RTI measures how often workers perform routine tasks relative to manual and abstract tasks. The rationale is that routine tasks are most easily automated, implying that a higher intensity of routine tasks is associated with higher risk. Inspired by Sebastian (2018), I estimate the RTI of occupations in Switzerland from the European Working Conditions Survey (EWCS). The main analyses use two-digit ISCO codes while sensitivity tests also use one-digit codes and further breakdowns by industry. The EWCS contains two samples for Switzerland from 2005 and 2015, which are pooled to reach acceptable sample sizes per occupational category. The exact calculation of RTI differs slightly from Autor and Dorn (2013) and Sebastian (2018); full details are available in the Supplementary Appendix. The downside of the RTI indicator is that it is constant over time within occupational categories, even though RTI might change over time. Furthermore, while the indicator captures jobs that are *most easily* automated, not only routine tasks are automated. RTI is therefore only a proxy for automation risk.

Globalization risk is measured with the job offshorability indicator by Blinder (2009), which is also used by Walter (2010, 2017). It indicates the potential for a job to be moved abroad because it can be performed from distance without jeopardizing product or service quality. The indicator is available for the US Labor Department's Standard Occupational Classification, which I convert into ISCO codes. As with RTI, it is a downside that the indicator is constant over time for occupational categories. Furthermore, other globalization risk measures (notably, industry trade exposure) cannot be used because the SHP only has a broad categorization of workers' industries.

4.1.3 Individual-level risks

I now move on to risk measures that are available in the SHP data. Subjective risk is measured with two items. First, respondents were asked how they evaluate the risk of becoming unemployed within the next 12 months on a scale from 0 (no risk at all) to 10 (a real risk). Second, respondents were asked whether their job is very secure, quite secure, a bit insecure, or very insecure.[4] Together, these items measure subjective labor market risk comprehensively. The first item indicates whether a respondent may be without a job altogether and the second item whether they may lose their current job.

Next, I use the following dummy variables to measure further individual-level risks. A temporary employment dummy captures whether a respondent holds a fixed-term employment contract (Burgoon and Dekker, 2010; Marx, 2014). A job tenure dummy indicates whether a respondent has been with their current employer for less than 1 year. The rationale is that low job tenure is associated with less employment security (Pahontu, 2022). A third dummy captures whether a respondent is employed in the private rather than the public sector because private sector employment tends to be more flexible (Anderson and Pontusson, 2007). Fourth, an unemployment experience dummy captures whether respondents were unemployed during the previous year. The rationale is that unemployment spells indicate that future unemployment is more likely (Green *et al.*, 2001). Lastly, unemployment is measured with a dummy indicating whether respondents are currently unemployed.

4.1.4 Control variables

I control for the highest level of education on a four-point scale (no or primary, secondary, post-secondary non-tertiary, and tertiary). I also control for income because it must be excluded that individuals derive their welfare preferences from their current and not their expected future income. I include both personal gross work income and equivalized household disposable income.[5] It is common to control for household income because it is the best measure of all-around material wellbeing. I additionally use personal work income because, according to self-interest theory, present-oriented utility optimization is conducted based on market income gross of taxes and transfers (Meltzer and Richard, 1981). Disposable household income, however, includes transfer income such as unemployment benefits.[6] Both income variables are used in categorical form, specifically as income quintiles.[7] The motivation is that quintiles reliably measure relative income levels over time, impervious to inflation, and that no functional form assumptions are required in regression modeling.

4 Respondents also had the fifth response category 'temporary' in waves 1–4, which I merge to the category 'very insecure'.

5 Equivalization is applied by dividing household income by the square root of household members.

6 For example, when an individual becomes unemployed, they should demand more welfare because their current market income drops substantially and not only because their future income is in peril. Using the gross labor income variable captures this. The household income variable, in contrast, does not necessarily decrease substantially because a considerable proportion of previous labor income may be substituted by social security transfers.

7 The quintiles are estimated from the SHP data separately for each panel wave.

4.2 Method

I use ordinary least squares (OLS) to estimate two-way fixed effects (TWFE) regression models that include fixed effects for both individuals and panel waves:

$$y_{it} = \sum_{k=1}^{K} ß_k \text{risk}_{it}^{k} + \sum_{m=1}^{M} \delta_m \text{control}_{it}^{m} + \alpha_i + \gamma_t + \epsilon_{it},$$

where y_{it} denotes the dependent variable (either welfare preferences or perceived risk) of individual i in wave t, risk_{it} a number of risk variables (comprised of either the subjective risks, aggregate risks, or individual risks), control_{it} a number of control variables, α_i individual-specific constants, γ_t time-specific constants, and ϵ_{it} the residual.

