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/ Preferences for work and leisure: Is labor supply a function of what workers prefer?

Patrick Kaczmarczyk and Andrew Bell

Abstract

The assumption that utility maximization determines individual employment outcomes and labor supply is central to neoclassical labor market theory and inspired a whole culture of leisure literature, which links the supply of labor to individual preferences. In this study, we use data from the World and European Value Surveys to test whether individual preferences for work vs. leisure are related to employment outcomes. We employ a multilevel logit model to test this proposition at the extensive margin, i.e., the odds of a person being in employment, and the intensive margin, i.e., the supply of labor (full-time vs. part-time). We find that there is no relationship between individual preferences and employment odds, neither at the extensive nor at the intensive margin. The effects of average country-level work-leisure preferences are mixed. Overall, therefore, our study suggests that unemployment is an institutional issue, rather than an outcome of individual preferences.

Keywords: employment, unemployment, utility maximization, labor market, culture

JEL classification: E24, J2, N30

Präferenzen für Arbeit und Freizeit: Ist das Arbeitsangebot eine Funktion dessen, was Arbeitnehmer:innen bevorzugen?

Zusammenfassung

Die Annahme, dass individuelle Nutzenmaximierung das individuelle Arbeitsangebot bestimmt, steht im Mittelpunkt der neoklassischen Arbeitsmarkttheorie und inspirierte eine ganze „culture of leisure" Literatur, die unterschiedliche Niveaus der Beschäftigung mit individuellen Präferenzen erklärt. In dieser Studie verwenden wir Daten aus den World und European Value Surveys, um zu prüfen, ob die individuellen Präferenzen für Arbeit und Freizeit mit der individuellen Situation der Beschäftigung in Zusammenhang stehen. Wir verwenden ein Multilevel Logit-Modell, um diese These auf der extensiven Marge, d. h. der Wahrscheinlichkeit, dass eine Person erwerbstätig ist, und der intensiven Marge, d. h. dem Angebot der Arbeit (Vollzeit vs. Teilzeit) zu testen. Wir stellen fest, dass es keinen Zusammenhang zwischen den individuellen Präferenzen und der Beschäftigung gibt, weder auf der extensiven noch auf der intensiven Marge. Die Auswirkungen der durchschnittlichen Arbeits- und Freizeitpräferenzen auf Länderebene sind durchwachsen. Insgesamt deutet unsere Studie daher darauf hin, dass Arbeitslosigkeit ein institutionelles Problem ist und weniger ein Ergebnis individueller Präferenzen.

Schlagwörter: Beschäftigung, Arbeitslosigkeit, Nutzenmaximierung, Arbeitsmarkt, Kultur

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1. Introduction

Is unemployment a choice for leisure? Although this claim is a pointed depiction of neoclassical labor market theory, it remains nonetheless a core assumption of orthodox economics that labor supply remains a function of individual utility maximization. Optimizing the allocation of time to work and leisure, individuals simply choose how much they want to work. There is of course a whole set of factors that can influence the decision-making process, from labor market institutions to personal family considerations. Yet, ceteris paribus, one's employment status is an expression of one's personal preferences at the given real wage. This applies to both the extensive margin, i.e., whether someone is unemployed or employed, and the intensive margin, i.e., how many hours of labor an individual chooses to supply. This theoretical foundation also provides the basis for a culture of leisure literature, in which scholars such as Blanchard (2004), Fernández (2010), or Alesina and Giuliano (2011) emphasize the role of culture in the supply of labor. Countries with higher preferences for leisure tend to supply fewer hours of work, and some economists also apply this to the overall level and duration of employment (Brügger et al. 2009).

The underpinnings of these approaches to labor market theory are widely criticized. Notably, Joan Robinson (1937, 1962) outlined that the very idea of a choice might be misleading, since most people cannot afford to live off their capital income, inheritance, or welfare. Neoclassical economic theory has repeatedly been criticized for ignoring the social and psychological effects of unemployment. The consequences of losing one's job include a significant loss of income, a decline in self-esteem and social status, high rates of mental health problems, and the "sheer boredom and monotony of long-term unemployment" (Spencer 2006: 462).

While such criticism convincingly addresses the approach of neoclassical theory on conceptual grounds, this article wants to expand this research, especially in relation to the culture of leisure literature, by empirically testing whether individual preferences for work and leisure act as predictors of an individual's employment status both at the extensive and at the intensive margin. Since some waves of the World Value Survey (WVS) and the European Value Survey (EVS) provided data on individuals' preferences on this work-leisure trade-off as well as information on the actual employment status of the respondent, it is possible to analyze the role of individual work-leisure preferences. Although one cannot directly dismantle the neoclassical assumption, as it argues that the utility of work or leisure is compared in relation to the real wage—a variable that can only be observed ex post and therefore cannot affect the individual's decision at any given point in time—this article can nonetheless address the conclusions drawn in the culture of leisure literature, which is inspired by the neoclassical individual-choice paradigm. Holding other factors constant, if individual preferences for work vs. leisure were related to individual employment outcomes, one should find that those in employment or full-time employment express higher preferences for work than those who are unemployed or only in part-time positions.

Unlike in most of the literature, the analysis employs a multilevel logit model to isolate the effect of individual-level preferences for work and leisure and to account for both micro and macro factors, which could otherwise affect the probability of employment for each respondent. To our knowledge, this is the first study that captures the implicit trade-off when investigating the effects of work-leisure preferences on employment outcomes, as the key predictor variable is based on a Likert scale with preferences for work or leisure as binary poles. Moreover, this multilevel approach allows us to examine whether some of the conclusions drawn in the culture of leisure literature, which rest on the assumption of an individual causal relationship based on observed country-level relationships, may be subject to ecological fallacy.

Indeed, contrary to what conventional economic intuition suggests, at both the extensive and the intensive margin, there is no meaningful or statistically significant relationship between an individual's work-leisure preference and the probability of them being in employment or the odds of them being in a full-time (rather than part-time) position. However, the results indicate that differences between countries in average preferences for work or leisure seem to be related to the country's average odds of employment at the extensive margin, which is in line with the findings from OLS models in the culture of leisure literature. At the intensive margin, this effect ceases to be significant. It is hence important to draw the distinction that, while there appears to be a relationship on the country level at the extensive margin, it does not imply that the coefficient is positive due to individuals' different preferences.

This article is organized as follows. It starts with a review of the development of labor market theory

to provide the foundation for the research question, showing that individual preferences for work vs. leisure are central to explaining labor market outcomes. Neoclassical economic theory inspires and forms the basis of the culture of leisure literature, which finds a relationship between overall preferences and the supply of labor, and appears to prima facie validate the assumptions. Next, the article introduces the empirical multilevel modeling approach. Sections 4, 5, and 6 present the data, methods, and results of the multilevel logit estimations. The final section contains the conclusions.

2. Micro foundations of explaining macro observations: Labor supply as a choice?

Most macroeconomic models work with static labor supply functions relying on stylized utility maximizing assumptions of consumer choice theory. From the perspective of the supply of labor, the utility-maximizing individual faces a choice between leisure and consumption—a decision that is subject to a budget constraint: the more leisure I want to enjoy, the lower my level of consumption will be (and vice versa). Higher wages increase the steepness of the budget constraint curve, as higher income concomitantly allows a higher level of consumption.

The properties of labor supply are the outcome of substitution and income effects (Cahuc et al. 2014). Given that a wage increase leads to higher opportunity costs for leisure, since a forgone hour of work now has a higher price, the individual might choose to supply more labor relative to leisure (substitution effect). On the other hand, due to higher income, a person may now equally prefer to work relatively less to enjoy more of their leisure (income effect). The labor supply curve can thus be upward *or* backward sloping, depending on which effect exceeds the other (Mankiw 2015). Economic theory generally assumes that above the reservation rate, the substitution effect dominates the income effect, so that labor supply increases as wages rise. Passing a certain threshold, the relationship is reversed, and the income effect becomes dominant (Cahuc et al. 2014). We are hence faced with a non-linear labor supply curve.

