Micro-based Participation Elasticities: New International Evidence*

Olivier Bargain[1,2] Herwig Immervoll[2,3] Eric Sommer[2,4]

[1]University Aix-Marseille
[2]IZA Bonn
[3]OECD
[4]University Cologne

October 1, 2015

!!! Work in Progress - Please do not quote !!!

Abstract

This paper provides estimates on the extensive elasticity of labor supply for 17 OECD countries for the period 2001 to 2012. Comparability across countries is achieved by applying a uniform empirical framework, exploiting tax-benefit and wage changes between demographic subgroups. Our findings confirm previous evidence on the magnitude of participation elasticities, but go beyond existing studies by providing a richer picture its interaction with institutional confounders. We do find evidence for differential responsiveness of workers along the business cycle and for different minimum wage levels.

JEL Classification: H21, H55, J22
Keywords: labor supply elasticity, taxation, design of welfare systems

*Corresponding author: Eric Sommer, (sommer@iza.org), IZA Bonn, P.O. Box 7240, 53072 Bonn, Germany, Tel.: +49(0)228 3894–419, Fax: +49(0)228 3894–510. We thank Linda Richardson, Sean Gibson, Karinne Logez and Pascal Marianna for data provision and assistance. We also thank Sebastian Königs and Andrea Bassanini for valuable suggestions.

1 Introduction

Individual employment decisions are considered to be strongly shaped by the design of tax-benefit systems, thereby explaining employment performances across countries to a considerable extent (Prescott, 2004). The magnitude of this effect is of high relevance for policy-makers in order to assess the employment impact of tax-benefit reforms (Immervoll et al., 2007). From a theoretical perspective, this margin is of major importance for the efficiency costs of taxation (Saez, 2001). As a consequence, a vast empirical literature on labor supply elasticities has emerged (Keane, 2011).

Despite this large literature, only a handful of studies provide comparable micro-based estimates for several countries by applying a unified empirical approach. Bargain et al. (2014) estimate a structural discrete-choice model, combined with a tax-benefit calculator and obtain labor supply elasticities for 17 EU countries and the US. The underlying data represent one single cross-section respectively. With a complementary approach, Jäntti et al. (2015) exploit variation between demographic groups to identify labor supply elasticities on the micro and macro level for 13 OECD countries.

We contribute to this literature in several aspects. While our approach also applies a comparable empirical framework, our data span OECD countries over the continuous period from 2001 to 2012. As labor supply elasticities have been found to change over the long term (Heim (2007), Blau and Kahn (2007)), the identification of a structural parameter is probably more reliable if focused on a narrower time window. We cover employment behavior and tax-benefit rules from North America, Southern Europe, Central Europe and transition economies alike. Our identification approach builds on Blundell et al. (1998b) exploiting variation in taxes and wages across demographic subgroups.

We test the sensitivity of our results by varying the time period for the identification, thus also uncovering potential differences in behavioral strengths before and after the Great Recession. The main contribution of this paper is to go beyond 'traditional' micro-based estimates on labor supply by providing an analysis of interactions of individual labor supply with economic and institutional confounders. These encompass indicators for the business-cycle, active labor market policies (ALMP) and the level of the minimum wage. Our findings may yield implications for future tax-benefit reforms. They shed light on how broadly certain policies can be applied. It could be that particular countries have certain institutional or cultural characteristics that ask for specific policy responses that might not be appropriate in other contexts.

Contrary to previous studies, we concentrate solely on the extensive margin of labor supply, being more relevant than the hours margin. One common explanation for this phenomenon is that tax changes are usually too small to induce behavioral adjustments; either because workers face adjustment costs or because of limited awareness of the tax rate change Chetty (2012). Moreover, the extensive margin is the critical one for the optimal design of in-work policies (Immervoll et al., 2007).

The paper is structured as follows. Section 2 describes our data base, as well as our concept for the work incentive. Section 3 explains the estimation strategy, while section 4 presents the results. Section 5 concludes and discusses policy implications.

2 Data

Employment For European countries, we rely on the European Labor Force Surveys (EU-LFS). It is a comprehensive household survey, which is nowadays conducted in more than 30 European countries and coordinated by Eurostat. In the early 2000s, its survey design switched from a snapshot in spring to a continuous sampling over the whole year. It serves as reference for the officially published employment and unemployment rates. The EU-LFS is delivered in two formats, as quarterly and annual sample. For our analysis, we use the annual samples. Although they regularly bear fewer observations than the quarterly samples, only these contain the so-called 'structural variables' on personal relations within the household.[1] For the US, we rely the Current Population Survey (CPS). Our outcome variable of interest is the employment status, which is defined following ILO standards. Apart from persons in paid employment and self-employment, this encompasses workers temporarily not at work for reasons such as illness, maternity leave, vacation, strike, educational leave. In order to net out effects from transition from education and into retirement, we limit the sample to prime-aged workers between 25 and 54 years. Following common practice, we exclude self-employed persons, as their employment behavior arguably follows a different rationale than that of employees, which implies different responses to incentives induced by the tax-benefit system.

