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LABOUR MARKET EFFECTS OF SOCIAL SECURITY CONTRIBUTIONS REFORM IN SERBIA

ABSTRACT: *In Serbia the inactivity rate of the working-age population is close to 40%, among the highest in Europe. The country also faces a high informal employment rate of 24%. Previous research has argued that high levels of informality and inactivity are mostly due to a high effective tax wedge at low wage levels caused by a minimum base for calculation of social security contributions (SSC), sudden withdrawal of means-tested benefits once formal income is earned, and low progressivity of income tax. This paper evaluates the impact of the minimum SSC base reform scenarios on labour supply and employment formalization using tax and benefit micro-simulation models together with the structural discrete choice labour supply model based on the Survey on Income and Living Conditions Data. Although we do not find positive employment effects of the reform, it would be premature to deduce that abolishment of the minimum SSC base is not needed. At this stage in our research, until alternative labour-supply modelling is applied, with both sector and hours of work choice alternatives, it is only safe to conclude that the proposed reform will not significantly contribute to the transformation of informal full-time to formal full-time jobs.*

KEY WORDS: *social security contributions, labour market, micro-simulation, labour supply, Serbia*

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1. INTRODUCTION

A high labour force participation rate is important for competitiveness, especially with an aging population. Moreover, it is important for political and social stability. In Serbia the inactivity rate of the working-age population is close to 40%, among the highest in Europe. The country also faces a high informal employment rate of almost 24%. The size of the active population will be under further pressure in the next decade, since its main reservoir, i.e., the working-age population, is projected to drop cumulatively by around 8 percentage points as the baby boomers exit the working-age population (Arandarenko, 2011). In this respect, measures aimed at increasing labour force participation need to be addressed.

Studies by Arandarenko and Vukojevic (2008) and Koettl (2012) argue that the high levels of informality and inactivity in Serbia are mostly due to the design of the tax and benefit system. Arandarenko and Vukojevic (2008) were the first to calculate, using OECD methodology, the labour tax wedge, defined as the difference between labour costs and take-home (net) wage of workers over total labour costs, for Western Balkan countries. They show that progressivity of the tax wedge for Serbia and countries in the region is very mild or completely absent at 50%-100% of average wage levels, which is empirically the most dense section of the wage distribution. The authors argue that specific features of the region's tax regimes (social security contribution (SSC) bases and ceilings, no progressivity) encourage the dualization of the region's labour markets into an informal, low-wage segment and a formal, higher-wage segment (with large public sector representation). Specifically, they point out that by enforcing high entry costs (in terms of high minimum mandatory bases for SSC payments and modest or entirely missing zero tax brackets for personal income tax), the taxes discourage formalization of jobs for low-wage labour.

This article examines the possible labour supply effect of policy reform that includes abolishment of the minimum SSC base. In Randjelovic and Zarkovic-Rakic (2013), using a tax and benefit micro-simulation model for Serbia (SRMOD), we calculated change in effective average tax rates (EATR) and effective marginal tax rates (EMTR) across deciles of income distribution as a result of the same reform[1]. Simulation results indicated that abolishment of the minimum SSC base

1 Effective marginal tax rate shows at which rate additional income is taxed, whereas effective averaget ax rate shows the proportion of total taxes (including social security contributions) to market (gross) income.

would reduce both EMTRs and EATRs, with larger effect at the extensive margin (labour force participation response) than at the intensive margin (hours of work response). As expected, a decrease in both tax rates was most pronounced for lower income groups, given that they are most affected by the minimum contribution base. Using EATR and EMTR, however, it is only possible to show indirect disincentive effects coming from a policy reform. In order to evaluate true behavioural responses the micro-simulation model needs to be linked to the discrete choice labour supply model, a variant of which is used in this paper.

The paper is organized as follows. After this short introduction, the next section describes how the minimum SSC base provides disincentives to formal work and labour market participation, particularly among individuals with low earning capacity. The third section provides insight into methodology and data, while the fourth section discusses the main results. The last section concludes with several policy recommendations.