Despite building the very core of neoclassical economic theory, modern approaches to labor supply of course include more complex determinants than the simple trade-off between leisure and work. For example, much labor market research has analyzed how intrafamilial decisions and circumstances affect labor supply. Income pooling by married couples, the number of children, and unpaid care work, which often falls on women's shoulders, all affect labor supply choices and set different constraints (Blundell et al. 2007; Cahuc et al. 2014). Moreover, much research has been devoted to the effects of taxation, unemployment benefits, in-work benefits, income from other sources, such as property and financial assets, as well as life cycle-dependent decisions (Blundell/Macurdy 1999; Keane 2011). Finally, neoclassical economists also attribute employment outcomes to institutional factors, such as the presence of labor unions or minimum wage policies, which can distort market outcomes by introducing monopsonistic competition or preventing wages from adjusting to the market clearing price (Manning 2004). Some authors have also questioned the ability of workers to choose how many hours of work they can supply (Altonji/Paxson 1988), finding that "there is not free choice of hours within a job and limited choice across jobs" (Blundell et al. 2008). If the constraints that employees face are larger than conventionally assumed, this has, of course, significant implications for the extent to which changes in preferences empirically affect the choice of labor supply in a given job as well as after switching positions (Altonji/Paxson 1988).

The complexity indicates that there is no one correct way to estimate labor supply, and much of it will depend on the specific research question and data availability (Blundell/Macurdy 1999). There is a myriad of different approaches to model labor supply, a discussion of which would go beyond of scope of this paper. What is relevant to our analysis is the question of how individual preferences determine employment outcomes. Notwithstanding the impressive body of research considering a highly diverse set of factors, at the very core of neoclassical labor market theory is nonetheless the assumption that individual preferences do play a pivotal role for labor supply. Hence, holding everything else constant, one ought to find a relationship between personal preferences for leisure and work and personal employment outcomes. If preferences can in turn be regarded as a function of culture, it follows that culture itself should be able to partly explain some of the differences in the supply of labor (Fernández 2010; Alesina/Giuliano 2011).

This idea lies at the heart of the "culture of leisure" literature, in which culture became an important factor in explaining the differentials in working hours between different economies, for example, between the US and Europe (Blanchard 2004). Some of this litera-

ture, arguing that lower labor supply is a function of preferences for leisure, also introduced so-called social multiplier effects. Adopted from Glaeser et al. (2003), Alesina et al. (2005) theorize for instance that if the utility of leisure were increasing among the people who do not work, the social multiplier could amplify this effect for society at large. In other words, the more utility people find in leisure, and the more complementarities exist (i.e., the higher the returns to leisure when more people do not work), the lower aggregate labor supply will be.

Based on this idea, scholars went on to examine how differences in employment rates can be explained via higher preferences for leisure. Most findings seem to confirm the classic work-leisure trade-off, indicating that employment rate differentials can indeed be attributed to cultural preferences (Mocan/Pogorelova 2015; Mocan 2019). Moriconi/Peri (2015) find that employment outcomes are strongly dependent on cultural factors, of which the work-leisure preference is one important and significant indicator. Specifically, the authors argue that work preferences explain roughly 24% of the differences in employment rates between countries with high and low employment rates (90th and 10th percentile). Mocan/Pogorelova (2015), on the other hand, show that at least for women, the culture of leisure affects labor supply.

Another study in this regard was conducted by Brügger et al. (2009). Using a spatial regression discontinuity design in their case study of the Swiss Röstigraben, the French-German language frontier in Switzerland along which culturally distinct groups live and work under identical labor market and political institutions, the authors identified a causal relationship between cultural preferences and employment outcomes. In their research, different cultural groups were conceptualized based on the different languages spoken in the Röstigraben, which exhibited statistically significant differences in attitudes toward work and leisure. The findings suggest that cultural differences explain roughly 20 percent of the differences in unemployment durations.

Numerous studies in this literature, however, have important shortcomings. The first problem is that most studies use fixed-effects models to examine the relationship between preferences and employment outcomes. This relationship is essentially grounded in the neoclassical microeconomic theory of individual optimization. Yet, using fixed-effects models and deriving micro implications from analyzing a given "leisure culture" at an aggregate level may be subject to ecological fallacy, i.e., assuming an individual causal relationship based on observed country-level relationships (Robinson 1950). In other words, it may be that on the individual level, the preference for work or leisure does not affect employment outcomes, so that statistical noise of higher-level factors could wrongly lead to an interpretation according to which neoclassical assumptions would hold. Secondly, another problem is that much research was conducted with cross-sectional data, hence even in the case of significant coefficients, the underlying case for causality remains contestable. Third and finally, the main predictor variable employed in this research often does not accurately capture the work-leisure trade-off. Instead, different approximations are used, such as voting behavior or the extent of agreement with statements such as "I would enjoy a paid job even if I did not need the money," "work is a duty to society," or "people who don't work turn lazy" (cf. Mocan 2019). Such "culture of leisure" indicators are then regressed against some aggregated average value of working hours or employment figures in a given country. While these indicators are convenient as they are available in many waves of the EVS and WVS, they do not capture the inherent trade-off between the preferences for work and leisure under budget constraints. Moreover, they tell us little as to whether *individual* work-leisure preferences affect *individual* employment outcomes, as neoclassical theory assumes (holding other factors constant).

To address two out of the three above shortcomings, we propose a different approach. Since both individual preferences and structural factors are relevant in the literature, this research employs a multilevel logit model with two hierarchies with individuals nested in country years. This allows us to consider both country-level and individual-level work-leisure preferences. It also allows us to control for macro conditions, e.g., labor market rigidities or tax rates, while at the same time controlling for individual-level factors. This separates the effect of individual preferences on the work-leisure trade-off scale on employment outcomes from other factors and provides an appropriate method to test whether preferences do play a role for employment outcomes. As a key predictor variable, we select an indicator that puts preferences for work and leisure at opposing ends of a single scale, hence capturing the trade-off between the two.

To test the hypothesis that individual preferences ought to be related to individual employment outco-

Table 1: Overview of country years

Overview of country years			
1995 Australia	1996 Estonia	1997 Germany	2000 Spain
1995 Spain	1996 Finland	1998 Czechia	2000 Japan
1995 Japan	1996 Korea	1998 Hungary	2000 Mexico
1995 Mexico	1996 Latvia	1998 New Zealand	2001 Italy
1995 Russia	1996 Mexico	1998 Slovakia	2001 Korea
1995 US	1996 Norway	1999 US	2001 Turkey
1996 Switzerland	1996 Sweden	2000 Canada	
1996 Chile	1996 Turkey	2000 Chile	

Source: Authors' own.

mes, we selected two different approaches, based on two different dependent variables. First, by using the probability of being in any kind of employment to test the proposition on the extensive margin, i.e., whether unemployed people are unemployed because they place a higher value on leisure. The models associated with this approach are referred to as extensive margin analysis (EMA). The second approach tests the predictive power of work-leisure preferences on the intensive margin, that is, whether these preferences affect the probability of being in full-time vs. part-time employment. If the neoclassical assumption holds, one should observe in the intensive margin analysis (IMA) that respondents in full-time positions have higher preferences for work than their part-time counterparts.

