Public Sector Economics
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Introduction to the special issue on Social Protection Policies and Microsimulation

IVICA URBAN, Ph.D.*

Guest editor's introduction
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Application of Microsimulation Models in the Analysis of Taxes and Social Benefits in Croatia (AMMATSBC) is a research project run by the Institute of Public Finance and financed by the Croatian Science Foundation.[1] One of the main goals of the project is to promote the use of microsimulation models in policy analysis and academic research in Croatia.

In pursuit of these aims, AMMATSBC researchers initiated the scientific workshop *Social Protection Policies and Microsimulation* held in Zagreb on June 12 and 13, 2017. The goal of the workshop was for the gathered researchers and policy makers to discuss the ways in which microsimulation models can be helpful in the evaluation and design of social policies, particularly child benefits and "make work pay" fiscal instruments.

The workshop brought together about eighty participants – academic researchers, policy makers and analysts from all EU countries. Several very informative plenary speeches were given by academic researchers and Croatian policy makers. Sixteen academic research papers were presented in sessions about support for families and children, work incentives and labour supply, policy reforms and tax-benefit incidence.[2]

The workshop call for papers invited the potential presenters to submit their finished papers for publication in *Public Sector Economics*. Several submissions have arrived and were engaged in the regular peer-review process. This issue of the Journal is publishing three papers and additional articles will appear in subsequent issues.

Thus, in the current issue we first find two investigations employing EUROMOD. Venelin Boshnakov discusses the political parties' proposals in the recently held parliamentary elections in Bulgaria, and calculates their eventual budget impact. Nuria Badenes-Plá and José María Buenaventura-Zabala assess the impact of the 2015 personal income tax reform on income inequality and poverty in Spain. Teo Matković and Dinka Caha study the transitions of Croatian social welfare recipients into employment, estimating the roles of financial incentives, work-related capabilities and engagement in household work. The fourth paper, by Ebru Canıkalp and Ilter Unlukaplan, reveals the relationship between political structure and social expenditures in Greece. It was not among papers presented at the workshop, but fits well into the current issue. This issue is rounded off with a book review by Predrag Bejaković, which contains reflections on Enrique Fernández-Macías, John Hurley and José María Arranz-Muñoz's "Occupational change and wage inequality: European Jobs Monitor 2017".

[1] AMMATSBC began in September 2015 and will finish in August 2018. Besides the researchers from the Institute of Public Finance, the collaborators come from the Zagreb Faculty of Economics and Business and the Institute for Social and Economic Research (United Kingdom). More information about the project is available at: <http://www.ijf.hr/eng/research/croatian-science-foundation-projects/1053/ammatsbc/1062/>.
[2] Detailed information about the workshop are available at: <http://www.ijf.hr/eng/conferences/social-protection-policies-and-microsimulation/1204/>.

I would like to thank the authors who contributed to this issue of the Journal. Also, I wish to thank all those who helped to make possible the workshop *Social Protection Policies and Microsimulation*: plenary speakers, presenting authors, assisting colleagues from the Institute of Public Finance, Friedrich Ebert Stiftung and the British Embassy Zagreb. Special thanks are extended to the EUROMOD team at the Institute for Social and Economic Research, University of Essex.

How much is the bill? Simulating selected proposals for income policy adjustments during the 2017 Bulgarian parliamentary election campaigns

VENELIN BOSHNAKOV, Ph.D.*

Preliminary communication**
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Abstract

The paper presents preliminary results from a sequence of microsimulation exercises implementing a selection of initiatives for income policy adjustments in Bulgaria. These initiatives originate from various income policy reform proposals that were publicly discussed during the 2017 parliamentary election campaigns. The paper provides empirical assessment of the possible budgetary effects of these proposals, assuming that these reforms are implemented in year 2017. The calculations are performed in EUROMOD – the tax-benefit microsimulation model for EU countries.