Work Incentives A comprehensive measure on the monetary employment incentive needs to account for tax and contribution payments and withdrawal of earnings-related transfers when entering the labor market from inactivity I into Employment E. We hence apply the Participation Tax Rate (PTR)(Immervoll et al., 2007), which is defined as follows:

$$PTR = \tau = 1 - \frac{\Delta y_{net}}{\Delta y_{gross}} = 1 - \frac{y^E_{net} - y^I_{net}}{y^E_{gross} - y^I_{gross}} \tag{1}$$

τ has to be interpreted as the share of gross income that is taxed away upon entering employment (Carone et al., 2004). For the calculation, we assume a transition from zero weekly hours to country-specific full-time work. Housing benefits are not considered in the calculations, as they as are hard to assess accurately due to within-country variation in housing costs. Transitory benefits, such as temporary unemployment benefits, are also not considered. This accounts for the fact that the planning horizon of an individual may be longer than the limited time of benefit payment. In this case, participation tax rates

[1] This information is generally not available for Denmark, Switzerland and Norway. For Finland, a reduced special sample was used.

based on short-term considerations may be too high (Pestel and Bartels, 2015).

The assignment of an individual PTR in the micro-data constitutes a challenge on its own, as the EU-LFS does not contain information individual earnings y^E_{gross}. We hence have to rely on auxiliary sources. We compute annual mean earnings by age group (25-34, 35-44,45-55), obtained education and sex from national surveys.[2] In the next step, we obtain net income in and out of employment from the OECD TaxBenefit Calculator. Gross income when not working is either zero for singles or corresponds to the earnings of the spouse. The calculation accounts for family background, i. e. marital status, employment status and qualification of the spouse and presence of children, yielding the individual PTR.[3] Persons in households with more than three adults and with non-married partners are not assigned a PTR and are hence excluded from the analysis. For workers in these households, a clear-cut classification as single or couple household cannot be done. The OECD TaxBenefit Calculator contains policy parameters for all OECD countries since 2001.

The selection of the estimation sample is ultimately driven by data availability and asks for sufficient time coverage by Labor Force Survey and TaxBenefit Calculator at the same time. Moreover, we abstain from including small sample countries such as Luxembourg, Estonia and Slovenia, as group employment rates are very volatile due to small sample sizes. Table 4 in the Appendix gives an overview about the sample sizes by country and year.

3 Empirical Approach

Identifying the elasticity of labor supply is known to be associated with several empirical challenges (Keane, 2011).[4] Among these are unobserved tastes for work, endogeneity of the tax rate and measurement error in wages. One way to account for unobserved tastes for work is a Grouping Estimator, as suggested by Blundell et al. (1998a). It exploits variation in working hours and/or employment between different demographic groups. These need to be exogenous from the workers' point of view. In line with Jäntti et al. (2015), we define groups according age, gender and obtained education.[5] Marital status and/or the number of children would be invalid determinants for group membership. The underlying assumption is that tastes for work are sufficiently constant within demographic

[2] These data were also used to compute skill earnings premia in OECD (2014b, Chapter A6). Average earnings per subgroup is calculated by dividing total earnings by the size of the respective subgroup, conditional on working. These data are not available for each year. Gaps of up to three years are filled by interpolating the average earnings per group. Similarly, group-specific earnings are extrapolated if the last observation is from 2009 or later.

[3] For the PTR calculation, the number of children is either zero or two. We assign all individuals with at least one children the value for two children.

[4] As our setting is static, our elasticity concept could also be classified as a *steady state elasticity*(Chetty et al., 2011).

[5] As our sample encompasses prime-aged workers only, education can be considered endogenous.

groups. The effect of a wage change on employment is hence identified from differential behavioral responses between demographic subgroups.

For the case of the individual employment decision E_i, the net of PTR is first estimated by OLS on the full sample of interactions between year, group and country indicators μ_t, α_g and c_c .

$$1 - \tau_i = \nu + \theta(\mu_t \times \alpha_g \times c_c) + \xi_i \tag{2}$$

If the identification assumptions hold, the predicted value for the net of tax rate, which is in effect the mean value by group, year and country, is now corrected from unobserved factors determining the employment decision. It is used on the second stage as explanatory variable, along with a set on year/group/country dummies, now in levels. Year Fixed Effects capture e. g. the influence of the business cycle, while country dummies capture country-specific cultures and institutions not included in the PTR, such as child care facilities and labor market regulations. As Kleven (2014) points out, Scandinavian countries display high employment rates along with high $PTRs$ because of massive provision of public goods that are complementary to labor.

$$E_i = \alpha + \beta(\widehat{1 - \tau_i}) + \alpha_g + \mu_t + c_c + \eta_i \tag{3}$$

In order to identify β, we need tax-benefit reforms affecting the take-home wage differently across demographic groups within a country. Recall that $\widehat{1 - \tau_i}$ captures changes in income tax regimes, but also in benefit generosity and market incomes. The variation of PTR across years and countries is presented in Figures 4 and 5 across years and countries. Countries like Hungary and Ireland exhibit substantial variation in work incentives, while identification of β might be rather problematic for Germany. With the sample mean tax rate and employment rate, the extensive elasticity can then be calculated by using the definition of the extensive elasticity (Immervoll et al., 2007): $\varepsilon_{ext} = \widehat{\beta}\frac{\overline{(1-\tau)}}{\overline{E}}$.[6]

Country-wise estimates can be obtained by allowing the coefficient for $1 - \tau$ to vary across countries.

$$E_i = \alpha + \beta(\widehat{1 - \tau_i}) + \gamma_c(\widehat{1 - \tau_i}) \times c_c + \alpha_g + \mu_t + c_c + \eta_i \tag{4}$$

In this case, the country-specific elasticity is given by $\varepsilon_{ext} = (\widehat{\beta} + \widehat{\gamma_c})\frac{\overline{(1-\tau)}}{\overline{E}}$.