3. Data

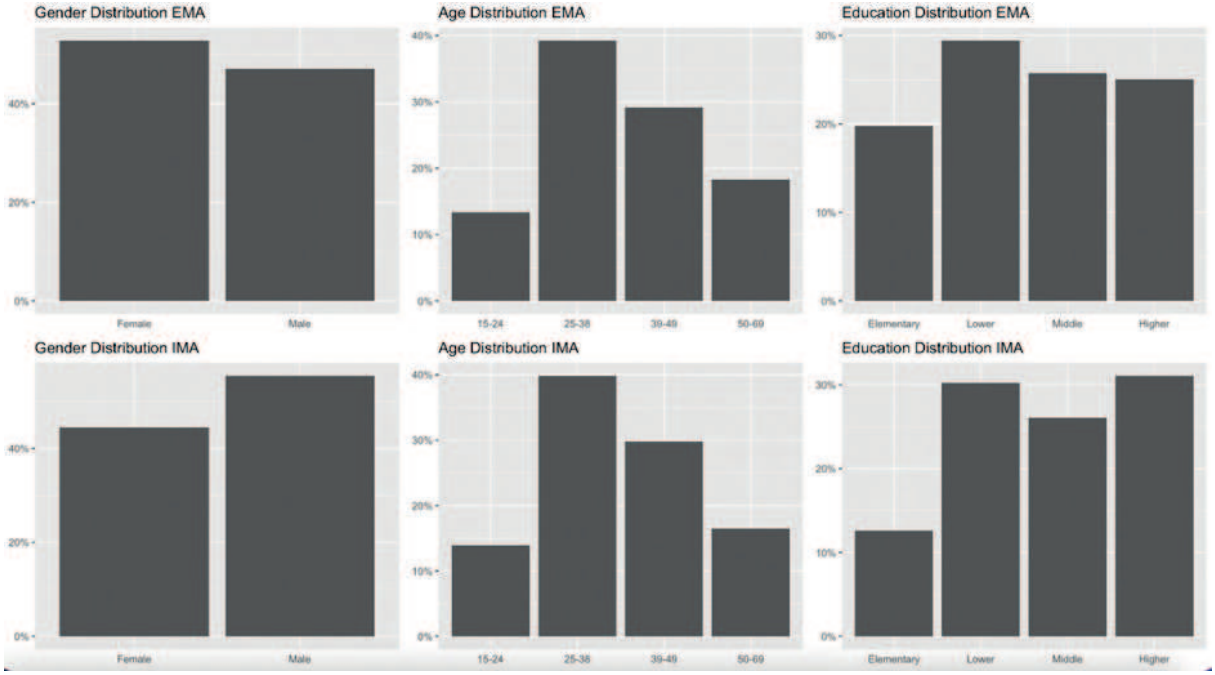
The World Value Survey (WVS) and the European Value Survey (EVS) provide the data for the key variables in our study—work-leisure preference and employment status—as well as key individual-level control variables. The work-leisure scale, which captured the inherent trade-off between work and leisure as described further below, was only part of 30 country year surveys (i.e., surveys in a given country in a given year). For some of those country years, there were no data on the macro control variables, so we had to limit our analysis to countries with available data.[1] In order to test for or reject causality, longitudinal data would have been more appropriate, yet unfortunately, there were very few cases in which respondents in a given country were asked more than once. After 2001, the indicator was abandoned entirely. While the indicator is therefore the most suitable to capture the work-leisure trade-off, the drawbacks are that the data are merely cross-sectional and cover the mid-1990s to early 2000s. An overview of the country years that were included in our research is provided in table 1.

Nonetheless, given the range of publications using the same data and finding a relationship between preferences and employment outcomes (cf. previous section), it is possible to derive meaningful conclusions and insights by taking the respective waves of the WVS and EVS and analyzing the data with a theoretically and conceptually more appropriate modeling technique. Overall, depending on the various models we tested in our EMA, the number of country year surveys we included varied between 29 and 30, with 28,876 and 30,414 individual observations respectively. Given that we had to limit our overall sample to those who indicated being in either full-time or part-time employment for our IMA, the number of observations varied between 17,222 to 19,205 individual observations in 28 to 30 country year surveys.

Figure 1 shows the descriptive statistics for our sample. We find that the distribution across gender is fairly equal, with a slightly higher number of females in our EMA and of males in our IMA. The distribution of age and education is also similar across our different samples. While 40 percent in both samples are in the

1 Data for country years was missing for the following: Czechia (labor market flexibility 1990–94, taxation level 1990–92), Estonia (labor market flexibility 1990–94, size of the welfare state 1990–94, and taxation level 1990–94), Hungary (labor market flexibility 1990–94, size of the welfare state 1990–94, and taxation level 1990), Israel (size of the welfare state 1990–95, taxation level 1990–94), Latvia (labor market flexibility 1990–94, size of the welfare state 1990–94, and taxation level 1990–94), Mexico (taxation level 1990–94), Poland (taxation level 1990), Russia (no data on taxation level), Slovakia (size of the welfare state 1990–94, taxation level 1990–94), Slovenia (size of the welfare state 1990–94, taxation level 1990–94), Turkey (size of the welfare state 1990–94).

Figure 1: Descriptive statistics



Source: Authors' own.

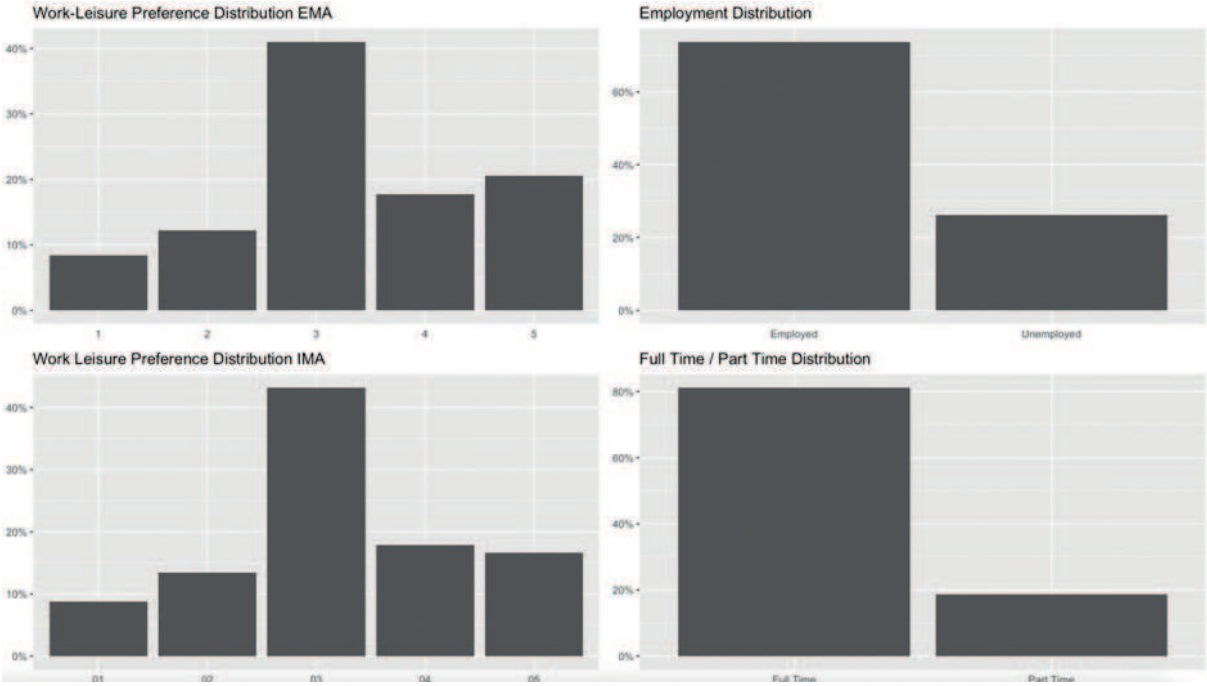
25–38 age group, 30 percent are between 39 and 49 years old and just under 20 percent find themselves in the group of 50–69-year-olds. Regarding education, it is noticeable that in our IMA, the share of middle and higher education is higher than in our EMA, whereas the share of those with only elementary education (12.6 percent) is significantly lower (20 percent).