Keywords: income taxation, reform proposals, elections campaigns, microsimulation, Bulgaria

1 INTRODUCTION

1.1 MOTIVATION AND GOALS

At the start of 2017 Bulgaria entered a tough political debate on a range of problematic issues raised during the parliamentary election campaigns. The main political parties put forward their proposals for the adjustment of taxation and income policies, in response to public expectations. Indeed, these expectations have a long history – about 15 years of neoliberal economic policy that introduced a 10% flat rate for personal income tax, brought about a substantial shift in the burden of social insurance from employers to employees, and focused income support on a narrow share of the population. Combined with the effects of the economic downturn of the 2008-2009 crisis, this policy inevitably induced persistent poverty, emigration, and negative demographic trends (Beleva and Dimitrov, 2014; Tosheva et al., 2016).

The paper suggests some preliminary results from a sequence of microsimulation exercises that produce estimates of the budgetary effects of a selection of initiatives for income policy adjustments discussed during the 2017 election campaigns. Most of these initiatives are targeted to reforming income support policies, taking two main types of approach – assistance- or taxation-based. For example, a proposal has been made to ease the task of bringing up children by working parents through the introduction of a child tax credit, replacing the tax base exemption for dependent children, which is deemed ineffective. An overall proposition for family taxation and joint filing is currently under debate, although it was already frequently considered in a series of political disputes during the market transition period. Furthermore, a minimum pension proposal has been hotly discussed, with mutual accusations of misleading populism. Along the same lines is a suggestion for a substantial expansion of the eligibility for targeted social assistance for heating and energy.

An overall impression is that none of the ideas for policy reforms or adjustments of policy parameters seem to be supported by a sound empirical analysis of the possible distributional effects. Besides, no estimates of the aggregate financial ef-

fects of such proposals have been announced – the tentative "bill" of each reform is not "submitted" to the taxpayer, nor it is clear to the public how the expanded deficit of the social budget could be compensated for.

The paper provides an empirical assessment of the possible non-neutral budgetary effects of selected proposals for policy adjustments – basically, the necessary shifts in the social spending budget – if implemented in the year 2017. The calculations are performed by EUROMOD – the tax-benefit microsimulation model for EU countries (Sutherland and Figari, 2013; De Agostini et al., 2014). Its Bulgarian section utilizes large sample data for Bulgarian households provided by several waves of the EU-SILC survey.

1.2 A SHORT OVERVIEW OF INCOME TRENDS

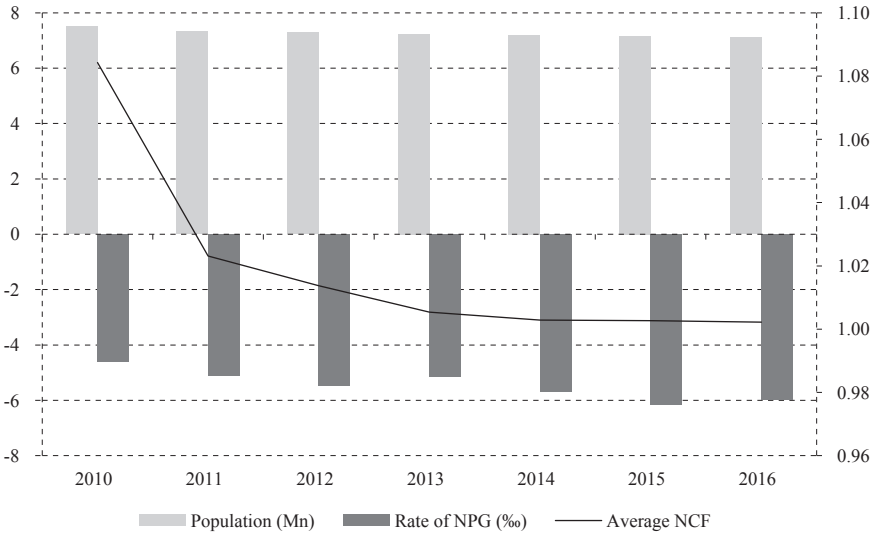
The socio-economic development of Bulgaria at the time of the electoral debate is characterized by the consequences of the global crisis of 2008-2009 on the economic situation and the search for effective ways of regaining the pre-crisis levels of investment (especially FDI), employment, and exports. Another important issue is also in the focus of the debate: the steady establishment of the substantial dependence of the country on EU funding for all major structural reforms and overall economic revitalization. In the light of this, public interest during the election campaigns has become sensitive to all issues related to living standards, income policies and social support for the vulnerable, e.g. the old, unemployed, disabled and so on. In spite of the overall positive trend in the dynamics of the income level during the post-crisis period – coinciding largely with the first decade of Bulgarian full EU membership– the "status quo" of the "poorest EU country" has been emphasized and utilized by the argumentation throughout the campaign.