2. MINIMUM SOCIAL SECURITY CONTRIBUTIONS BASE: MAKING WORK NOT PAY AT LOW WAGE LEVELS?

Social security contribution systems in the Western Balkan region are characterised by the existence of mandatory minimum bases for social security contribution payments. In some countries, such as Macedonia, the minimum SSC base offers a future safety net for workers in terms of pensions and ensures some minimum contribution to social funds, given that there is no national minimum wage in the country. In Serbia between 2001 and 2004 there were education-differentiated minimum mandatory bases. For some groups (e.g., those with a college or university degree) the minimum SSC base was higher than the average wage. The uniform minimum SSC base was introduced in 2004. At that time the minimum SSC base was set at 40% of the average gross wage, and in 2007 it was reduced to 35% of the average gross wage. When the gross minimum wage for full time employment is lower than the minimum base for SSC, the minimum base is used for the calculation of income tax and social security contributions.

In Serbia there is also a minimum wage, introduced by the 2014 Labour Law. Its net amount per working hour is set semi-annually by the Socioeconomic council - the tripartite government body that includes representatives of the government,

the labour unions, and employers' associations.[2] Through almost the entire period of 2005-2014,thegross minimum wage for full time employment was higher than the minimum SSC base (except in 2006). This means that full-time minimum-wage workers should not be affected by the minimum SSC base (see Table 1). Due to weak enforcement mechanisms, however, in practice a certain number of full-time workers also get lower wages than the minimum wage, thus also being potentially affected by the minimum SSC base provision. Survey on Income and Living Conditions (SILC) data for 2013, used in this paper, shows that 5.5 % of formally employed persons receive less than the minimum wage (27.000 dinars gross in 2013). However, the minimum SSC base is only binding for those receiving less than the minimum base amount (around 21.000 dinars), and only 0.8% of formally employed workers belong to this group[3].

Table 1. Minimum SSC base and minimum wage, 2005-2014

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Gross minimum wage	10,156	11,524	13,904	17,416	20,578	21,305	23,198	26,399	27,043	26,941
Minimum SSC base	9,473	11,806	12,879	15,217	15,797	16,166	17,806	19,459	20,884	21,246

Source: Author's calculation. Note: Both indicators present the average value in a given year, assuming 174 working hours per month

Since 2002 the informal sector in Serbia has been increasingly absorbing unqualified and unskilled workers (Krstić and Sanfey 2011). Latest data from the Labour Force Survey show that almost 50% of all informally employed individuals have primary educational level at the highest (LFS 2015). However, low-educated individuals are the majority not only among the informally employed but also among the inactive. SILC data shows that inactivity rates for those with primary education are significantly higher than for those with secondary and tertiary education. At the same time, women with low education attainment are in a particularly difficult labour market position. On average, they have a 26.8 percentage point higher inactivity rate than men. The lack of working experience

2 According to amendments to the Labour Law, adopted in July 2014, the minimum wage is to be determined by the Socioeconomic Council once a year (by 15 September of the current year for the next year).

3 Individuals are considered to be in the informal sector if they work in an unregistered firm, or in a registered business but are not paying social security contributions. Unpaid family workers are also included in the group of informally employed persons. All other workers are considered to be formally employed.

is an additional contributing factor to high unemployment and inactivity rates, and again especially for women. For instance, 44% of women among those who are inactive and with primary education have no working experience

Low-education attainment coupled with lack of work experience generates low earnings capacity in the labour market. When earnings or potential earnings are low, incentives to seek employment or stay in formal employment are usually limited. For these individuals, incentive problems are further aggravated by a high tax burden on labour income due to the minimum SSC base, and by a sudden withdrawal of major social benefits once a person has any formal income on his/her record. This has been shown in Koettl's (2012) study using the Implicit Costs of Formalization (ICF) indicator. ICF measures the difference between informal income (informal wage and social assistance at the level of no formal wage) and formal net income (formal net wage and social assistance at formal wage) as a share of informal income. It is therefore the share of informal income that an informal worker has to give up in order to formalize. Koettle (2012) shows that in Serbia the ICF is high at lower wage levels. A single person with no children who earns less than the minimum wage in the informal sector has to give up between 40% and 75% of income to formalize. A one-earner couple with two children has to give up between 20% and 40% of informal income at very low wage levels, and between 40% and 55% of informal income at wage levels between 10% and 100% of the average wage.