The outcome variables are binary measures of employment. This is based on a self-reported measure where respondents are asked to indicate their status of employment. The choices include (1) full-time, (2) part-time, (3) self-employed, (4) retired, (5) ughper, (6) student, (7) unemployed, and (8) other. From this we produced two outcome variables. The first was an indicator of any employment (1) against non-employment (which includes voluntarily and involuntarily unemployed, and inactive, individuals). However, because the process of work preference could operate only among those who are employed, and affects the number of hours worked, we additionally analyze a second binary variable looking only at employed individuals, with 1 indicating full-time employment and 0 part-time employment (without any further specification of hours per week provided by the data). In our analysis, we excluded students, retirees, homemakers, and those classified as others (e.g., missing, unknown, not asked in survey, etc.).

The main independent variable of interest, work-leisure preference, was measured on a 5-level Likert scale, ranging from 1 ("It is leisure that makes life worth living, not work") to 5 ("Work is what makes life worth living, not leisure"). As previously mentioned, this operationalization allows us to capture the individuals' trade-off between work and leisure on the indifference curve. This is an important advantage compared to other measures of the effect of preferences on employment outcomes, which largely relied on proxies as predictor variables that did not address the above budget constraints, such as the degree of agreement with the statement "I would enjoy a paid job even if I did not need the money" (Brügger et al. 2009). The distribution of the key variables is shown in figure 2, where we immediately find that a very high share of respondents—around 40 percent in both samples—gave a value of 3, which indicates that some form of work-life balance is the preferred option. In our EMA, 26 percent of respondents did not have a job. In our IMA sample, in turn, which only included those respondents who indicated they were in employment, 81 percent were in full-time employment.

The selection of control variables followed the economics and political economy literature. On an individual level, significant factors include gender, education, and age (Wetherell et al. 1987; Lippmann 2008; Ridell/

Figure 2: Distribution of key variables in the samples



Source: Authors' own.

Table 2: Overview of selected variables

Variables	Measurement	Source
Key outcome variable		
Employment	Binary	WVS/EVS
Full/part-time employment	Binary	WVS/EVS
Key predictor variable		
Work preference	Likert scale, centered	WVS/EVS
Individual-level control variables		
Age	Categorical (15–24, 25–38, 39–49, 50–69)	WVS/EVS
Education	Categorical (elementary, lower, middle, higher)	WVS/EVS
Gender	Binary	WVS/EVS
Country-level control variables		
GDP per capita	PPP (constant 2011 international $)	World Bank
Unemployment	Headline rate	World Bank
Size of the welfare state	Share of government social spending (% of GDP)	OECD
Taxation level	Personal income tax (% of GDP)	OECD
Labor market flexibility (LMF)	Score incl. measures of hiring regulations minimum wage, centralized collective bargaining, regulations of working hours	Fraser Institute

Source: Authors' own.

Song 2009; Stiglitz 2015). Unfortunately, we could not control for "offered income," which we might expect to be related to employment decisions, given that there is no measure of this for those who are unemployed. The data also did not allow for any controlling for ethnicity, as it was not included as an item in the respective surveys, albeit the importance of this variable is not disputed (Poster 2008). To account for the higher-level effects of macroeconomic conditions and institutions on individual employment outcomes and on individuals' choice of labor supply, we controlled for government policies, notably tax (share of personal

income tax as a percentage of GDP) and welfare policies (social spending as a percentage of GDP), as well as GDP per capita (Blundell/Macurdy 1999; Lee 2000). To eliminate the effects on individual employment odds from the general conditions of the labor market, we controlled for the headline unemployment rate. Finally, to address the neoclassical concern of flexibility in labor markets (Chakravarty/MacKay 1999), we included an index for labor market flexibility (LMF) from the Fraser Institute's Economic Freedom of the World (EFW) database, as operationalized in Bernal-Verdugo et al. (2012). The data we used for the other indicators came from public institutions, including the World Bank, the IMF, and the OECD. In order to facilitate the computation of an otherwise too complex model, we rescaled the size of the welfare state and labor market flexibility, as well as the taxation level (IMA only), so that these variables range from values of 0 to 1, with 0 indicating the lowest and 1 indicating the highest score in the sample. Table 2 provides an overview of selected variables.

4. Method

We first analyzed the differences in the distribution of our main predictor variable, using the Wilcoxon test to obtain the significance level of the differences between groups. Next, to be able to account for differences between country years, we employed a multilevel logit model (Gelman/Hill 2007). This not only avoids both the ecological fallacy and atomistic fallacy (Hox 2002), but also provides a distinct contribution to the literature, which is dominated by OLS regression models that fail to take into account the heterogeneity between country years (Bell/Jones 2015). Our key predictor variable of interest was the work-leisure preference variable measured on a Likert scale. We treated this as a continuous variable, centered around its mean to ease computation and interpretation. We additionally used the categorical variable as dummy variables in other iterations of the model. The results are provided in the appendix 2 and do not substantively deviate from the results we obtained from the continuous predictor.

The first methodological steps were identical for our extensive margin analysis (EMA) and our intensive margin analysis (IMA). First, we fitted a null model (specification 0) and a model with work-leisure preference as the only predictor variable (specification 1) to see to what extent an individual's employment status might be related to their work vs. leisure preference alone. In a second step, we introduced the relevant individual-level variables to control for the effects of age, education, and gender (specification 2).

In order to control for specific higher-level variables, we could only work within the confines of the limited sample size at that level (Bryan/Jenkins 2016), a maximum of 30 country years. First, we controlled for a limited set of the most relevant higher-level control variables, which could affect individual odds of employment (specification 3). In our EMA, these variables included (1) the overall level of unemployment, (2) the size of the welfare state, and (3) the taxation level. In our IMA, we initially included the unemployment rate to check whether it might serve, via its indicative function of the overall labor market situation, as an influential factor on the decision at the intensive margin of labor supply. However, the coefficient was zero with a p-value of 0.8, hence we decided to exclude the headline unemployment rate as a control variable to keep the model simpler.

Next, in our EMA, we loosened the assumption of unvarying slopes in specification 3 by fitting a random intercept random slopes model (RIRS; specification 4). This allowed us to confirm how any association varies across a country year, allowing for the possibility that the effect of work-leisure preference might exist in some countries but not others (for a similar example, see Bell et al. 2015), as well as ensuring that standard errors are accurately estimated (Bell et al. 2019). Subsequently, in specification 5, we added the mean level of work-leisure preference in each country year as another control variable to ensure that the results are not the outcome of unmeasured cultural differences between countries. Including average work preference means that all higher-level variables related to work preferences will be controlled in the estimate of the within work-preference variable, as in a fixed-effects model (for more on this, see Bell/Jones 2015; Bell et al. 2019; Mundlak 1978)[2]. Finally, in specification 6, we added GDP per capita and labor market flexibility as additional higher-level control variables to see whether the coefficient for the mean level of work-leisure preference still holds. To fit the more complex specifications 4, 5, and 6, we used two optimizers in R that allowed us to include a higher

2 Precisely speaking, to be equivalent to a fixed-effects model, we should include the group means of all level 1 variables (see Bell et al 2019). As a sensitivity analysis, we also ran the model in this way (see appendix 1) – and the results were unchanged.

number of level 2 control variables (Nash/Varadhan 2011). Additionally, due to convergence failures we had to take out (the constantly insignificant) taxation level predictor in specification 6.

In our IMA, we found out that using RIRS models did not improve AIC scores (cf. IMA specification 3 and 4). While we therefore included the exact same higher-level variables in our IMA models 5 and 6 as in our EMA analysis, the former were RI models only.