TWFE accounts for unobserved confounders (i.e. common causes of risks and preferences). The approach solely assesses variation within individuals and therefore remains unbiased by any time-invariant characteristics such social background. Furthermore, the time fixed effects remove potential bias from unobserved confounders that individuals in particular panel waves are jointly subjected to [e.g. the recession after the financial crisis, which affected both labor market risks and policy preferences (Limberg, 2020)].

TWFE allows for more credible effect identification compared to the usual cross-sectional approach. Using TWFE trades one problem for another in the sense that TWFE can be biased by time-variant confounders instead of time-invariant confounders, as in the cross-sectional case. However, I expect that time-varying confounding poses less of a threat to identification. First, there is stronger theoretical indication speaking for the presence of time-invariant confounders. In particular, political preferences and labor market profiles are jointly shaped during early-life socialization, which is difficult to capture via control variables (O'Grady, 2019; Wehl, 2019). Second, time-variant confounders are easier to capture even when they are unobserved because TWFE includes time fixed effects, which account for shared influences such as the aforementioned financial crisis. It must be noted that TWFE comes with an additional set of assumptions that are unlikely to be fully met in real world data.[8] While a degree of bias must be expected, I expect that TWFE estimates more accurately reflect true causal effects than cross-sectional estimates.

TWFE assesses within-individual variation in risk exposure over time, and it is important to note that such variation emerges for different reasons. Most variation originates from respondents taking up different employment (e.g. by switching from public to private sector employment). The aggregate risks occupational unemployment and skill specificity also vary within occupational categories over time, implying that respondents' risk exposure can vary even when they hold the same job as before. However, larger variations are primarily driven by occupation changes.

Analyzing variation in risk that mostly stems from job changes may spur doubts because of three reasons. First, it could be assumed that people rarely change their occupational category, but this is not the case. About 40% of all individuals in the analysis sample change their occupation at some point in the panel, and the probability of a within-individual occupation change from one observation to the next is about 9%.

8 TWFE requires linear-additive effects (Imai and Kim, 2021) and a correct specification of causal dynamics over time (Plümper and Troeger, 2019). Furthermore, the strict exogeneity assumption also requires that past outcomes affect neither the current outcome nor the current treatment (Kim and Imai, 2019).

Second, people in more and less stable employment trajectories may differ, implying that the generalizability of the findings across the whole workforce remains unclear. Figure A1 in the Supplementary Appendix shows that those who ever switch their occupational category are younger and poorer that those in completely stable employment trajectories, while there are no discernible differences regarding education and gender. I expect that there is no reason *per se* to doubt the generalizability of the results, but it must be noted that the effect estimates relate to a large part on this younger and poorer sub-sample of job changers.

Third, job switching may be related to policy preferences for reasons other than shifting exposure to specific risks. This cannot be resolved completely, but I argue that if this problem is present, the effect estimates of risks should be inflated. If at all, job switching should *increase* support for welfare policies because of the insecurity that comes with loose labor market attachment. The implication is that the estimates are upper-bound estimates.

I now move on to how I rescale all variables to allow for meaningful comparison of effect estimates across variables and models. The dependent variables (welfare preferences and perceived risk) are always on a scale from 0 to 1, where higher values indicate stronger welfare demand or perceived risk. The independent variables on continuous scales are divided by two standard deviations, while the dummies are left as is. Therefore, all regression coefficients indicate how many percentage points the dependent variable is expected to change when the independent variable increases by two standard deviations (continuous independent variable) or by one (dummy independent variable). This approach makes the effects of dummies and continuous variables roughly comparable (Gelman, 2008).