A further focus of this study is to investigate to what extent workers' responsiveness to tax incentives β vary with economic and institutional circumstances. As an example, workers might react less to lower PTRs in times of recessions due to demand-side constraints. The presence of active labor market policies (ALMP) might also dampen workers' responsiveness, because participation in a training program might conflict with applying

[6]Equation 3 can also be estimated by GLS using the group-specific means for employment and tax rates, weighted by the number of observations in each cell.(Blundell et al. (1998a) and Angrist and Pischke (2009, p. 136))

for a job. To our knowledge, we are the first to investigate this kind of relationships with a micro-estimated behavioral parameter. There are however studies that systematically investigate the impact of policies and institutions on the level of (un)employment on the national level.(Bassanini and Duval, 2006; Nickell, 1997)

In order to capture the influence of such confounders, the econometric model is enhanced by interacting the net PTR with a country-specific institutional indicator.

$$E_i = \alpha + \beta(1 - \tau_i) + \delta(1 - \tau_i) \times Z^*_{ct} + \theta Z^*_{ct} + \alpha_g + \mu_t + \epsilon_i \tag{5}$$

In order to maintain the interpretation of β as the responsiveness at the mean, the indicator is normalized by its country mean: $Z^*_{ct} = Z_{ct} - \overline{Z_c}$. In particular, we apply GDP growth, the Output gap and the ratio of unemployed persons to vacancies (UV Ratio) as measures for the business cycle. Beyond, we consider ALMP spending and the level of the minimum wage.

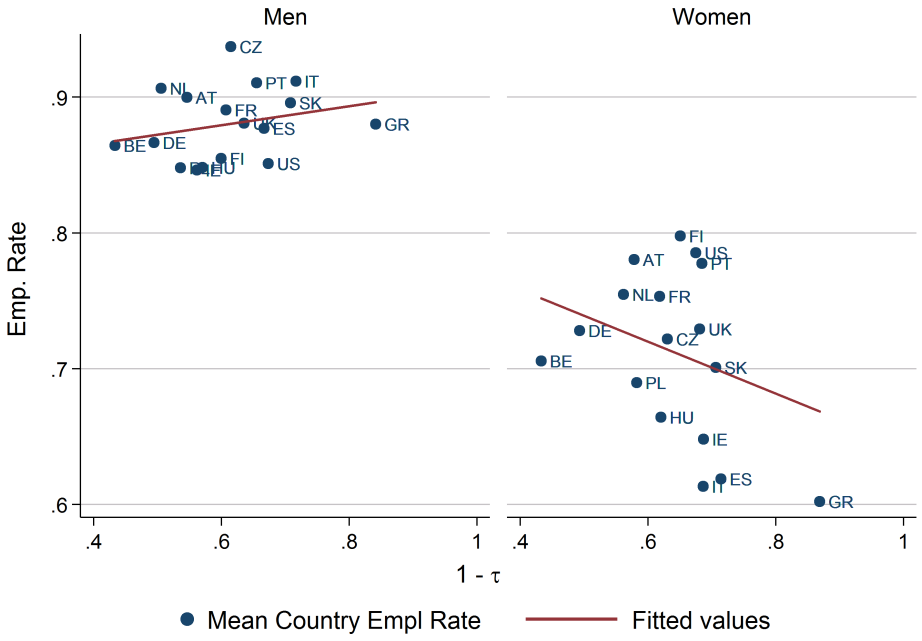
4 Results

We start by providing visual evidence on the bivariate relationship between Employment and work incentives at the extensive margin. Figure 1 contrasts average Employment rates with the respective mean PTR. For ease of interpretation, we use the net of PTR, i. e. the change in net income, in what follows. Moreover, we consider the transition from receiving basic social assistance to Full-Time Employment (Inactivity Trap). Apart from demonstrating an overall lower employment rate of women, Figure 1 suggests a negative relationship between Employment and potential earnings for women.[7]

To demonstrate the idea behind our empirical approach, Figure 2 shows the same relationship for the US, broken down by skill groups. Each dot represents one demographic group in one year. As can be seen, the overall negative slope is driven by differences across skill groups, which might be an indication for different tastes for work across skill groups. The estimation approach we apply controls for these group-specific unobserved characteristics, and exploit divergent