Our model equations can be expressed as follows:

$$\text{logit}(P_{ij}) = \beta_0 + \beta_1 * \text{Work Preference}_{ij} + \sum_2^k \beta_k X_{kij} + (U_{0j} + U_{1j} * \text{Work Preference}_{ij})$$

Here, for the EMA, P_{ij} represents the estimated probability of being employed (full-time in IMA) for individual *i* in country year j. β_1 is the coefficient associated with individual work-leisure preference, hence the key coefficient of interest. There are then *k* control variables, X_{kij}, measured at the individual and the country year level, as shown in table 4. Each will have a coefficient β_k estimated. Thus, β_2, β_3, and β_4 will estimate the effects of age (for four categories, less a reference category), β_5, β_6, and β_7 will provide estimates for the effect of education (again, four categories) and so on. The model is specified the same for the IMA, except that *Pij* refers to the probability of person *i*, in country year *j*, being employed full-time. We provide the full estimates and results in table 5 (EMA) and table 6 (IMA).

In the random part of the model, we have random intercepts (U_{0j}) and (for EMA only) random slopes (U_{1j}), which follow the usual distributional assumptions with their variances, and a covariance between them, being estimated:

$$\begin{bmatrix} U_{0j} \\ U_{1j} \end{bmatrix} \sim N(0, \begin{bmatrix} \sigma^2_{u0} & \\ \sigma_{u01} & \sigma^2_{u1} \end{bmatrix})$$

The logistic model assumes the level 1 variance to be fixed, and so it need not be estimated. We also ran the same models treating work-leisure preference as a categorical variable (see appendix 2)—the results were substantively similar.

5. Results

The results indicate that, within the sample distributions, a higher proportion of respondents in the EMA sample (20.6 percent) indicated the highest possible preference for work, while this number was substantially lower in the IMA sample (16.7 percent). As table 3, which presents the work-leisure preferences based on employment group, indicates, this difference is primarily due to the self-employed group, which expresses the highest and statistically significant preference for work. Interestingly, the distribution of the outcome variable reveals that the unemployed have a statistically significant higher mean preference for work than those in part-time and full-time positions, which is a puzzling finding if put in relation to the economics literature outlined above. From a more critical perspective, however, one could explain this by referring to the social and material benefits that people derive from work, of which the unemployed are deprived. Between the full-time and part-time group, there is no statistically significant difference in the mean value of work-leisure preferences. The details of the Wilcoxon test results are provided in appendix 3.

Table 4 provides the log odds of the null model (1), the regression with the key variable of interest as the only predictor (2), the regression model controlling for individual characteristics (3), as well as country-level variables for our EMA.

Following the standard formula in the literature for computing the intra-class correlation coefficient (cf. Snijders/Bosker 2011), we find that around 10 percent of the variance in the log odds of being employed occurs at the country year level.

$$ICC = \frac{var(u_{0j})}{var(u_{0j}) + \left(\frac{\pi^2}{3}\right)} \approx \frac{0.35}{(0.35 + 3.29)} \approx 0.096\ (EMA)$$

$$\approx \frac{0.29}{(0.29 + 3.29)} \approx 0.081\ (IMA)$$

An ICC of around 0.1 can be regarded as a fairly large effect, as it is equivalent to a median odds ratio (i.e., the average odds ratio between two country years) of 2 (Larsen/Merlo 2005). Not surprisingly, therefore, we find that the country year in which the individuals find themselves substantially affects the probability for the individual to be in employment. In other words, national factors, institutions, and policies matter for individual employment outcomes.

Regarding our key predictor, that is, the preferences on the work-leisure scale, the regression models do show a relationship between work-leisure preference and employment for EMA, in that a higher preference for work leads to higher log odds of being in employ-

Table 3: Work-leisure preferences by group

Groups (G1)	Count (n)	Mean	Standard difference	Standard error	Differences between groups (G1-G2)			
					FT	PT	SE	UE
Full-time (FT)	15607	3.20	1.13	0.01	-	0.01	-0.33***	-0.14***
Part-time (PT)	3598	3.19	1.14	0.02	-0.01	-	-0.34***	-0.15***
Self-employed (SE)	3245	3.53	1.18	0.02	0.33***	0.34***	-	0.19***
Unemployed (UE)	2479	3.34	1.24	0.03	0.14***	0.15***	-0.19***	-

Significance level of means differences: ***p < 0.01, **p < 0.05, *p < 0.1

Source: Authors' own.

ment. However, this effect disappears as soon as individual demographics are controlled for. Thus, the analysis provides no evidence that work preferences affect the odds of an individual being in employment once control variables, or random slopes, are included. Ceteris paribus, with a one-unit increase in work preference (with the mean value as the starting point), there is no evidence of a change in the probability of being employed. Much more important individual-level variables are education and gender, with highly significant and quantitatively large disadvantages for lower educated individuals and women. Compared to the respondents with an elementary education (reference category), even those with lower education have a more than 50 percent increase in the odds of employment. The corresponding odds ratio of being in employment if having obtained higher education are 5 to 1. The log odds for different genders are the largest coefficients in the models, with an odds ratio of employment of 7 to 1 for men compared to their female counterparts. Age also appears to affect the odds of employment, with experienced middle-aged workers (39–50) having a higher chance of being employed compared to respondents above the age of 50, who served as a reference category.

At the country year level, the control variables have rather minor and often insignificant effects, which is perhaps unsurprising given the small sample size at that level. As expected, higher overall unemployment significantly lowers the odds of an individual being in employment, though the coefficient estimate is small. Interestingly, our results suggest that a larger welfare state increases the odds of employment, which contradicts some of the orthodox economic postulates, claiming that higher welfare payments are, ceteris paribus, a disincentive to work. While the coefficients were not significant at the 0.1 level in specifications 3 and 4, they turned out to be significant in specifications 5 (at 0.1 level) and 6 (at 0.01 level). It should be noted, however, that the coefficients refer to an increase in impact from the lowest to the highest welfare state value in the sample, since the variable was rescaled. Taxation and labor market flexibility both turned out to be statistically not significant. Regarding the significance of random slopes, the results are mixed. The chi-square test indicates that the RIRS model is a significantly better fit (13.93 with $p < 0.001$). A comparison of the AIC values confirms this conclusion. The BIC, in contrast, indicates that RI are better, given the additional complexity that random slopes introduce. However, due to the borderline BIC value of 6.6 and the better suitability of the AIC value for the given sample size (Burnham/Anderson 2004), the RIRS appears the more appropriate model.

Interestingly, and in line with the literature on the role of culture on employment outcomes, we found that, after introducing more higher-level control variables in model 6, the country-level average work-leisure preference turned out to be significantly related to an individual's odds of being in employment (although this is only significant with some combinations of control variables). We can interpret this as mixed evidence that countries with a culture of appreciating leisure over work tend to have higher unemployment. However, it is crucial to note that this relationship does not exist at the individual level and is likely to be explained by other latent attributes. The theory that employment and unemployment are choices that are related to *individual* preferences does not have any empirical support.

The log odds in figure 3 illustrate the random effects associated with specification 4. The intercepts show variation in employment between countries, even after accounting for the variables in the model. This is evident, for example, in the cases of high unemployment in some Eastern European countries in the late 1990s. It also confirms that the null finding related to work-leisure preferences seems to apply across all country