A last point to consider is that several of the aggregate risks (occupational unemployment, skill specificity, and RTI) contain measurement error because they are estimates or use estimates in their calculation. For example, occupational unemployment rates are first estimated from LFS data and then used as an independent variable with SHP data. This measurement error must be reflected in the stage-two regressions. I rely on an imputation approach inspired by Blackwell *et al.* (2017). I treat the estimated values as missing and impute them 100 times using random draws from distributions that are informed by the point estimates and their sampling uncertainty. This introduces additional spread into the data informed by the amount of measurement error. For example, imputed values of occupational unemployment are on average equal to the calculated rates, but individual values deviate less or more from the point estimates depending on the amount of sampling uncertainty (which varies because of differently sized occupational samples in the LFS data). All regressions containing imputed risk variables are estimated 100 times, and their results are combined using Rubin's rule. More detailed information on the calculation of the respective aggregate risks and their imputation is available in the Supplementary Appendix.

4.3 Results

This section presents the results of an empirical analysis of all causal pathways in the mediation model (see Figure 1). It first evaluates whether individuals' perceived labor market risk depends on their objective risk exposure. The analysis then shifts to explanations of welfare preferences: do people adapt their preferences to their risk exposure?

4.3.1 The relationship between objective and subjective risks

I first assess the implications of different objective risks for subjective risks. The results of four regression models are displayed in Figure 2. The first two models jointly assess the

effects of aggregate risks on the two subjective risk perceptions, and the latter two models jointly assess the effects of individual risks. The motivation of including the aggregate and individual risks in common models is that they may be correlated among each other, but results from models containing only one risk variable at a time are available in the Supplementary Appendix.

The results from the first two models show that workers only marginally adapt their subjective risk to their aggregate risk exposure. The different aggregate risks exert positive but mostly small effects on subjective risks. Effect sizes reach a maximum effect size of about two percentage points, but most coefficients are smaller. Furthermore, the null hypothesis cannot be rejected in most cases.

In contrast, the third and fourth models show that individual risks substantially increase perceived risks. The strongest effect is that of temporary employment, which increases subjective risk by about 10 percentage points. The other individual risks have a less substantial size, but they are also mostly positive and significant, with effect sizes reaching up to four percentage points. The divergence makes sense from a theoretical perspective because temporary employment is bound to end, which gives an unambiguous signal to workers that they are exposed to risk. Short job tenure, private-sector employment, and recent unemployment spells also signify risk, but to a lesser extent.

Overall, the findings are consistent with theoretical expectations. Changes in individual risks over time (especially temporary employment) are positively associated with perceived risk, whereas the findings on aggregate risks are weaker and inconsistent. This matches bounded rationality theory because workers should be best able to derive their risk exposure from directly observable individual attributes rather than more obscure aggregate characteristics of the labor market. The findings also spur first doubts regarding the impact of aggregate risks on policy preferences because workers cannot insure against risks they are not aware of.

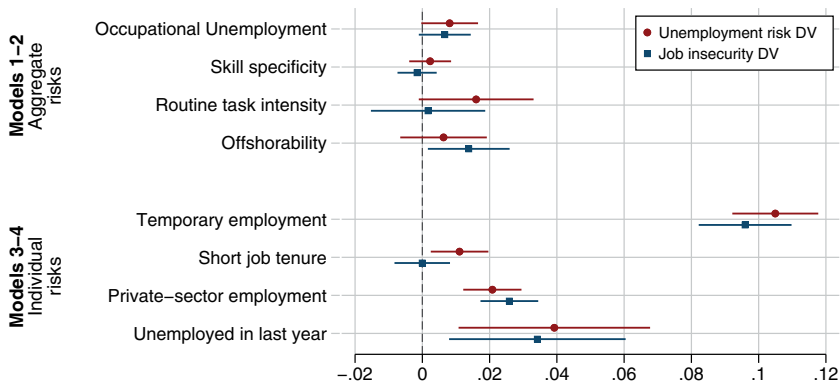

Figure 2 The effect of objective risk on subjective risk.

Notes: The horizontal bars represent 95% confidence intervals obtained from robust standard errors clustered by individuals. The control variables (education, personal income, and household income) as well as both individual and time fixed effects are included in the regressions. Occupational unemployment is measured on the ISCO88 one-digit level, skill specificity and RTI on the two-digit level, and offshorability on the four-digit level. The full results are available in the Supplementary Appendix.