Since a minimum SSC base is one of the factors of high ICF (for low–income and/or part-time earners), its reform is one of the policy options that may help to formalize informal employees and activate the inactive. When a minimum SSC base applies, the following formula is used for gross-to-net conversion:

$$gross\ wage = \frac{net\ wage - 1.100 + 0.199 * 21200}{0.9}$$

where 0.199 is the rate of SSC on the part of employees, 21.200 is the minimum SSC base, and 1.100 is the non-taxable threshold. If there is no minimum SSC base the formula becomes:

$$gross\ wage = \frac{net\ wage - 1.100}{0.701}$$

For example, if someone is working half-time at the minimum wage level, the wage he/she receives in gross terms is 14.000 dinars. That corresponds to 9.482

dinars in the net amount. After the abolishment of the minimum SSC base, the net wage increases to 10.900 dinars. Using the methodology explained in the next section, we aim to estimate the impact of this increase in net wage on labour force participation and formalization.

3. METHODOLOGY

In order to analyse labour supply and the fiscal effects of policy reform scenarios, we combine the tax-benefit micro-simulation model for Serbia (SRMOD) with a structural discrete-choice labour-supply model. The tax and benefit microsimulation model allows us to reproduce the budget constraint for each household, i.e., the latent set of working hours and household disposable income alternatives, while the labour supply model rationalizes observed behaviour.

The tax and benefit micro-simulation model for Serbia, SRMOD, is based on the EUROMOD platform, EUROMOD being the tax and benefit micro-simulation model for the European Union (Randjelovic and Zarković-Rakic 2013). Similar to other micro-simulation models, SRMOD is a tax and benefit calculator based on micro-data on income, earnings, and labour force participation, as well as on various socio-demographic features. SRMOD currently uses data disclosed in the Survey on Income and Living Conditions, collected for the first time in 2013 by the Statistical Office on are presentative sample of 6,501 households (20,069 individuals), stratified in two levels: enumeration districts as primary and households as secondary selection units. The SILC database contains detailed information on household and individual income, labour market status, and socio-economic features. Use of SILC data and the tax-benefit rules programmed in SRMOD enables computation of taxes and main means-tested benefits for each individual and household. Starting from the (gross) income data and simulated values of taxes and benefits, the main output of the model is disposable income for an individual/household.

When policy reform is introduced in SRMOD, the model shows the direct ('day after') effect of a reform on the change in disposable income for each individual/household. This change is expected to trigger labour participation (both at the intensive and the extensive margins), thus producing an additional impact on households' disposable income. These second-round effects are estimated using a structural labour supply model with discrete labour choice.

The labour supply model is based on the assumption that a person can choose from a finite number of working hours, depending on her/his income-leisure preferences (Van Soest 1995).Here we use an extension of the discrete choice labour supply model, the so called 'switching' model proposed by De Hoyos (2012); Bucheli and Ceni (2010); Marcouiller et al. (1997), and Saavedra and Chong (1999). It is based on the assumption that instead of choosing working hours, a person can choose between three 'sectors': inactivity, informal work, and formal work, and thus earn zero, an informal wage, or a formal wage, respectively. A person's choice of sector depends on his/her wages, other household income (partner's earnings, pension, social benefits, etc.) and individual and household characteristics (e.g., level of education, number of children, etc.). More formally, the person in the switching model maximizes the utility function:

$$V_{ji} = \alpha_i \cdot DI(w_i S_j, Z_i) + b_i + c_i + v_{ji}, \quad j = 0, inf, for \quad i = 1, 2, ..., n.$$

Vhi is a total utility that is the sum of the deterministic $\alpha_i \cdot DI(w_i S_j, Z_i) + b_i + c_i$ and the stochastic part (v_{ji})[4]. Within the deterministic part of the utility function, $DI(w_i S_j, Z_i)$ is a household disposable income, calculated by SRMOD based on the person's choice of 'sector' (*Sj*), the wage he/she earns in this sector[5] (*wji*), and other household characteristics and income (*Zi*). Parameter *ai* represents income preferences, while *bi* and *ci* are the observed preferences for working in the informal and formal sector respectively[6]. Both parameters b_i and c_i are expected to be negative, since not working is preferable to working in either of the sectors. Preferences are heterogeneous, in the sense that they vary with individual and household characteristics (e.g., level of education, number of children, etc.).