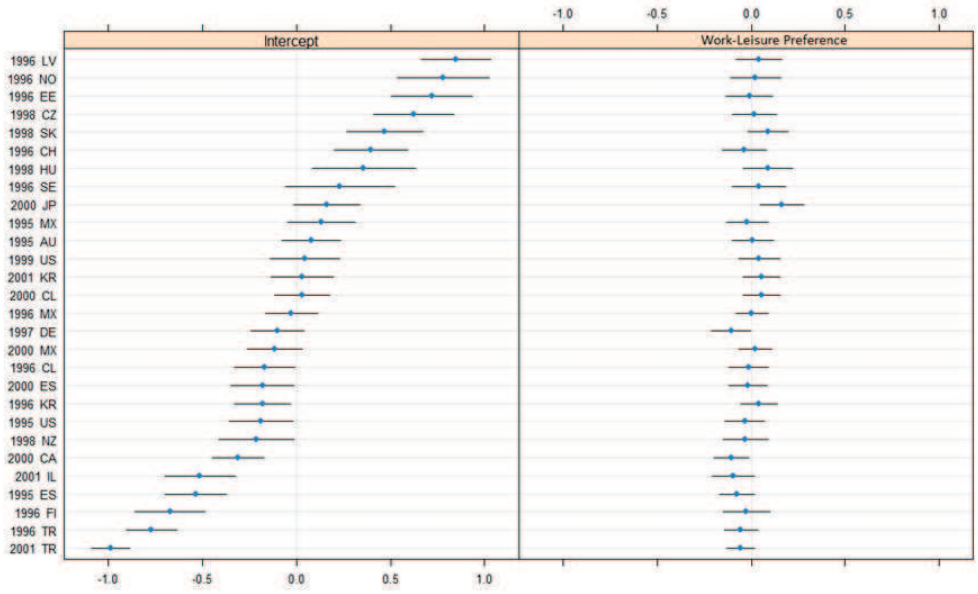
Table 4: Output of logistic regression models of EMA

EMA model (DV is employment)		0	1	2	3	4	5	6
Random effects variances	Country year intercept	0.35 (0.59)	0.34 (0.58)	0.32 (0.57)	0.21 (0.46)	0.21 (0.46)	0.20 (0.48)	0.20 (0.45)
	Slope (work preference)					0.01	0.01	0.01
	Correlation (slopes, intercepts)					0.40	0.39	0.40
Fixed-effects coefficients	Intercept	1.22*** (0.11)	1.21*** (0.11)	-0.33*** (0.11)	-0.65*** (0.22)	-0.73*** (0.22)	0.61 (0.99)	2.81 (2.41)
Individual-level predictors	Work-leisure preference a		-0.05*** (0.01)	-0.02 (0.01)	-0.02 (0.01)	-0.01 (0.02)	-0.01 (0.02)	0.00 (0.02)
	Age b							
	15–24			0.01 (0.06)	0.07 (0.06)	0.07 (0.06)	0.08 (0.06)	0.02 (0.06)
	25–38			0.09** (0.05)	0.13*** (0.05)	0.14*** (0.05)	0.14*** (0.05)	0.10** (0.05)
	39–50			0.29*** (0.05)	0.31*** (0.05)	0.32*** (0.05)	0.32*** (0.05)	0.29*** (0.05)
	Education c							
	Lower			0.56*** (0.05)	0.53*** (0.05)	0.53*** (0.05)	0.53*** (0.05)	0.56*** (0.05)
	Middle			0.84*** (0.05)	0.87*** (0.05)	0.86*** (0.05)	0.86*** (0.05)	0.84*** (0.05)
	Higher			1.62*** (0.05)	1.64*** (0.05)	1.64*** (0.05)	1.64*** (0.05)	1.62*** (0.05)
	Gender			1.95*** (0.04)	2.01*** (0.04)	2.01*** (0.04)	2.01*** (0.04)	1.95*** (0.04)
Country year-level predictors	Unemployment level				-0.04** (0.02)	-0.04* (0.02)	-0.05** (0.02)	-0.05** (0.02)
	Welfare state size e				0.74 (0.54)	0.69 (0.52)	0.88* (0.52)	1.26*** (0.41)
	Taxation e				0.68 (0.45)	0.85* (0.45)	0.43 (0.52)	
	Mean work-leisure preferences						-0.37 (0.27)	-0.60** (0.41)
	Log (GDP per capita)							-0.15 (0.20)
	Labor market flexibility							0.29 (0.33)
AIC		33022.8	33008.7	26155.2	24946.7	24939.1	24939.5	26142.2
BIC		33039.5	33033.7	26237.9	25053.6	25062.4	25071.1	26282.8
logLik		-16509.4	-16501.4	-13067.6	-12460.4	-12454.5	-12453.8	-13054.1
N		30414, 30	30414, 30	28876, 29	27526, 28	27526, 28	27526, 28	28876, 29

Note: SD (random effects) and SEs (fixed effects) in parentheses. All coefficients given on log odds scale.
***<0.01, **p<0.05, *p<0.1
a: Variable was rescaled toward the mean for better computations in more advanced models. Due to reasons of comparability and consistency, all models were regressed on the centered work-leisure preference variable.

b: Age included as a categorical variable. Seniors (age > 50) serve as the reference category.
c: Education included as a categorical variable. Elementary education (max. completed [compulsory] elementary education) serves as a baseline for all comparisons.
d: Gender included as a dummy variable. Female serves as the reference category.
e: For ease of computation, the size of the welfare state and taxation variables were rescaled from 0 to 1 (from smallest to largest value in the sample).
Ns indicate the number of observations in total, nested in country years. Models 4–6 used optimizers (bobyqa and nloptr in R).
Source: Authors' own.

Figure 3: Varying intercepts and slopes of model 4



Source: Authors' own.

years, although there is evidence of some differences, for instance in Japan in 2000, where there seems to have been a positive relationship between employment and work preference (equally there may be negative effects in Germany in 1997 and Canada in 2000). Such differences are worthy of further investigation, but do not suggest doubt in the overall null finding.

The results of our IMA, which show to what extent preferences for work or leisure might affect the odds of being in full-time or part-time employment, are similar. As the output provided in table 5 illustrates, we find that work-leisure preferences are entirely unrelated to the supply of labor. The coefficients of the control variables vary compared to the models presented in table 4, which is not surprising as we are working with a different sample. As in our EMA, however, we find that the individual-level variables of education, age, and gender matter. The higher the education level, the higher are the log odds of full-time employment. Moreover, we find that younger respondents have lower log odds of being in full-time employment compared to older peers in the sample, while the effect of gender is again the largest coefficient at the individual level. The corresponding odds ratio for male compared to female respondents is 4 to 1.

As per higher-level control variables, the size of the welfare state is associated with much better odds for full-time employment. This holds with a high level of significance across all models including higher-level variables. In line with the classic economics literature, we also find that higher levels of taxation reduce the odds of being in full-time employment, yet this effect ceases to be significant once country-level mean work-leisure preferences, GDP per capita, and labor market flexibility are introduced as additional control variables. Since we rescaled the welfare state and taxation variables from 0 to 1, the coefficients indicate the change in log odds from the lowest to the highest value in the sample. Finally, in contrast to our EMA output, average country-level mean preferences for work and leisure do not affect the odds of the individual being in full-time employment, suggesting no evidence of an effect of "leisure culture."

Table 5: Output of logistic regression models of IMA

IMA model (DV is full-time employment)		0	1	2	3	4	5	6
Random effects variances	Country year intercept	0.29 (0.54)	0.29 (0.54)	0.34 (0.58) (0.49)	0.24 (0.49)	0.24 (0.46)	0.21	0.20 (0.45)
	Slope (work preference)					0.01		
	Correlation (slopes, intercepts)					0.01		
Fixed-effects coefficients	Intercept	1.60*** (0.10)	1.60*** (0.10)	0.48*** (0.13)	0.13 (0.22)	0.13 (0.22)	-1.67 (1.13)	2.31 (2.44)
Individual-level predictors	Work-leisure preference a		-0.02 (0.02)	-0.03 (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.02 (0.02)
	Age b							
		15–24	-0.34*** (0.07)	-0.36*** (0.07)	-0.36*** (0.07)	-0.36*** (0.07)	-0.36*** (0.07)	
		25–38	0.44*** (0.06)	0.42*** (0.06)	0.43*** (0.06)	0.42*** (0.06)	0.42*** (0.06)	
		39–50	0.50*** (0.06)	0.48*** (0.06)	0.49*** (0.07)	0.48*** (0.06)	0.48*** (0.06)	
	Education c							
		Lower	0.35*** (0.07)	0.34*** (0.07)	0.33*** (0.07)	0.34*** (0.07)	0.33*** (0.07)	
		Middle	0.27*** (0.07)	0.30*** (0.07)	0.30*** (0.07)	0.30*** (0.07)	0.30*** (0.07)	
		Higher	0.38*** (0.07)	0.38*** (0.07)	0.38*** (0.07)	0.38*** (0.07)	0.38*** (0.07)	
		Gender	1.29*** (0.04)	1.31*** (0.04)	1.31*** (0.04)	1.31*** (0.04)	1.31*** (0.04)	
Country year-level predictors								
	Welfare state size e			1.64*** (0.51)	1.64*** (0.54)	1.51** (0.50)	1.68*** (0.53)	
	Taxation e			-1.19** (0.47)	-1.19** (0.48)	-0.68 (0.54)	-0.63 (0.60)	
	Mean work-leisure preferences					0.51 (0.32)	0.51 (0.48)	
	Log (GDP per capita)						-0.28 (0.24)	
	Labor market flexibility						0.44 (0.36)	
AIC		17995.9	17996.5	15833.5	15147.2	15147.5	15146.6	15148.5
BIC		18011.6	18020.1	15911.6	15240.2	15256.1	15247.4	15264.8
logLik		-8995.9	-8995.2	-7906.7	-7561.6	-7559.8	-7560.3	-7559.3
N		19205, 30	19205, 30	18351, 29	17222, 28	17222, 28	17222, 28	17222, 28