4.3.2 The relationship between risks and preferences

This section assesses the effects of all risks on welfare preferences. Figure 3 presents the results of eight regression models using either social spending or unemployment benefit preferences as the dependent variable. Models 1 and 2 evaluate the effects of subjective risks, models 3 and 4 of aggregate risks, models 5 and 6 of individual risks, and models 7 and 8 of realized unemployment. Note that the analysis of unemployment is unique because the regression model includes both employed and unemployed workers, whereas all other analyses solely assess the implications of risks experienced by employed workers. This includes the subjective risk variables, which are only surveyed from employed workers.

The results show that none of the risks employed workers face affect welfare preferences. The effect estimates for perceived, aggregate, and individual risks for both dependent variables are all insignificant. The point estimates also tend to be near zero.

In contrast, models 7 and 8 show that unemployment substantially and significantly increases demand for welfare. The point estimates suggest that unemployed workers increase their social spending demand by about five percentage points and their unemployment benefit demand by about 10 percentage points, holding current income constant. Especially the latter finding indicates a substantial effect of unemployment. However, it must be noted that the confidence intervals are wide in the analysis of unemployment benefit preferences because the variable is available in only three panel waves.

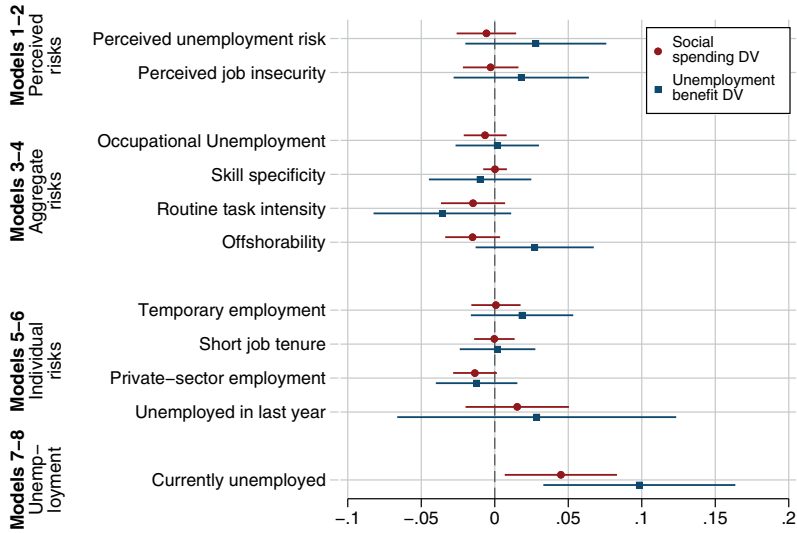

Figure 3 The effects of risks on welfare preferences.

Notes: The horizontal bars represent 95% confidence intervals obtained from robust standard errors clustered by individuals. The control variables (education, personal income, and household income) as well as both individual and time fixed effects are included in the regressions. Occupational unemployment is measured on the ISCO88 one-digit level, skill specificity and RTI on the two-digit level, and offshorability on the four-digit level. The full results are available in the Supplementary Appendix.

Overall, the results mostly align with bounded rationality theory. Unemployment is found to increase welfare demand while all risks faced by employed workers (even including subjective risks) leave preferences unaffected. This is consistent with bounded rationality theory because risk exposure should only affect welfare demand when (a) it can be assumed that workers are aware of their exposure to risks and (b) future-related concerns are salient in preference formation. This is definitely the case when workers are unemployed. Regarding the other risk types, it is striking that even temporary employment and subjective risks have no effect on policy preferences. However, this is consistent with bounded rationality theory because knowledge of one's risk exposure is not sufficient to boost welfare demand; future-related concerns must also be currently salient, which is not guaranteed.

4.3.3 Sensitivity analyses

Several robustness tests check the sensitivity of the results (see the Supplementary Appendix). First, the main regressions estimate the effects of different risks of the same type (e.g. aggregate risks) jointly in one model. In the full regression tables in the Supplementary Appendix, the effects of all risks are re-estimated only entering one risk variable at a time per regression. This has the advantage that the estimates become more precise due to less collinearity and that more observations can be used because listwise deletion does not limit the samples to individuals with available information on all risks. This approach changes the results only marginally and leaves all inferences intact.

Second, there are several approaches to quantifying the aggregate risks depending on how fine-grained occupations are measured: at the ISCO one-, two-, or three-digit level. RTI can also be further broken down by industry (Sebastian, 2018). Additional robustness tests use all possible specifications of aggregate risks. Again, the main results replicate.

