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THE IMPACT OF THE TAX AND BENEFIT SYSTEM ON THE LABOUR SUPPLY IN LATVIA

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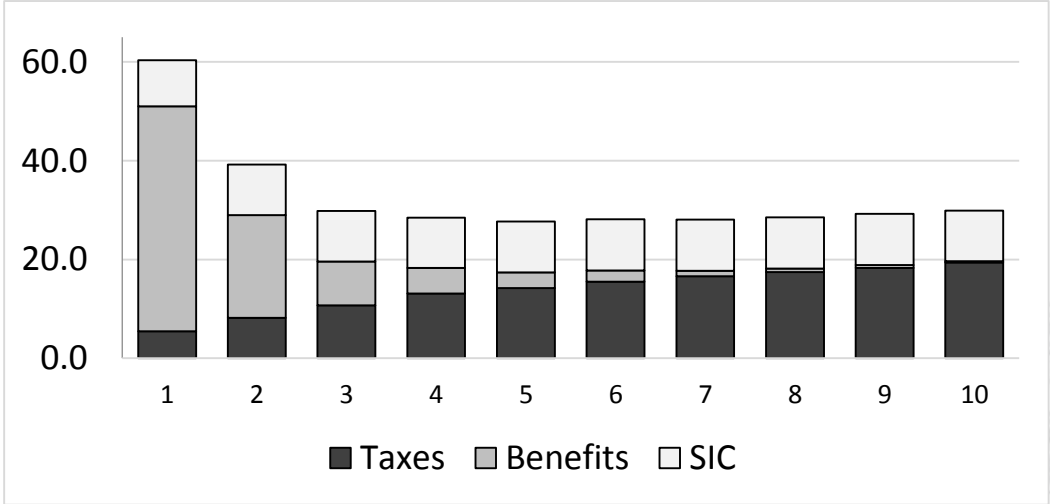
Motivation of the study

- Inactivity and unemployment rates persist to be high in Latvia;
- Participation probabilities depend on the level of expected net market earnings and expected net changes in transfers due to taking up a job;
- Recommendations should be developed for targeting labour market policies aimed to boost employment

Latvian tax and benefit system creates low incentives to take up a job, especially for potential low-income earners

- Low work incentives for low-income earners increase the poverty trap and exacerbate the problem of informal economy.
- ***Participation tax rate*** **(PTR)** is defined as the proportion of total gross earnings lost in the form of tax and withdrawn benefits when a person enters employment.

Contribution of taxes, benefits and social security contributions (SSC) to mean PTRs by deciles of equivalised disposable income, 2014, percentage points



Source: author`s calculation using EU-SILC 2015 and EUROMOD-LV

Empirical strategy of labour supply modelling approach

The author follows the approach presented in Benczur et al. (2012) and Siebertová (2013) – WP of National Bank of Slovakia and Hungary.

- Employment status (employed/non-employed) is dependent variable in the structural probit model.
- Employed/non-employed status of an individual is defined based on the positive employee earnings in the reference period
- The main dependent variable in the structural labour supply model is *gains to work*, which is defined as follows:

Gains-to-work = net wage – hypothetical transfers that are lost when taking up a job

A microsimulation tool – EUROMOD

- EUROMOD is a static microsimulation tax-benefit model, i.e., the short-term (first round) effect of reforms is being modelled.
- Re-calculate income components (taxes and benefits) under different assumptions (policy reforms, macroeconomic changes)
- Covering all the EU-28 countries by using harmonized methodology
- Supported by PROGRESS funding from EC DG-EMPL. Developed by a core team at ISER, University of Essex. EUROMOD is updated annually according to actual tax and benefit policy framework in collaboration with national experts
- Based on micro level representative national data – EU-SILC (in Latvian case)
- The author has adjusted EU-SILC 2011, 2013, 2014 un 2015 databases for use in EUROMOD. Until now only EU-SILC 2008, 2010 un 2012 databases were available.

The procedure of calculation of the gains-to-work using EUROMOD

For the employed

1. first **the simulated in-work net income** is computed **–** as a sum of the net employment income, non-labour income and simulated amount of transfers that an individual is entitled to at a given level of income.
2. **Simulated out-of-work net income** - in the next step a hypothetical scenario is assumed: income from employment is set to zero (non-labour income is left at its original level) and the corresponding amount of transfers an individual is entitled to is simulated.

For the non-employed their hypothetical earnings are predicted by using Heckman selection model. EUROMOD is used to evaluate the hypothetical amount of transfers lost when taking up a job

Prediction of the potential full-time wages using Heckman model

Heckman model is used to predict the hypothetical earnings for those actually not working on the basis of the observed workers' earnings. The first step of Heckman model is selection into status of employee.

Data**:** 5 waves of EU-SILC 2011-2015 - cross-sectional data on household and individual level provides information on income, living conditions, social exclusion and poverty.

Setup of the sample:

1. restricted by age: persons older than 15 and younger than 65;
2. individuals who report annual income below monthly minimum wage are dropped;
3. excluding those with earnings above 99 pctile
4. excluding those in education, with pension income, with self-employment income.