For the inactive and unemployed, we predict the monthly wages that they would earn in formal and informal employment. For the informally employed we predict wages that they would earn in the case of formal employment, and vice versa for the formally employed. The predictions are based on their human capital characteristics and separate wage estimates for formal and informal

4 The stochastic part of the utility function is the i.i.d. error term for each choice, which represents observational and optimization errors as well as transitory situations (Bargain 2012).

5 The wage for the inactivity 'sector' is set to zero.

6 More formal operationalization of the model includes another parameter for the inactivity 'sector'. However, for identification purposes this parameter is set to zero, so that the parameters b_i and c_i are interpreted compared to this option.

employment (using the three-stage Heckman-type model[7]). Using SRMOD, we calculate the disposable income for each individual and each of the three choices and estimate preference parameters and the probability of each of the choices. Finally, we estimate the labour supply and the 'switching' (from informal to formal employment, or vice versa) effects of the reform by comparing the predicted probabilities of the choices under pre-reform (current tax-benefit system) and post-reform conditions (after the SSC reform).

As a standard practice, a sample for the labour supply model is constructed after dropping from the database those under 18 and over 64 years of age, students, pensioners, persons with disability, and women on maternity leave. This is because their labour supply is inflexible. Additionally, we drop those who are self-employed and unpaid family members. This is a standard practice in labour supply modelling, given that it is reasonable to assume that for employees in the sample the employment decision and the number of hours worked per week are the channels through which they respond to tax reforms, while for the self-employed hours of work and employment are not the important margin of response. Therefore, their labour supply behaviour may indeed be rather different from that of salaried workers and would require a different modelling strategy. This also means that the sample for the informally employed includes only those in wage employment.

4. RESULTS

4.1 Wage Equation, Utility Function, and Labour Supply Elasticities

The estimated coefficients of the Heckman wage and selection equations for the switching model are presented in Tables A1 and A2 in the Appendix. The coefficients have the expected signs and magnitudes. For both men and women wages rise with years of education and work experience and with the probability of living in an urban area.

The participation and informal sector selection biases are present for both men and women. This means that selection into employment and informal employment is not random, but rather depends on factors such as education, number of children, marital status, region, etc. Looking at the selection equations

7 The three-stage model includes: (1) estimation of the participation choice equation, (2) estimation of the sector (formal/informal) choice equation, and (3) estimation of the formal and informal wage equation.

in both Table A1 and Table A2, we can find out more about the characteristics of individuals choosing the informal rather than the formal sector of economic activity. We observe that being married increases the probability of working in the formal sector. Our results also indicate that having children reduces the probability of women working formally, while in the case of men the results are the opposite. This may be due to the greater flexibility of informal working arrangements, which allow women to carry out informal work together with childcare and home work. Also, choosing the informal sector might be a way for women to avoid the childcare costs associated with formal employment. On the other hand, men's formal employment might represent the way to provide health care insurance for the whole family, which could be regarded as an incentive for men to opt for formal work

The parameter estimates for the utility functions are shown in Table 2. The marginal utility of income is positive, and the marginal utilities of working in the formal and informal sectors (compared to inactivity) are negative; i.e., not working is preferable to working in either of the sectors. Furthermore, the size of the parameter for the informal sector is higher than for the formal sector, indicating that the dis utility of working in the informal sector is higher than the dis utility of working in the formal sector. In other words, higher wages in the formal sector are not sufficient to explain the decision to work in the formal rather than the informal sector. The informal sector therefore has an additional 'cost' of working compared to the formal sector[8].

8 The explanation of these costs is beyond the scope of this paper. However, this result is plausible in the context of the labour market situation in Serbia, given that informal workers face a high level of job insecurity, are not covered by the social security system (health insurance, pension, etc.), and generally face poorer working conditions.