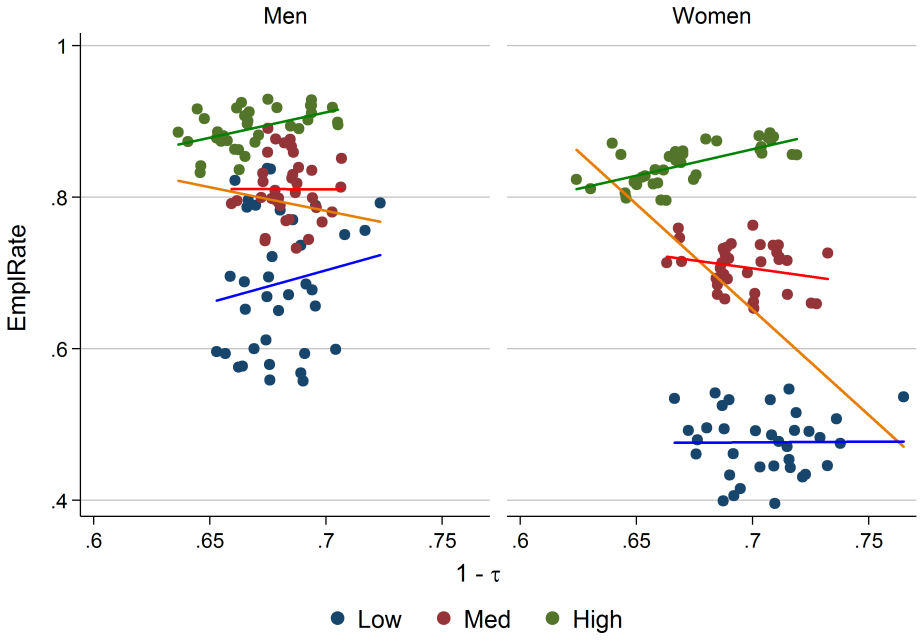
[7] See also Kleven (2014).

Figure 1: Employment and PTR: Country variation



Note: The figure depicts country-wise means of Employment Rate and Work net PTR by sex. Out-of-work income assumes reception of basic Social Assistance (*Inactivity Trap*).

Figure 2: Employment and PTR in US: Variation by skill groups



Note: Each dot represent one demographic group, defined by age, sex and education in one year. The lines represent linear fit by skill groups, the orange line is the overall linear fit.

First, we present the estimation results for Equation 3 for the pooled sample, separated by gender and, in a second step, on obtained education in Table 1. Panel A lists the estimation results for the full sample, ranging from 2001 to 2012. The coefficient of the net PTR is positive and significant for all specifications, suggesting an overall positive response to work incentives. Coefficients for men are estimated rather similar across skill groups, while showing a higher diversity for women.

In the bottom two panels, we split the estimation sample by time period, considering the period before and after the Great Recession separately. Coefficients are now slightly negative for medium-skilled men for pre- and post-crisis years.

Table 1: Pooled Sample regression

	Men				**Women**			
Skill Group:	All	Low	Medium	High	Full	Low	Medium	High
				Panel A: Full Sample				
$\widehat{1-\tau}$	0.220***	0.205***	0.0412***	0.135***	0.241***	0.237***	0.430***	0.668***
	(0.00638)	(0.0143)	(0.00807)	(0.0119)	(0.00434)	(0.0147)	(0.0138)	(0.0165)
Observations	4,981,378	912,941	2,044,766	1,520,835	4,478,542	972,015	2,159,791	1,849,572
R^2	0.091	0.057	0.029	0.017	0.041	0.046	0.024	0.006
				Panel B: Pre-crisis				
$\widehat{1-\tau}$	0.119***	0.101***	-0.170***	0.0459**	0.127***	0.254***	0.206***	0.490***
	(0.00643)	(0.0223)	(0.0126)	(0.0203)	(0.0104)	(0.0239)	(0.0241)	(0.0301)
N	2,258,428	445,626	1,012,299	800,503	2,513,877	498,380	1,080,871	934,626
R^2	0.041	0.069	0.031	0.015	0.089	0.044	0.015	0.004
				Panel C: Post-crisis				
$\widehat{1-\tau}$	0.273***	0.144***	-0.125***	0.131***	0.211***	0.197***	0.546***	0.912***
	(0.00681)	(0.0233)	(0.0146)	(0.0170)	(0.00930)	(0.0222)	(0.0239)	(0.0230)
N	2,220,114	467,315	1,032,467	720,332	2,467,501	473,635	1,078,920	914,946
R^2	0.043	0.047	0.030	0.019	0.094	0.049	0.033	0.009

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. $\widehat{1-\tau}$ is obtained from regressing $1-\tau$ on the full set of interactions of group, year and country dummies (see Eq. 3). All regressions include Group, Year and Country Fixed Effects. Pre-crisis refers to years from 2001 to 2007.

4.1 Participation Elasticities

The coefficients in Table 1 are not easy to interpreted, as they need to be contrasted with respective employment rates and work incentives. The associated elasticities are provided in Table 2.[8]

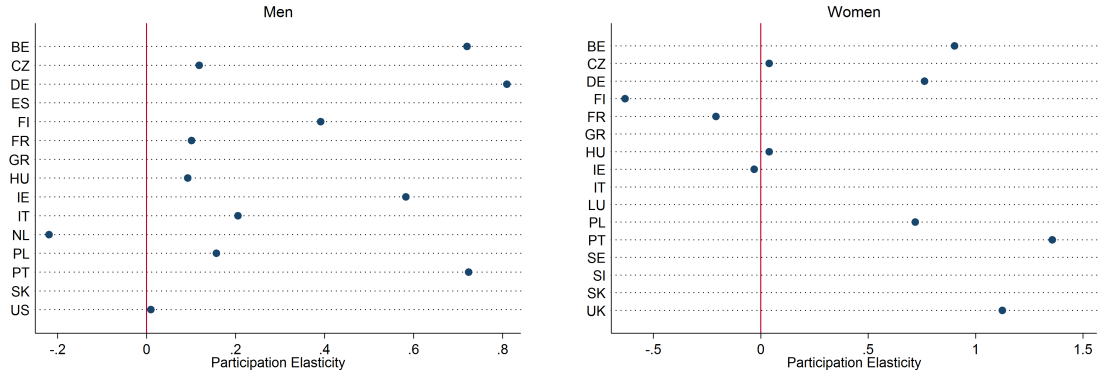
Table 2: Participation Elasticities - All Countries