Note: SD (random effects) and SEs (fixed effects) in parentheses. All coefficients given on log odds scale.
***<0.01, **p<0.05, *p<0.1
a: Variable was rescaled toward the mean for better computations in more advanced models. Due to reasons of comparability and consistency, all models were regressed on the centered work-leisure preference variable.

b: Age included as a categorical variable. Seniors (age > 50) serve as the reference category.
c: Education included as a categorical variable. Elementary education serves as a baseline for all comparisons.
d: Gender included as a dummy variable. Female serves as the reference category.
e: For ease of computation, the size of the welfare state and the taxation variables were rescaled from 0 to 1 (from smallest to largest value in the sample).
Ns indicate the number of observations in total, nested in country years. Models 4–6 used optimizers (bobyqa and nloptr in R).
Source: Authors' own.

6. Conclusions

The objective of this study was to assess whether an individual's preference for work vs. leisure is related to an individual's employment status. This research examines a potential influence on both the extensive margin, i.e., whether a person is employed or unemployed, and the intensive margin, i.e., whether a person is in part-time or full-time employment. Following the general conceptual approach of neoclassical economics, which derives its approaches and theory from microeconomic foundations, it employs a multilevel model with individuals nested in countries at a given year, in order to control for higher-level factors, test for the possibility of a country-level effect of "leisure culture," and to overcome some of the shortcomings of conventional fixed-effects and OLS models.

The results support the strand of literature that criticizes the theoretical and conceptual approach of neoclassical economics, as the findings indicate that neither do individual preferences for work or leisure relate to general employment odds, nor is there a relationship between higher preferences for work and higher odds for working full-time compared to part-time. Indeed, what is striking is that while the self-employed reported the highest preferences for work overall in the sample, unemployed respondents expressed a statistically significant higher work preference than those in full-time or part-time employment.

Yet, interestingly, according to the EMA, there may be a relationship between employment and the higher-level country year average work-leisure preference, although this evidence is mixed and depends on the model specification. In line with the literature on cultures of leisure and their effects on employment, there is a relationship at the country year level. The significance of this relationship held in the most comprehensive model, while it just failed to cross threshold of a 0.10 p-value when only few higher-level variables were controlled for, and was consistently non-significant in the IMA models. Nonetheless, given the low number of country years (28), it suggests the plausibility and validity of the findings that were put forward in the "cultures of leisure" literature.

However, deducing an individual-level effect is to commit the ecological fallacy, since no such relationship exists on the individual level. In other words, even though previous findings suggest that higher unemployment might be related to preferences for leisure in a given country, this is not the result of individual's preference for work vs. leisure—rather it is a result of other latent higher-level (e.g., institutional) factors. In order to validate the findings of this research, we would suggest that the WVS and EVS ought to reintroduce the work-preference indicator on a single Likert scale. This would capture the inherent trade-off between leisure and work, which is so critical to economic theory. Newer data would make it possible to conduct this research with more up-to-date information and, if time series data of this indicator were to be available, it would facilitate setting up causal research designs. Moreover, we recommend the inclusion of the number of hours worked and a note on the voluntary or involuntary nature of employment. Both pieces of additional information would allow for additional tests on the intensive margin about the role of preferences for labor supply and tests on the sensitivity of the work-leisure preference indicator.

As per the results of our study, our null findings have nonetheless practical and policy implications. Much of the discourse around employment policies was based on the assumption that the main mechanism to get people into work is to lower reservation wages by dismantling social welfare. The motto of "fördern und fordern" (support and demand) became a euphemism for cutting unemployment benefits so that people would be forced to take any job as quickly as they could. The unemployed were otherwise deemed to be merely taking advantage of the welfare state, hence causing damage to wider society. In short, the discourse of unemployment was neatly tied to the assumptions of individual responsibility and optimization of personal preferences, rather than an understanding of unemployment as an institutional problem.

Yet, as this research shows, such assumptions may not have a solid empirical basis. Moreover, as we find that the unemployed express higher preferences for work than their peers in regular full or part-time

employment, one could even argue that unemployment is not a problem of deficient work attitudes that would require the unemployed to be forced back into work. If people who are out of a job have higher preferences for work, it is highly unlikely that they would not accept a job offer if they were to find one, meaning that the "stick" approach to employment policy becomes ineffective. Combining this insight with recent research, which indicates that the stick mentality is even highly damaging to production, as those who are unemployed are forced to accept jobs that do not match their skill set (Caliendo et al. 2013), the case for rethinking employment policies becomes even stronger.

Our results, by contrast, suggest that unemployment appears to be more of an institutional issue, since much of the variance is explained at the country level. This supports an approach that puts more emphasis on the carrot rather than the stick, i.e., on adequate demand policy, investments, and retraining. Equally, it complements the calls for more generous unemployment benefits and less pressure, so that those who are out of work can take the time to find a job that matches their skills.

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Appendix

Appendix 1: Fixed-effects models

		EMA model
	Intercept	0.21 (0.37)
Individual-level predictors	Work-leisure preference a	-0.02 (0.01)
	Age b	
	15–24	0.02 (0.06)
	25–38	0.10** (0.05)
	39–50	0.28*** (0.05)
	Education c	
	Elementary	-1.58*** (0.05)
	Lower	-1.05*** (0.05)
	Middle	-0.77*** (0.05)
	Gender	1.93*** (0.04)
Country year-level predictors	Mean work-leisure preferences	-0.32*** (0.06)
	Age b	
	15–24	1.46*** (0.52)
	25–38	-1.68*** (0.50)
	39–50	3.37*** (0.61)
	Education c	
	Elementary	-1.84*** (0.19)
	Lower	-0.19 (0.21)
	Middle	-0.97*** (0.25)
	Gender	4.62*** (0.63)
AIC		26466

Note: All coefficients given on log odds scale.
***<0.01, **p<0.05, *p<0.1
a: Variable was rescaled toward the mean for better computations. Due to reasons of comparability and consistency, the model was regressed on the centered work-leisure preference variable.
b: Age included as a categorical variable. Seniors (age > 50) serve as the reference category.
c: Education included as a categorical variable. Higher education serves as the reference category.
d: Gender included as a dummy variable. Female serves as the reference category.