Table 2: Switching model - conditional logit estimates

	Basic model		Model with heterogeneous preferences	
VARIABLES	coef	Se	Coef	se
HH disposable income	1.095***	(0.038)	0.733***	(0.135)
HH disposable income squared	-0.004***	(0.001)	-0.006***	(0.001)
x Age			0.007**	(0.003)
x Married			0.192***	(0.068)
x Children			0.230***	(0.082)
Formal employment	-2.991***	(0.096)	-1.376***	(0.367)
x Age			-0.043***	(0.009)
x Married			0.194	(0.200)
x Children			-0.719***	(0.228)
Informal employment	-4.811***	(0.106)	-2.151***	(0.383)
x Age			-0.060***	(0.009)
x Married			-0.301	(0.221)
x Children			-1.237***	(0.294)
Observations	23,448		23,448	
Pseudo R^2	0.32		0.34	
Log likelihood	-5837		-5682	

Source: Authors' calculation. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Starting from the estimated utility functions, we have calculated participation elasticity and informal employment elasticity (Table 3). Elasticities are obtained by increasing the formal gross hourly wages by 1% under the pre-reform tax-benefit system, simulating the changes in the participation rate and the informal employment rate.

Table 3: Participation and informal employment elasticities

Elasticities	Basic model	Model with heterogeneous preferences
Participation	1.145%	1.167%
Informal employment	0.274%	0.274%

Source: Authors' calculation

The participation elasticity is positive, meaning that a wage increase would raise the participation of those that are currently inactive or unemployed. Bargain et al. (2011) provide comprehensive cross-country (17 European countries and the US)

comparison of labour supply elasticities. They find large variation in elasticities across the countries, the higher estimates being reported in countries with lower labour market participation (e.g., Italy). Estimated labour supply elasticities in Serbia are closer to the results for Southern Europe, that is, countries with lower participation rates. This is also in line with the review of labour supply elasticities reported in Meghir and Phillips (2010).

Informal employment elasticity from the switching model is positive but significantly lower than the participation elasticity, indicating that an increase of wages in the formal economy (with constant effects for the informal economy) would make only some informal workers 'switch' from the informal to the formal sector.

4.2 Participation and Formalization Effects of Policy Reform

In order to better understand the labour market effects of the reforms, it is important to first present the static or so-called 'day after' effects of the reforms before behavioural responses are taken into account. According to the results presented in Table 4, quite a small number of the currently employed are affected by the abolishment of the minimum SSC base. As already explained, in SILC data only 0.8% of formally employed individuals receive a gross wage that is lower than the minimum SSC base amount, and for whom thus the minimum base is binding. The effect of the reform, in terms of its impact on the increase of disposable income per individual, is around RSD 800 on average, thus very low.[9]

Table 4. Static effects of the reform

Reform	Number of individuals affected	Average increase in disposable income per individual	Budgetary effects
Minimum contribution base (individuals)	13,251	759	21,056,464

Source: Authors' calculation.

If the government decides to abolish the minimum social security contributions base it would reduce budgetary revenues, coming from contributions levied on both employers and employees, by a monthly amount of RSD 21 million. On a

9 With a median value of around RSD 950, the minimum being 137 dinars and the maximum increase in disposable income being 2,163 dinars.

yearly basis this would reduce government revenues by 0.08% of GDP, or 250 million dinars.

A transition matrix presented in Table 5 shows that participation and formalization effects due to minimum contributions reform are non-existent. Increase in disposable income after the reform is not high enough to make people transit from inactivity to the labour market and from the informal to the formal employment sector. Effects are also missing for those at the bottom of the income distribution who would be most affected by the reform.

Table 5. Labour supply response of SSC minimum-base reform: transition matrix

			All		
		Post-reform choice	Non-participation	Formal employment	Informal employment
Pre-reform choice	Non-participation		1,230,278	15	0
	Formal employment		0	1,479,514	0
	Informal employment		0	0	149,577
			First quintile		
Pre-reform choice	Non-participation		552,442	15	0
	Formal employment		0	29,323	0
	Informal employment		0	3	18,090

Source: Authors' calculation

5. CONCLUDING REMARKS AND POLICY RECOMMENDATIONS

Serbia is a country with a troubled labour market situation. The unemployment rate is high and the inactivity rate even higher. Inactivity is widespread among women and increases for individuals with low educational attainment. The lack of working experience is an additional contributing factor to high unemployment and inactivity rates, again especially for women. Additionally, work in the informal sector is prevalent, particularly among individuals with low earning capacity