A last set of robustness checks uses logged version of occupational unemployment and skill specificity because the variables tend to have right-skewed distributions, especially when more fine-grained ISCO classifications are considered. These robustness checks also use a version of the RTI indicator that, in line with Autor and Dorn (2013), uses logged task frequency variables in its calculation (see the Supplementary Appendix for details on why the main analyses do not use logged frequencies). Once again, all robustness tests lead to similar results.

5. Macro-level evidence from 28 European countries

This section presents the data, methods, and results of an empirical analysis of survey data from 28 European countries.[9] It addresses one of the main criticisms one could raise against the SHP data analysis: it is unclear to what extent the findings from Switzerland apply to other countries. Here, I present additional evidence on two aggregate risks, namely occupational unemployment and skill specificity. I show that the results hold in a multi-country analysis and conduct further research on the implications of risk exposure on the national level.

9 Austria, Belgium, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, and UK.

5.1 Data

I use data from waves 1–9 of the ESS, which is a high-quality multi-country survey used extensively in related studies (Rehm, 2009; Walter, 2017; Thewissen and Rueda, 2019; Busemeyer and Sahm, 2022). I retain respondents in dependent employment aged 16–65 and merge data on their occupational unemployment and skill specificity based on their ISCO88 classification. These aggregate risks are estimated for all available countries and years from Eurostat LFS. The resulting dataset contains 108 778 observations from 176 country-waves and 28 countries.

I use three dependent variables. The first measures perceived unemployment risk via an item that asks how likely it is that respondents will be unemployed and looking for work in the next year. The second and third dependent variables measure policy preferences. Support of public unemployment assistance is measured with an item that asks whether it should be the government's responsibility to ensure a reasonable standard of living for the unemployed, and support of redistribution with an item that asks whether the government should take measures to reduce income inequality. Data on redistribution preferences are available in all ESS waves, while the other two dependent variables were only surveyed in waves 4 and 8. I prefer the unemployment assistance item as a measure for policy preferences because unemployment is the primary labor market risk that workers are theorized to insure against. However, I also include the redistribution item because welfare programs protecting against risk are inherently redistributive. Furthermore, the item is commonly used in related research (e.g. Rehm, 2009) and it has vastly superior data availability across ESS waves.

5.2 Method

Analyzing multiple ESS waves for each country (i.e. repeated cross-sections) makes it possible to use a within-occupation estimator to address bias from unobserved heterogeneity between occupations, which leads to more credible evidence than cross-sectional comparisons. The estimator assesses to what extent within-occupational changes in aggregate risks and policy preferences are related over time. If classical self-interest theory on labor market risks is correct, then the average welfare support held by specific occupations should increase when their occupational unemployment and skill specificity rises over time. Again, it is noteworthy that the analyzed variance stems from (a) changing unemployment rates and skill specificity[10] over time and (b) the changing composition of occupations (i.e. people switching into, out of, and between occupations).

The longitudinal, within-occupational estimates follow a similar identification strategy as the previous analyses that assessed within-individual changes. The advantage of the strategy is that it avoids omitted variable bias from common causes of risk and preferences that persist stably between occupations. The estimates remain unbiased when, for example, individuals with stronger welfare demand select into occupations with higher risk exposure due to socialization effects (O'Grady, 2019; Wehl, 2019).

10 Changes in skill specificity result from occupations' varying employment shares over time (see the Supplementary Appendix for details on the calculation of skill specificity).

I estimate the following regression model with OLS:

$$y_{ioct} = \sum_{k=1}^{K} ß_k occrisk_{oct}^{k} + \sum_{m=1}^{M} \delta_m control_{ict}^{m} + \alpha_{oc} + \gamma_t + \epsilon_{ioct},$$

where y_{ioct} denotes the dependent variable (perceived unemployment risk, redistribution preferences, or unemployment assistance preferences) of individual i in occupation o, country c, and ESS-round t; $occrisk_{oct}$ denotes aggregate risks (occupational unemployment and skill specificity), $control_{ict}$ several individual-level controls, α_{oc} country-occupation fixed effects, and γ_t ESS-round fixed effects. Due to the fixed effects structure, the regressions assess whether individuals in specific occupations change their redistribution support over time when their aggregate risk exposure changes (relative to other country-occupations at specific points in time). I use gender, age, age squared, the number of full-time years in education, and household income quintile dummies as individual-level controls. The standard errors are clustered by country-occupations. Consistent with the analyses of SHP data, all dependent variables are put on a scale from zero to one and all independent variables are divided by two standard deviations. The regressions also take account of the measurement error of the estimated risk variables using the same imputation approach as in the SHP analysis (see the SHP method section above and the Supplementary Appendix for additional details).