First Step of Heckman model: selection into status of employee

	Men		Women	
	Coef.	Sig. level	Coef.	Sig. level
Select				
Age	0.091	***	0.089	***
Age^2 (coef. *100)	-0.109	***	-0.097	***
Education (ref. Not completed Primary and primary)				
Education level: Lower Secondary, Secondary and Post-Secondary	0.149		0.788	***
Education level: Tertiary	0.542	***	1.255	***
Degree of urbanisation (ref. Rīga)				
Other cities	0.042		-0.054	
Thinly populated area	-0.139	***	-0.161	***
Marital Status (ref. Single)				
Married	0.199	***	-0.124	***
Separated, Divorced, Widowed	0.053		0.116	**
Number of children below age of 7	0.384	***	-0.599	***
Other non-labour income of all individual in the same hh, ln	-0.046	***	-0.032	***
Earnings of other individuals living in the same hh, ln	0.246	***	0.204	***
Mortgages	0.383	***	0.105	**
Year (ref. 2010)				
2011	0.225	***	0.159	***
2012	0.095	*	0.093	**
2013	0.289	***	0.386	***
2014	0.629	***	0.550	***
Constant	-2.688	***	-3.159	***

	Men		Women	
Gross annual wage (ln)	Coef.	Sig. level	Coef.	Sig. level
Age	0.022	***	0.009	*
Age^2 (coef. *100)	-0.031	***	-0.011	*
Education (ref. Not completed Primary and primary)				
Education level: Lower Secondary, Secondary and Post-Secondary	0.082		0.263	
Education level: Tertiary	0.475	***	0.734	***
Degree of urbanisation (ref. Rīga)				
Other cities	-0.074	***	-0.150	***
Thinly populated area	-0.148	***	-0.189	***
Marital Status (ref. Single)				
Married	0.125	***	0.004	
Separated, divorced, widowed	0.039		-0.044	**
Number of months spent in full-time work	0.122	***	0.118	***
Number of months spent in part-time work	0.046	***	0.047	***
Constant	6.912	***	6.792	***

Number of observations	10,217	11,894
Number of censored observations	1,373	1975
Uncensored observations	8,844	9919
LR test of indep. Eqns. (rho=0)	380.28***	298.29***
Inverse Mills ratio (lambda)	-0.533***	-0.445***

*** p<0.01, ** p<0.05, *p<0.1

Source: Author`s calculations using EU-SILC 2011-2015.

Observed and predicted earnings via Heckman selection model: men and women

MEN		Obs. N.	Mean	Std. Dev.
Observed annual earnings	for the full sample	13777	7131.6	7751.5
	for those working (on average 10 months full time)	11557	8501.6	7744.7
Predicted annual earnings	for those working	11557	8392.8	3339.4
	for non-working if working 10 months full-time	2220	7528.6	4601.6
	for non-working if working 12 months full-time	2220	9527.6	5823.4

WOMEN		Obs. N.	Mean	Std. Dev.
Observed annual earnings	for the full sample	16064	5786.1	6043.6
	for those working (on average 9.9 months full time)	13217	7032.5	5968.9
Predicted annual earnings	for those working	13217	6833.8	2847.1
	for non-working if working 9.9 months full-time	2847	5714.2	2761.5
	for non-working if working 12 months full-time	2847	7355.2	3554.5

Source: Author`s calculations using EU-SILC 2011-2015.

Distribution of gains-to-work of employed

According to the specific rules of Latvian tax-benefit system, "gains to work" are calculated for each individual at the household level as the difference between net earnings of all members in the hh and the amount of lost benefits of all members in the hh due to individual is taking up a job.

Descriptive statistics of estimated monthly gains-to-work of employed, 2010-2014, EUR

	Sample size	Mean	p5	p10	p25	p50	p75	p90	Gross minimum monthly wage	Net minimum monthly wage, employee without dependents
2010	6890	439	48	97	194	316	513	819	256.12	185.41
2011	6679	460	61	114	213	338	538	872	284.57	205.96
2012	6689	484	77	121	226	360	565	889	284.57	205.96
2013	6493	527	105	165	262	405	615	959	284.57	207.85
2014	6634	596	122	186	300	458	695	1052	320.00	235.66

Source: Author`s calculation using EU-SILC 2011-2015 and EUROMOD-LV.
Note: Gains-to-work are estimated only for all employed in the income reference period (with positive annual earnings) taking into account number of months spent at work as an employee in income reference period. Gains-to-work are not adjusted for inflation.

Further steps in the development of the research

- Structural modelling of the labour supply
- Using the results of the structural model, to determine the impact of the changes in the tax and benefit system on the individual decision to take up a full-time job in Latvia;

The novelty of the study

- The impact of the tax and benefit system on the changes in the labour supply in Latvia is being evaluated for the first time;
- Tax-benefit microsimulation model EUROMOD is being used for the labor supply structural modelling for Latvia;
- The author has adjusted EU-SILC 2011, 2013, 2014 un 2015 databases for use in EUROMOD. Until now only EU-SILC 2008, 2010 un 2012 databases were available.

Thank You

References

- Benczur, P., Katay, G., Kiss A. and O.Racz (2012): “Income Taxation, Transfers and Labour Supply at the Extensive Margin”, National Bank of Hungary, Budapest.
- Siebertová, Z., Senaj, M., Švarda, N., Valachyová, J. (2013) *“To Work or Not to Work? Estimates of Labour Supply Elasticities”*, National Bank of Slovakia, Bratislava.