	Men				Women			
Skill group	all	low	med	high	all	low	med	high
All Years	0.152	0.162	0.028	0.086	0.219	0.307	0.378	0.497
Pre-crisis	0.079	0.076	-0.109	0.028	0.112	0.318	0.173	0.355
Post-crisis	0.201	0.121	-0.091	0.089	0.190	0.259	0.477	0.669

Note: Participation elasticities based on estimates from Table 1.

Finally, We also ran Equation 4 to capture country-wise variation in workers' responsiveness. The resulting elasticities are provided in Figure 3. We only show elasticities with γ coefficients significant to the 5% level. They show substantial cross-country variation.[9]

Figure 3: Country-wise participation elasticities



[8] They come without standard errors, as this would require bootstrapping the estimation, which has not yet been done.

[9] See also Jäntti et al. (2015) for comparable participation elasticities, although based on a smaller sample.

4.2 When are workers (not) responsive?

The main contribution of this paper is to go beyond 'traditional' micro-based estimates on labor supply, but to provide an analysis of interactions of individual labor supply with economic and institutional confounders. The results for this interaction term δ from equation 5 are provided in Table 3. We apply one time-demeaned variable Z^*_{ct} at once. Hence, every estimate from Table 3 represents a distinct regression with a full set of country, year and group dummies. The coefficients can be interpreted as added components It should be noted that data on vacancies and ALMP spending are not available for all years and countries. Similarly, only a subset of countries have imposed a statutory minimum wage. As a consequence, the underlying samples are not identical across specifications.

The first two rows are to capture workers' responsiveness across the business cycle. Coefficients are significant throughout, but small in magnitude.[10] Interestingly though, all three business cycle indicators affect labor supply responses by men and women differently. While women tend to slightly more reactive in times of recessions, the opposite holds for men.

Next we consider the tightness of the labor market, defined as the ratio between unemployed workers and job vacancies. The comparability of this measure across countries is limited due to different definitions and accuracy of vacancy statistics.[11] There is however only a limited effect on labor supply responses, irrespective of sex.[12]

An interesting institution that may impact exits from inactivity or unemployment is the prevalence of labor market policies. A plausible hypothesis is that tax-benefit reforms have lower employment impacts if relatively many unemployed are participating in e. g. training programmes. Counter to this hypothesis, there is some evidence that men are more responsive if a government spends more on Active Labor Market Policies. This measure however takes values in a narrow range between -.32 and .25, suggesting that increasing ALMP spending per unemployed by a tenth of GDP per capita would raise the coefficient for men by about 0.017. While the coefficient for women is negative, it even smaller.

Finally, it is regularly stated that a high minimum wage has adverse effects on employment by raising labor costs. On the other hand, it guarantees a certain minimum income if workers find a job. If reservation wages are high, a higher statutory minimum wage might incentivize job-seekers. Our estimations support rather the latter view. The apparently high coefficient has however to be set in perspective, as it is identified from a minimum wage ratio ranging between 34 and 62% of median wage. Raising the minimum

[10] The normalized Output gap takes values between -8.5 and 7, the majority of countries moving in a bandwidth of about 5.

[11] While vacancy statistics for Austria cover the whole country, Finnish and German numbers reflect only those vacancies that are reported to the employment agencies. (OECD, 2014a).

[12] The normalized UV ratio takes values between -30 and 56.

Table 3: Estimates for economic and institutional confounders

	Men	Women
Output Gap	-0.011***	0.016***
	(0.001)	(0.001)
GDP Growth rate	-0.009***	0.013***
	(0.001)	(0.001)
UV Ratio	0.001***	-0.002***
	(0.000)	(0.000)
ALMP Spending per unemployed	0.169***	-0.047**
	(0.020)	(0.023)
Minimum Wage / Median Wage	1.772***	0.531***
	(0.097)	(0.121)

The table shows estimates for δ in Equation 5 with full set of country, group and year dummies. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All variables come from the OECD data base and are normalized by their country mean. ALMP Spending per unemployed is divided by GDP per capita in order to net out country wealth. The minimum wage level is defined by the statutory minimum wage, divided by the median wage for a full-time worker.

wage by a tenth relative to the median wage would hence increase the baseline coefficient by around 0.17 for men and 0.05 for women.

5 Conclusion

This paper provides micro-estimates on extensive labor supply elasticities for 20 OECD countries. We contribute to the existing literature by relying on comprehensive data covering up to 12 years, totaling to around 8 million individual observations. While this time span is long enough to capture tax-benefit changes, including reforms after the Great Recession, the assumption of constant behavioral parameters is still justified. These employment data are combined with the OECD tax-benefit calculator, thereby obtaining comprehensive work incentive measures. Our estimation approach exploits variation in employment rates between demographic groups. Our results for the extensive labor supply elasticity are almost uniformly non-negative, which is line with previous findings. At the same time, there is substantial degree of heterogeneity between countries. On a second step, we interact the participation tax rate with country-specific economic and institutional factors. Our preliminary results indicate heterogeneous interactions between men and women with regard to the business cycle and the prevalence of Active Labor Market Policies. This suggests that tax-benefit reforms aiming at increasing work incentives indeed work differently in different circumstances. The above findings are admittedly rather reduced-form. Further steps in this analysis would include time lags or several confounders at once to capture interdependencies.