The implicit costs of formalization in Serbia are relatively high at low wage levels due to the rule for calculation of the minimum SSC base, withdrawal of means tested benefits once formal income is earned, and low progressivity of the income tax scheme. The universal minimum SSC base (set at the 35% of the average wage) particularly affects individuals with low earning capacity. This paper assesses labour supply effects of the abolishment of the minimum contributions base using a tax and benefit micro-simulation model together with a structural discrete labour supply model.

The results show that reform would not bring any positive effects in labour market participation and formalization even for the people at the bottom of the income distribution who are most affected by the existence of the minimum SSC base. Government would lose some RSD 250 million (0.08% of GDP) of public revenue. However, given the limitations of our current modelling approach, for the moment it is only safe to conclude that the proposed reform will not significantly contribute to the transformation of informal full-time to formal full-time work.

Our model does not introduce hours of work into the decision to join formal or informal labour market activity. Given that the proposal to abolish the minimum SSC base aims to target those wishing to work part-time, in order to evaluate the full impact of the reform the next step should be to develop a more advanced model that integrates both choice of hours and sectors. This could produce different results from those obtained in this paper.

One final word of caution. A key hypothesis of this type of model is perfect elasticity of labour demand. In a labour market were unemployment is severe, like that in Serbia, it is unlikely that this hypothesis will hold. It is then necessary to take into account unemployment in the model to estimate unbiased parameters. Ideally, it would be necessary to evaluate elasticity of labour demand to predict accurately the effect of a policy reform. This cannot be done with the type of household data that we have, but would require firm-level data. This all presents an interesting avenue for future research.

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APPENDIX

Table A1: Heckman wage equation, switching model (formal income)

		men		women	
EQUATION	VARIABLES	coef	se	coef	se
lny	Years of highest education	0.051***	(0.006)	0.070***	(0.008)
	Secondary education (1-3 years)[1]	-0.032	(0.021)	-0.092***	(0.026)
	Tertiary education (4 years)[1]	0.227***	(0.035)	0.257***	(0.037)
	Work experience	0.006***	(0.001)	0.009***	(0.001)
	Settlement (urban=1)	0.052***	(0.017)	0.079***	(0.018)
	Vojvodina[2]	-0.076***	(0.024)	-0.050**	(0.022)
	West Serbia[2]	-0.122***	(0.024)	-0.107***	(0.021)
	South-East Serbia[2]	-0.148***	(0.025)	-0.155***	(0.024)
	Constant	9.771***	(0.073)	9.246***	(0.092)
select	Years of highest education	0.146***	(0.010)	0.176***	(0.009)
non-participation	Age	0.178***	(0.014)	0.196***	(0.016)
	Age squared	-0.002***	(0.000)	-0.002***	(0.000)
	Settlement (urban=1)	-0.289***	(0.049)	0.123**	(0.048)
	Regional unemployment rate (%)	-0.005	(0.010)	-0.025***	(0.010)
	Number of children below 1 year	0.189*	(0.103)	-0.648***	(0.116)
	Number of children	-0.009	(0.027)	-0.106***	(0.028)
	Marital status (2 categories)	0.552***	(0.058)	0.070	(0.052)
	Pensions (ad_eq, 000)	-0.010***	(0.003)	-0.005	(0.003)
	Benefits (ad_eq, 000)	-0.027**	(0.013)	-0.018**	(0.008)
	Constant	-4.576***	(0.364)	-5.304***	(0.384)
	Athrho	-0.258***	(0.064)	-0.088	(0.160)
	lnsigma	-0.965***	(0.021)	-1.086***	(0.026)
	Observations	3,532		3,882	
	Censored N	1,380		2,052	
	rho	-0.25		-0.088	
	LR test ofindep. eqns. (rho = 0):	16.1		0.30	
	Prob> chi2:	0.000061		0.58	