Nevertheless, the dynamics of the main income indicators showed recent trends somehow opposite to the adverse demographic shifts. A stable negative rate of natural population growth amounting to about -5 per 1,000 residents and continual emigration led to a severe decline in total population size (from 7.5 to 7.1 million in the period 2010-2016). In the first half of the 2010s, the average number of children per family has persistently stabilized at about one child (figure 1).

In the same period, the average monthly wage has constantly grown from about BGN 650 to over BGN 1,000 (50% for the period) followed by even faster growth of the minimum wage. As a result, the ratio of the minimum to average wage increased from 37% to 45% in the early 2017 (figure 2). As officially announced, the governments in charge during the post-crisis period have controlled the growth of remuneration levels by linking them to the growth of GDP per capita as a measure of aggregate productivity. The GDP elasticity of the average annual gross wage is estimated to 1.56% for the period 2010-2016 (figure 3).

FIGURE 1

Dynamics of total population (million), rate of natural population growth (NPG), and the average number of children per family (NCF)

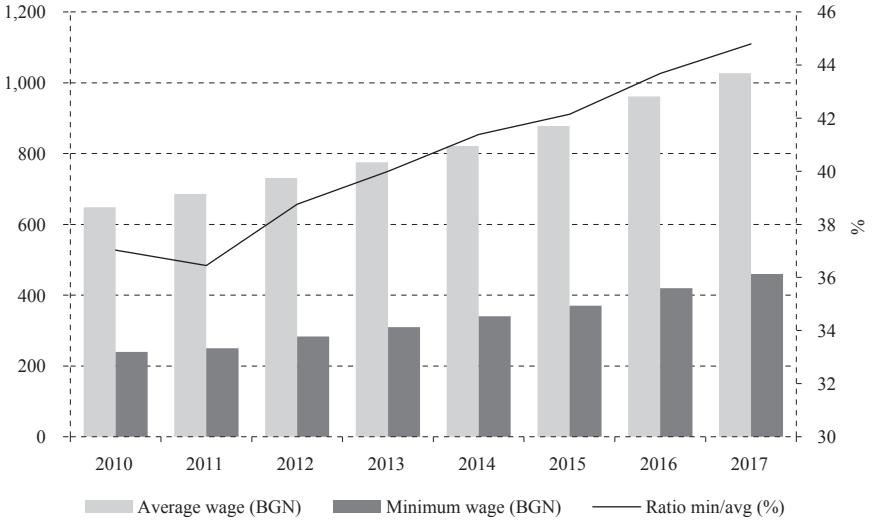


Note: Right axis – average number of children per family.

Source: NSI (2017); author's calculations.

FIGURE 2

Dynamics of the minimum and average monthly wages



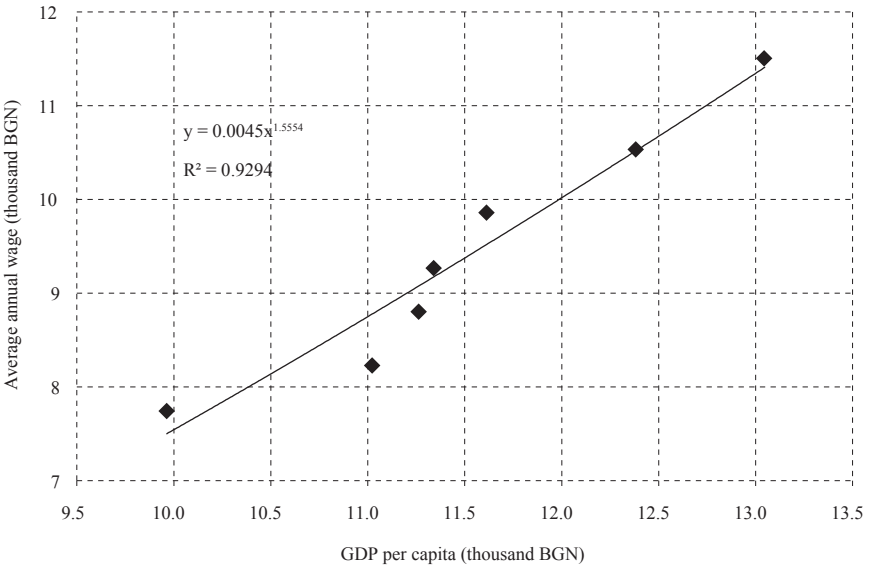
Notes: 1 BGN ≈ 0.5 EUR. Right axis – the annual ratio of minimum to average wage.