5.3 Results

Figure 4 displays the results of six regression models. The first three models assess the effects of occupational unemployment and skill specificity (both on the ISCO one-digit level) on the

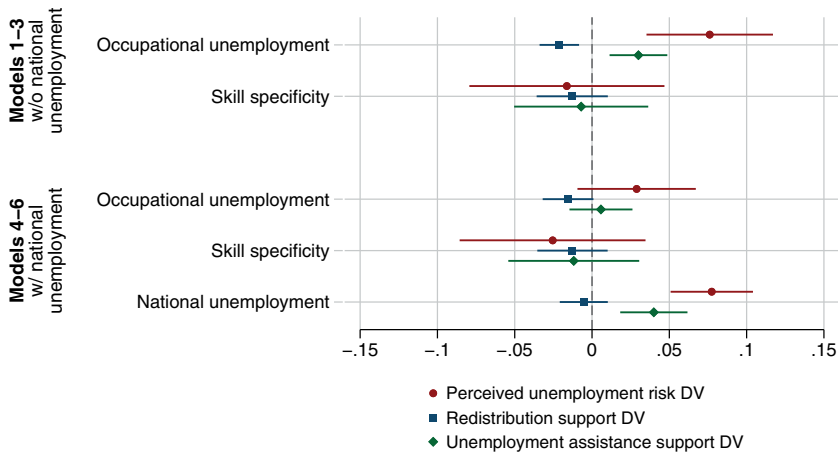

Figure 4 Effects of labor market risks in 28 countries.

Notes: The horizontal bars represent 95% confidence intervals obtained from robust standard errors clustered by country-occupations (ISCO88 1d). Country-occupation and time fixed effects as well as the controls education years, household income quintiles, gender, age, and age squared are included in all regressions. Occupational unemployment and skill specificity are both measured on the ISCO one-digit level. The full results are available in the Supplementary Appendix.

three dependent variables (perceived unemployment risk, redistribution preferences, and unemployment assistance preferences). The latter three models additionally include the national unemployment rate as an independent variable. The motivation is to check whether perceptions and preferences really depend on occupational unemployment rather than on the national headline rate because there is considerable correlation between the two variables ($r = 0.62$).

The results of the first three models suggest that occupational unemployment has a positive impact on perceived unemployment risk and unemployment assistance preferences, which matches the theoretical expectations, but a negative impact on redistribution support, which counters theoretical expectations. Furthermore, skill specificity is found to be unrelated with all three dependent variables. All estimated coefficients are small and insignificant.

The results of the latter three models show, however, that perceptions and preferences largely depend on the national unemployment rate rather than occupational unemployment. The national unemployment rate has a positive relationship with perceived unemployment risk and unemployment assistance support but no impact on redistribution preferences. In contrast, the effects of occupational unemployment become smaller and insignificant once national unemployment is included in the regression. Therefore, the ESS data again suggest that the aggregate risks discussed in the literature and policy preferences are unrelated.

The Supplementary Appendix contains the results of several robustness tests that support these findings. Using ISCO two-digit specifications of occupational unemployment and skill specificity suggests that occupational unemployment increases perceived risk even when controlling for national unemployment, but an effect on policy preferences remains absent. Furthermore, individual regressions where only one risk variable is included at a time leads to similar results as the main analyses. I also show that the positive effect of national unemployment remains when a tailored statistical specification is used (fixed effects and error clustering on the country rather than the country-occupation level).

Overall, the results validate one of the main results from the SHP data in a multi-country analysis: employed workers do not seem to optimize their policy preferences according to their exposure to aggregate risks. The ESS data rather suggest that employed workers partly adjust their preferences to the national unemployment rate. As unemployment rises, workers feel more threatened and demand stronger unemployment assistance with no concurrent effect on redistribution preferences.

6. Conclusion

This study argued that workers are boundedly rational. They follow their material self-interest, but they are ill-equipped with information on their labor market risk exposure, and they do not necessarily consider their risk exposure in preference formation. Labor market risks primarily influence welfare preferences when (a) information on risk exposure is readily available and (b) future-related concerns are made salient.