		men		women	
EQUATION	VARIABLES	coef	se	coef	se
select	Years of highest education	0.138***	(0.016)	0.154***	(0.021)
informal	Age	0.013***	(0.004)	0.015***	(0.004)
	Number of children below 1 year	-0.089	(0.145)	0.604	(0.529)
	Number of children	0.056	(0.045)	-0.036	(0.058)
	Marital status (2 categories)	0.328***	(0.093)	0.262***	(0.088)
	Pensions (ad_eq, 000)	0.012**	(0.006)	0.003	(0.007)
	Benefits (ad_eq, 000)	-0.011	(0.008)	0.002	(0.010)
	Constant	-1.085***	(0.238)	-1.193***	(0.303)
	athrho	-0.184**	(0.086)	0.939***	(0.141)
	lnsigma	-0.975***	(0.020)	-1.027***	(0.030)
	Observations	2,404		1,980	
	Censored N	252		150	
	rho	-0.18		0.73	
	LR test ofindep. eqns. (rho = 0):	4.59		44.4	
	Prob> chi2:	0.032		0	

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

[1] Dummy variables for education indicate deviations from linear impact of years of education on log wages.

[2] Reference category for regional variables is Belgrade.

Table A2: Heckman wage equation, switching model (informal income)

		men		women	
EQUATION	VARIABLES	coef	se	coef	se
lny	Years of highest education	0.007	(0.015)	0.053***	(0.019)
	Tertiaryeducation (4 years)[1]	-0.007	(0.116)	0.372**	(0.164)
	Work experience	0.010***	(0.003)	0.006	(0.004)
	Vojvodina[2]	-0.108	(0.085)	-0.119*	(0.068)
	West Serbia[2]	-0.058	(0.064)	-0.093	(0.071)
	South-East Serbia[2]	-0.288***	(0.084)	-0.395***	(0.100)
	Number of children	0.129***	(0.025)	-0.023	(0.035)
	Constant	10.200***	(0.224)	9.140***	(0.490)
Select non-participation	Years of highest education	0.002	(0.013)	0.037***	(0.014)
	Age	-0.013***	(0.003)	-0.013***	(0.004)
	Number of children below 1 year	0.256	(0.159)	-0.867***	(0.283)
	Number of children	-0.034	(0.036)	-0.081	(0.051)
	Marital status (2 categories)	0.257***	(0.095)	0.007	(0.129)
	Pensions (ad_eq, 000)	-0.019***	(0.006)	-0.012	(0.008)
	Benefits (ad_eq, 000)	-0.028*	(0.015)	-0.014	(0.014)
	Constant	-0.534***	(0.189)	-1.182***	(0.249)
	athrho	-0.364	(0.232)	0.320	(0.601)
	lnsigma	-0.818***	(0.075)	-1.013***	(0.187)
	Observations	1,632		2,202	
	Censored N	1,380		2,052	
	rho	-0.35		0.31	
	LR test of indep. eqns. (rho = 0):	2.46		0.28	
	Prob> chi2:	0.12		0.59	

		men		women	
EQUATION	VARIABLES	coef	se	coef	se
Select	Years of highest education	-0.139***	(0.016)	-0.122***	(0.017)
Formal	Age	-0.013***	(0.004)	-0.012***	(0.005)
	Number of children below 1 year	0.086	(0.147)	-0.026	(0.305)
	Number of children	-0.052	(0.045)	0.021	(0.057)
	Marital status (2 categories)	-0.312***	(0.098)	-0.261***	(0.084)
	Pensions (ad_eq, 000)	-0.013**	(0.006)	-0.009	(0.005)
	Benefits (ad_eq, 000)	0.013	(0.009)	-0.000	(0.008)
	Constant	1.106***	(0.241)	0.708**	(0.287)
	athrho	-0.280	(0.216)	-1.273***	(0.372)
	lnsigma	-0.837***	(0.093)	-0.616***	(0.221)
	Observations	2,404		1,980	
	Censored N	2,152		1,830	
	rho	-0.27		-0.85	
	LR test of indep. eqns. (rho = 0):	1.68		11.7	
	Prob> chi2:	0.19		0.00	

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

[1] Dummy variable for education indicates a deviation from linear impact of years of education on log wages.

[2] Reference category for regional variables is Belgrade.

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