Source: NSI (2017); author's calculations.

In summary, according to Eurostat (2017), in all the 10 years of EU full membership, Bulgarian society was obsessed with the country's occupying the lowest position among EC member states regarding, for example, the minimum wage (EUR 184 for 2015, as compared to EUR 218 in Romania, EUR 300 in Lithuania, etc.) and GDP per capita in PPS (relative level of 46 for 2016 with 100 for EU28, 59 for Romania and Croatia, 65 for Latvia, etc.). This naturally provided many options for the political opponents to search for electoral support utilizing the existing apprehension and expectations of Bulgarians regarding the short-run income policies.

Figure 3

Relation between GDP per capita and average annual wage, 2010-2016



Source: NSI (2017); author's calculations.

1.3 BRIEF LITERATURE REVIEW

The specialised literature provides empirical evidence regarding Bulgarian tax-benefit policies and their effects, mainly regarding research into income distribution, inequality, and poverty (e.g., Cerami and Stanescu, 2009; Tsanov and Bogdanov, 2012; Tsanov et al., 2014; Tosheva et al., 2016; Mihaylova and Bratoeva-Manoleva, 2017). Specific issues concerning targeted social assistance in Bulgaria, specifically "energy poverty" and the related social support instruments, are analysed by Shopov (2013, 2016). Major sources of income inequality in Bulgaria for 2007 were analysed using decomposition methods and quantile regression by Mintchev, Boshnakov and Naydenov (2010). Empirical studies of the contribution of income sources to the level of income inequality in Bulgaria have been recently updated by Mihaylova and Bratoeva-Manoleva (2017) following the previous works of Kotzeva (1999) and Nikolova (2009).

Bogdanov and Zahariev (2009) provide an overview of the policies related to minimum income support in Bulgaria implemented in the 2000s. The most up-to-date presentation of social protection instruments can be found in Tosheva et al. (2017), provided for the maintenance of the Bulgarian section of EUROMOD where the regimes of both simulated and non-simulated social benefits are explained in the overall framework of the Bulgarian tax-benefit system for the period 2014-2017. Apart from the cross-country distributional analyses of the changes in tax-benefit systems on income inequality and poverty levels in Europe (e.g. EUROMOD, 2017), several studies utilize the capabilities of EUROMOD to assist specific analyses for Bulgaria. Boshnakov, Tosheva and Draganov (2013) provide evidence for the expected gains in poverty reduction through simulation of scenarios for updating the social assistance benefit based on the guaranteed minimum income (GMI) policy parameter. A detailed study of income assistance schemes by Tasseva (2016) finds that – although a substantial share of the beneficiaries of assistance through GMI and heating allowances is located at the left tail of the income distribution – this policy's impact on poverty is minor since these benefits reach a small fraction of the poor: only about 12% through GMI and 25% through targeted benefit for heating. Tosheva et al. (2016) provide empirical results that assess the effects from changes in tax-transfer policies (enacted in the period 2011-2015) on income distribution, inequality and poverty in Bulgarian households. Their results show that the changes in the policies induced positive income shifts mainly for the households in the lowest income groups. Furthermore, the poverty rate has decreased by 1.3-2.9 percentage points (depending on the level of poverty threshold chosen).

2 MAJOR POLITICAL FORCES: POLITICAL DEBATE AND "MESSAGES"

The 2017 election campaigns were not substantially different to those conducted during the past 20 years, which was a period of relative stabilization after the hyperinflation crisis and banking system collapse of 1995-1996, followed by the introduction of the Currency Board Arrangement in 1997 and stabilization of the macroeconomic indicators. In most cases, the debate has been between the major left- and right-centred political forces, with the participation of minor liberal, centrist, and (less significantly) ultra-left or nationalistic wings.