Extensions of the present work will explore the reasons for different estimates before

and after the Great Recession. It seems also promising to investigate the sensitivity of our results with respect to other PTR definitions.

References

Angrist, J. D. and Pischke, J.-S. (2009). *Mostly Harmless Econometrics*, Princeton University Press.

Bargain, O., Orsini, K. and Peichl, A. (2014). Comparing Labor Supply Elasticities in Europe and the US: New Results, *Journal of Human Resources* **49**(3): 723–838.

Bassanini, A. and Duval, R. (2006). Employment Patterns in OECD Countries: Reassessing the role of policies and institutions, OECD Social, Employment and Migration Working Paper No. 35.

Blau, F. D. and Kahn, L. M. (2007). Changes in the labor supply behavior of married women: 1980–2000, *Journal of Labor Economics* **25**(3).

Blundell, R., Duncan, A. and Meghir, C. (1998a). Estimating labor supply responses using tax reforms, *Econometrica* pp. 827–861.

Blundell, R., Duncan, A. and Meghir, C. (1998b). Estimating Labour Supply Responses Using Tax Reforms, *Econometrica* **66(4)**(4): 827–861.

Carone, G., Immervoll, H., Paturot, D. and Salomäki, A. (2004). Indicators of Unemployment and Low-Wage Traps: Marginal Effective Tax Rates on Employment Incomes, *OECD Social, Employment and Migration Working Papers 18*, OECD Publishing.

Chetty, R. (2012). Bounds on Elasticities With Optimization Frictions: A Synthesis of Micro and Macro Evidence on Labor Supply, *Econometrica* **80**(3): 969–1018.

Chetty, R., Guren, A., Manoli, D. and Weber, A. (2011). Are micro and macro labor supply elasticities consistent? a review of evidence on the intensive and extensive margins, *American Economic Review* **101**(3): 471–75.

Heim, B. T. (2007). The incredible shrinking elasticities – married female labor supply, 1978–2002, *Journal of Human Resources* **42**(4): 881–918.

Immervoll, H., Kleven, H. J., Kreiner, C. T. and Saez, E. (2007). Welfare reform in european countries: a microsimulation analysis, *The Economic Journal* **117**(516): 1–44.

Jäntti, M., Pirttilä, J. and Selin, H. (2015). Estimating labour supply elasticities based on cross-country micro data: A bridge between micro and macro estimates?, *Journal of Public Economics, forthcoming* **127**: 87–99.

Keane, M. P. (2011). Labor supply and taxes: A survey, *Journal of Economic Literature* **49**(4): 961 – 1075.

Kleven, H. J. (2014). How Can Scandinavians Tax So Much?, *Journal of Economic Perspectives* **28**(4): 77–98.

Nickell, S. (1997). Unemployment and labour market rigidities: Europe versus North America, *Journal of Economic Perspectives* **11**(3): 55–74.

OECD (2014a). An Update on the Labour Market Situation – Further Material. Annex of Chapter 1 of the OECD Employment Outlook 2014 OECD Publishing, Paris,.

OECD (2014b). Education at a Glance 2014: OECD Indicators. OECD Publishing.

Pestel, N. and Bartels, C. (2015). The Impact of Short- and Long-term Participation Tax Rates on Labor Supply. IZA Discussion Paper No. 9151.

Prescott, E. C. (2004). Why do americans work so much more than europeans?, *Technical report*, National Bureau of Economic Research.

Saez, E. (2001). Using elasticities to derive optimal income tax rates, *Review of Economic Studies* **68**(1): 205–229.