	IMA model	
	Intercept	-1.72*** (0.64)
Individual-level predictors	Work-leisure preference a	-0.02 (0.02)
	Age b	
	15–24	-0.35*** (0.07)
	25–38	0.41*** (0.06)
	39–50	0.46*** (0.07)
	Education c	
	Elementary	-0.37*** (0.07)
	Lower	-0.05 (0.06)
	Middle	-0.08 (0.06)
	Gender	1.28*** (0.04)
Country year-level predictors	Mean work-leisure preferences	0.52*** (0.08)
	Age b	
	15–24	-1.35* (0.79)
	25–38	1.49* (0.81)
	39–50	3.88*** (1.10)
	Education c	
	Elementary	1.03*** (0.29)
	Lower	0.37 (0.26)
	Middle	0.55* (0.29)
	Gender	-2.13*** (0.46)
AIC		15467

Note: All coefficients given on log odds scale.
***<0.01, **p<0.05, *p<0.1
a: Variable was rescaled toward the mean for better computations. Due to reasons of comparability and consistency, the model was regressed on the centered work-leisure preference variable.
B: Age included as a categorical variable. Seniors (age > 50) serve as the reference category.
C: Education included as a categorical variable. Higher education serves as the reference category.
D: Gender included as a dummy variable. Female serves as the reference category.

Appendix 2: Regression results with categorical predictor

EMA model (DV is employment)				A1	A2	A3	A4
Random effects	Country year intercept variance			0.33 (0.57)	0.32 (0.57)	0.21 (0.46)	0.20 (0.44)
Fixed-effects coefficients	Intercept			1.25*** (0.12)	-0.35*** (0.13)	-0.65*** (0.22)	0.78 (1.05)
	Individual-level predictors	Work-leisure preference a					
			Low (=2)	0.01 (0.06)	0.01 (0.07)	0.02 (0.07)	0.02 (0.07)
			Medium (=3)	0.00 (0.05)	0.06 (0.06)	0.04 (0.06)	0.04 (0.06)
			High (=4)	0.01 (0.06)	0.03 (0.07)	0.02 (0.07)	0.02 (0.07)
			Highest (=5)	-0.19*** (0.06)	-0.05 (0.06)	-0.06 (0.07)	-0.06 (0.07)
		Age b					
			15–24		0.01 (0.06)	0.07 (0.06)	0.07 (0.06)
			25–38		0.10** (0.05)	0.13*** (0.05)	0.13*** (0.05)
			39–50		0.29*** (0.05)	0.31*** (0.05)	0.32*** (0.05)
		Education c					
			Lower		0.55*** (0.05)	0.53*** (0.05)	0.53*** (0.05)
			Middle		0.84*** (0.05)	0.86*** (0.05)	0.86*** (0.05)
			Higher		1.61*** (0.05)	1.63*** (0.05)	1.63*** (0.05)
		Gender			1.96*** (0.04)	2.02*** (0.04)	2.02*** (0.04)
Country-level predictors			Unemployment level			-0.04** (0.02)	-0.05** (0.02)
			Taxation			0.67 (0.44)	0.24 (0.53)
			Welfare state size e			0.74 (0.53)	0.93* (0.54)
			Mean work-leisure preferences				-0.40 (0.29)
AIC				33000.8	26156.2	24949.6	24949.9
BIC				33050.7	26263.7	25081.1	25089.7
logLik				-16494.4	-13065.1	-12458.8	-12457.9
N				30414, 30	28876, 29	27526, 28	27526, 28

Note: SD (random effects) and SEs (fixed effects) in parentheses. All coefficients given on log odds scale.
***<0.01, **p<0.05, *p<0.1
a: Work-leisure preference included as a categorical variable. Lowest preference for work/highest preference for leisure (i.e., WLP = 1) serves as the reference category.

b: Age included as a categorical variable. Seniors (age > 50) serve as the reference category.
c: Education included as a categorical variable. Elementary education (max. completed [compulsory] elementary education) serves as a baseline for all comparisons.
d: Gender included as a dummy variable. Female serves as the reference category.
e: For ease of computation, the size of the welfare state variable was rescaled from 0 to 1 (from smallest to largest social expenditure of GDP in the sample).
Ns indicate the number of observations in total, nested in country years. Model 4 used optimizers (bobyqa and nloptr in R).

IMA model (DV is full-time employment)				B1	B2	B3	B4	B5
Random effects	Country year intercept variance			0.29 (0.54)	0.34 (0.58)	0.24 (0.49)	0.22 (0.46)	0.20 (0.45)
Fixed-effects coefficients	Intercept			1.67*** (0.12)	0.50*** (0.14)	0.15 (0.25)	-1.68 (1.08)	1.11 (2.70)
	Individual-level predictors	Work-leisure preference a						
			Low (=2)	-0.05 (0.08)	0.01 (0.09)	0.02 (0.09)	0.03 (0.09)	0.02 (0.09)
			Medium (=3)	-0.07 (0.07)	0.01 (0.07)	0.00 (0.08)	0.00 (0.08)	0.00 (0.08)
			High (=4)	-0.02 (0.08)	-0.02 (0.08)	0.00 (0.09)	0.00 (0.09)	0.00 (0.09)
			Highest (=5)	-0.13 (0.08)	-0.11 (0.09)	-0.09 (0.09)	-0.10 (0.09)	-0.10 (0.09)
		Age b						
			15–24		-0.34*** (0.07)	-0.36*** (0.07)	-0.36*** (0.07)	-0.36*** (0.07)
			25–38		0.44*** (0.06)	0.42*** (0.06)	0.42*** (0.06)	0.42*** (0.06)
			39–50		0.50*** (0.06)	0.48*** (0.06)	0.48*** (0.06)	0.48*** (0.06)
		Education c						
			Lower		0.34*** (0.07)	0.33*** (0.07)	0.33*** (0.07)	0.33*** (0.07)
			Middle		0.27*** (0.07)	0.30*** (0.07)	0.30*** (0.07)	0.29*** (0.07)
			Higher		0.37*** (0.07)	0.37*** (0.07)	0.37*** (0.07)	0.37*** (0.07)
		Gender			1.29*** (0.04)	1.31*** (0.04)	1.31*** (0.04)	1.31*** (0.04)
	Country-level predictors							
	Taxation					-1.20** (0.47)	-0.68 (0.53)	-0.63 (0.61)
	Welfare state size e					1.64*** (0.51)	1.50*** (0.50)	1.67*** (0.53)
	Mean work-leisure preferences						0.52* (0.31)	0.35 (0.31)
	Log (GDP per capita)							-0.28 (0.24)
	Labor market flexibility							0.10 (0.08)

AIC	18000.3	15383.1	15151.8	15151.2	15153.1
BIC	18047.5	15939.7	15268.1	15275.2	15292.7
logLik	-8994.2	-7906.0	-7560.9	-7559.6	-7558.6
N	19205, 30	18351, 29	17222, 28	17222, 28	17222, 28

Note: SD (random effects) and SEs (fixed effects) in parentheses. All coefficients given on log odds scale.
***<0.01, **p<0.05, *p<0.1
a: Work-leisure preference included as a categorical variable. Lowest preference for work/highest preference for leisure (i.e., WLP = 1) serves as the reference category.
b: Age included as a categorical variable. Seniors (age > 50) serve as the reference category.
c: Education included as a categorical variable. Elementary education (max. completed [compulsory] elementary education) serves as a baseline for all comparisons.
d: Gender included as a dummy variable. Female serves as the reference category.

Appendix 3: Wilcoxon test: pairwise comparison between groups

Reference group (G1)	Comparative group (G2)	G1 n	G2 n	Difference in means (G1-G2)	Statistic	P-value	Adjusted p-value
Full-time	Part-time	15607	3598	0.01	28331915	0.37	0.37
Full-time	Self-employed	15607	3245	-0.33	21335554	0.00	0.00
Full-time	Unemployed	15607	2479	-0.14	18076032	0.00	0.00
Part-time	Self-employed	3598	3245	-0.34	4875971	0.00	0.00
Part-time	Unemployed	3598	2479	-0.15	4132464	0.00	0.00
Self-employed	Unemployed	3245	2479	0.19	4359822	0.00	0.00