The empirical analysis of long-run panel data from Switzerland and repeated cross-sections from 28 European countries supported these expectations. First, workers consistently feel threatened when they are exposed to readily observable individual-level risks such as temporary employment. In contrast, risks on the aggregate level are uncertain and difficult to observe, which is why they were found to only weakly and inconsistently affect

perceived risk. Second, unemployment is the only factor that is found to increase welfare demand. This is consistent with theoretical expectations because the unemployed face an unambiguous risk, which makes future-related concerns salient. It is also the case that employed workers increase their demand for unemployment assistance when the national unemployment rate rises (but not their redistribution demand). These findings are consistent with bounded rationality theory because national unemployment tends to be reported and politicized, which primes workers to think about their future welfare.

All other risks employed workers are exposed to (individual risks, aggregate risks, and even subjective risks) are found to be inconsequential for preferences, in my interpretation because risk exposure is not sufficient to boost welfare demand; workers must also be primed to consider their future welfare in preference formation. Only the non-finding regarding temporary unemployment appears somewhat inconsistent with this perspective.

The findings are in line with Margalit (2019), who surveys research on the effects of temporal shocks to economic circumstances on policy preferences. He reports that 'the personal experience of economic shocks tends to exert a significant impact on individuals' political attitudes and policy preferences' (p. 279), but effects are weaker and less consistent than classical political economy models predict. Effects are found especially when more extreme economic shocks are considered (such as unemployment) compared to more gradual economic shifts (such as changes to income or economic risk perceptions). I argue that my bounded rationality framework shines a light on these conclusions because it predicts that people have stronger reactions when economic shocks become more readily observable and material considerations more salient.

This study also has limitations that must be considered in the interpretation of its results. Many findings are based on a single country (Switzerland), and the longitudinal estimates draw much of their analyzed variance from individuals who changed their job or their occupation over time. These job- and occupation-changers are younger and poorer compared to those in stable jobs. Both limitations suggest that it is unclear to what extent the results can be generalized across the workforce and across countries. However, I argue that there is no indication *per se* to doubt the external validity of the results.

With these limitations in mind, this study suggests that labor market risks only affect policy preferences under advantageous conditions, and that the risk exposure of currently employed workers may matter less in preference formation than commonly expected. The substantial implication of this argument concerns political phenomena that allegedly result from risk-based policy preferences, such as radical right voting (Abou-Chadi and Kurer, 2021), left party voting (Marx, 2014), and welfare generosity (Rehm, 2011). The theoretical justification of all these contributions is that economic risk structures policy preferences, which in turn determines voting behavior and policymaking. If the causal link between risk and preferences is inconsistent, as this study suggests, such theoretical arguments should be constrained as well.

Overall, the research field will benefit from carefully assessing the validity of risk-focused theories in future research. It is noteworthy that all studies so far that deviate from the cross-sectional approach are in line with the findings from this study. Realized unemployment increases welfare and redistribution support (Margalit, 2013; Naumann *et al.*, 2016; Ahrens, 2022; Pahontu, 2022), but studies have so far been unsuccessful in finding positive effects of experimental risk primes (Zhang, 2019; Gallego *et al.*, 2022) and within-individual changes in perceived unemployment risk (Margalit, 2013; O'Grady, 2019). It will

therefore be beneficial to continue research on the effects of labor market risks with methods that are less prone to omitted variable bias in the future, such as further panel studies or experiments.

Lastly, it is an intriguing question what current labor market transformations entail for the politics of redistribution. Post-industrial societies have been expanding their service sectors, often leaving behind the standard of stable full-time employment in the process. Recent developments have shown that new AI technologies increasingly threaten the jobs of workers in the knowledge economy that perform non-routine tasks. Overall, economic risk increases, which may lead to demand for social protection according to the standard political economy framework. This article suggests that there is certainly potential for these developments to trigger such demand for social protection. However, workers must be aware of their risk exposure and be able to connect these with their social policy preferences. My prediction is that this will only be possible via a top-down process, where skillful political entrepreneurs politicize developments such as increasing automation risk, thereby priming workers to consider their material self-interest.

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Supplementary material

Supplementary material is available at *SOCECO Journal* online.

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