Table 4: Sample Size by Country and Year

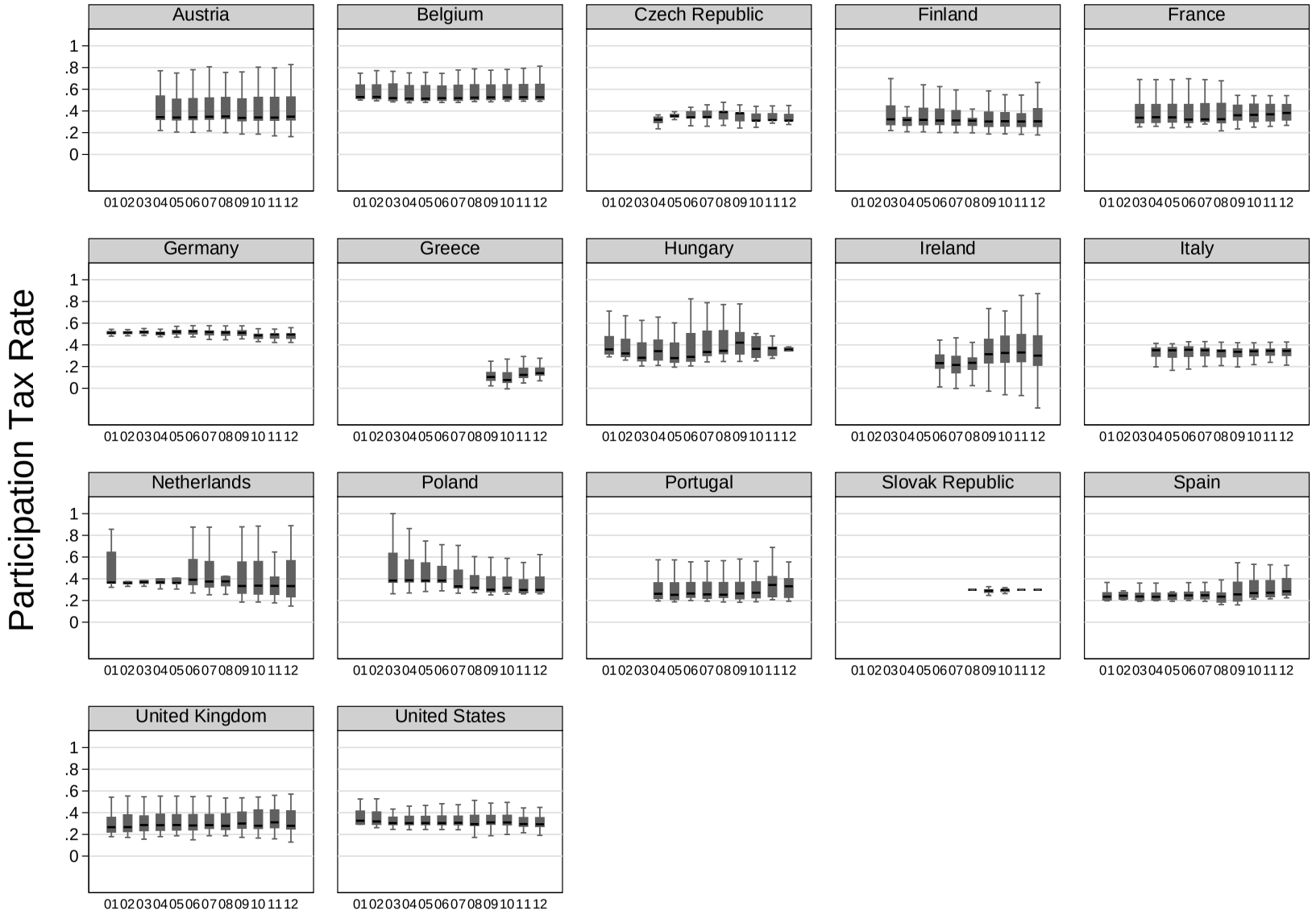
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
AT				10,718	48,734	47,651	48,129	45,074	43,458	43,082	42,571	42,215
BE	6,663	7,555	7,318	8,018	30,872	31,612	30,745	28,390	27,599	26,983	24,687	24,057
CZ				15,182	59,652	60,123	58,567	55,229	52,150	51,763	9,942	9,662
DE	88,874	87,855	87,892	85,756	132,404	13,962	13,779	13,199	13,633	12,947	12,940	129,900
ES	35,645	35,550	35,757	36,445	125,935	21,908	21,880	22,768	23,554	23,993	23,654	24,214
FI			17,696	16,933	16,353	15,908	15,174	15,362	14,777	14,334	13,459	13,334
FR			22,735	22,431	84,538	82,145	83,078	80,955	95,884	112,391	116,471	114,338
GR									70,943	72,965	64,031	54,518
HU	17,748	16,577	18,241	16,891	61,141	60,113	58,709	53,334	51,841	49,119	48,236	45,421
IE						19,390	18,811	16,930	66,006	60,357	56,053	57,493
IT				39,004	159,774	155,366	153,980	153,813	150,984	151,160	146,932	133,030
NL	32,383	34,389	33,664	38,904	158,587	35,268	34,077	34,370	28,667	25,174	26,392	24,371
PL			11,951	12,001	45,936	43,957	41,365	40,740	42,299	81,095	81,004	79,573
PT				11,135	41,335	38,030	35,055	34,104	33,662	32,910	29,042	28,198
SK								18,964	18,160	17,729	17,586	16,963
UK	32,105	31,582	29,826	31,664	30,798	29,824	29,390	46,317	22,374	21,359	20,683	19,791
US	199,791	218,253	213,115	208,009	204,533	200,542	196,919	194,391	192,193	184,936	177,231	175,193

Table 5: Descriptive Statistics

	Men			*Women*					
	EmplRate	1-τ	Age	EmplRate	1-τ	Age	Children	Married	N
AT	.914	.552	41.2	.779	.583	40.2	.592	.734	371632
BE	.862	.434	41.1	.710	.433	40.2	.634	.726	254499
CZ	.934	.615	40.3	.734	.626	39.2	.709	.828	372271
DE	.869	.495	40.5	.728	.492	40.0	.524	.695	693149
ES	.903	.668	40.7	.596	.719	39.5	.768	.887	431303
FI	.895	.611	42.0	.820	.664	41.6	.671	.820	153330
FR	.887	.605	41.3	.750	.615	40.6	.633	.717	814966
GR	.885	.846	41.7	.595	.873	40.2	.671	.857	262457
HU	.819	.565	41.1	.647	.611	39.9	.717	.837	497371
IE	.829	.55	41.2	.647	.666	39.8	.744	.812	295040
IT	.908	.716	41.7	.605	.688	40.3	.720	.835	1244043
NL	.932	.531	41.2	.768	.576	40.4	.682	.815	506246
PL	.840	.555	40.7	.694	.598	39.8	.756	.886	479921
PT	.904	.653	41.4	.761	.681	40.4	.762	.893	283471
SK	.892	.709	41.1	.715	.706	40.1	.754	.877	89402
UK	.882	.637	40.6	.730	.683	39.4	.600	.702	345713
US	.849	.673	41.6	.795	.674	43.3	.367	.588	2365106
TOTAL	.877	.624	41.2	.720	.642	40.9	.600	.747	9459920

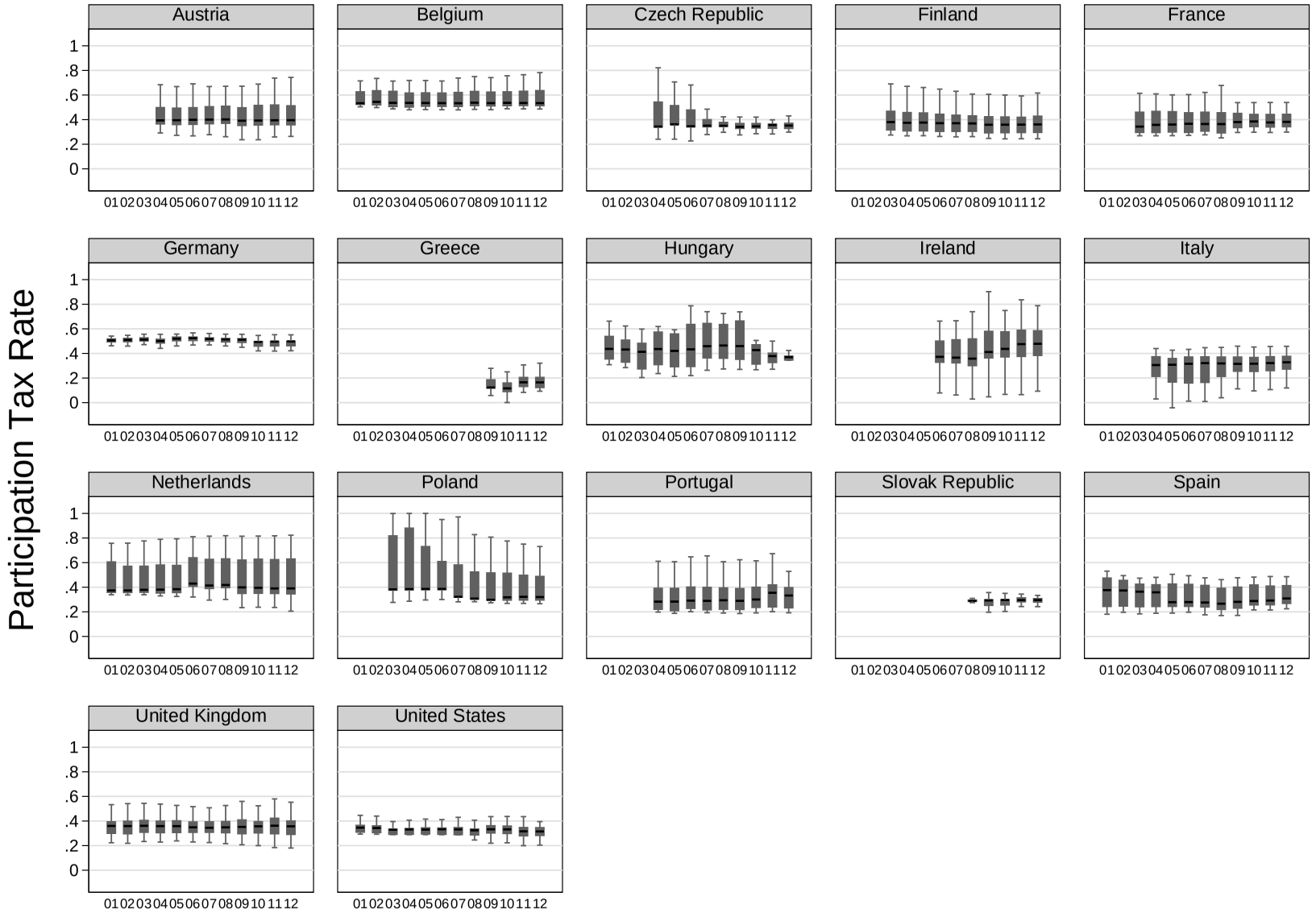
The table gives mean values by country and variable as well as the number of observations. The sample is restricted to adults between 25 and 54 years, living in households with no more than 2 adult members.

Figure 4: Variation in Participation Tax Rates for Women



The graph plots the distribution of Participation Tax Rates by year and country. The grey boxes represent the interquartile range, the black line indicates the median. A transition from Social Assistance to Full-Time Employment is assumed (Inactivity Trap), while housing benefits are not considered.

Figure 5: Variation in Participation Tax Rates for Men



The graph plots the distribution of Participation Tax Rates by year and country. The grey boxes represent the interquartile range, the black line indicates the median. A transition from Social Assistance to Full-Time Employment is assumed (Inactivity Trap), while housing benefits are not considered.