The leading role during the 2017 election campaigns was played by CEDB (Citizens for European Development of Bulgaria) – the political party that just came out of central government offices with the role of a "proponent" of the established current economic and social policies. Its election platform was publicly announced on the party's website[1] as well as through participation of CEDB representatives in media and other communication events. The major "messages" of the leading party did not deviate much from the "low taxes/low deficits" postulates implemented by Bulgarian governments since 2001. In this line, the underpinnings of its campaign were basically:

[1] Political Programme of CEDB 2017 (in Bulgarian); document retrieved from: <www.gerb.bg>.

– the undisputable *status quo* of the 10% flat PIT rate and the relatively low burden of compulsory social insurance (with the current employer/employee split)[2];
– main sources for increasing the public revenues identified as: tightened administrative operations, with a better focus on counteracting corruption (including pressures on the grey economy, underreporting, customs misconduct facilitating smuggling/trafficking, etc.);
– strict control over the expenditures, assuming the argument "redistribute only what you collect" – as a result, social spending focused only on those who objectively cannot manage in the labour market (the old, disabled, families in extreme poverty and so on);
– family support provided mainly through improved community services (kindergartens), financial support to children if at school and such like.

The program rarely announces quantitative targets and other policy parameters, which shows its great caution regarding any "promises" the keeping of which will be able to be verified in due time. Just few numerical parameters were modestly defined, e.g.:

– increment of all pensions by 2.4% since July 2017 (which was planned during the budgetary process of 2016);
– support to the so called "3-child family model", although not accompanied by any specific policy instruments except a general vow concerning targeted financial support to a third child, with a reduction of this support to subsequent children;
– few targets that are, however, spread over the whole 4-year mandate: macroeconomic expectations for at least 2% GDP annual real growth rate; average and minimum monthly wages to reach 1,500 and BGN 650 respectively, at the end of the mandate (i.e. about 50% growth in both wages, or 12% annually).

A similar general platform was announced by the prospective governmental partner of CEDB – which actually became so after the election – the United Patriots coalition[3]. It generally lacks any quantitative policy parameters, emphasizing massive political and administrative enforcement of a range of measures, e.g. revision of concessions and contracts; "strike against monopolistic and oligopolistic structures"; reorganization of the customs service, from which a gain of BGN 2 billion (about 2% of GDP) is expected from anti-smuggling measures; empowerment of the State Bank to credit SMEs; and enforcement of a state employment programme "providing a job for every Bulgarian". An important suggestion raised in the autumn of 2016 (during the presidential elections) has been kept – the introduction of a minimum floor of BGN 300 for the contributory old-age pension. The related necessary budget was not clearly evaluated; however, a general idea for its provi-

[2] The total wedge of social insurance contributions in the total expenditures for labour inputs for 2017 is 24% split in the 13.9/10.1 ratio between the employer and employee; this wedge for 2007 was 36.2% (23.8/12.4).
[3] An alliance of 3 parties: National Front, Ataka, and IMRO (Internal Macedonian Revolutionary Organization, a successor of a historical configuration from the national liberation period) – fragments of the nationalistic political wing (political platform retrieved from: <www.vmro.bg>; <www.vestnikataka.bg>).

sion has been outlined concerning a rigorous revision of the regime and practices for disability categorization and determination of disability pensions and benefits.

The main opposition forces were represented by the Bulgarian Socialist Party (BSP) – a political organization integrating the social-democratic wings of the former totalitarian party-ruler of the country up to 1989. Although its political platform[4] was announced as an "ultimate and only reasonable" alternative to the liberal and right-centre platforms, it raises a range of modest proposals aligned to the traditional values of the Party of European Socialists (following the general idea of "leaving no one behind" policies). Conforming to the general framework of low deficit policies (specifically emphasizing compliance with the Maastricht deficit criterion), several policy parameters were targeted in respect to income policies. The main ones were:

- an upgrade to the monthly benefit for raising a child aged between 1 and 2 – up to the minimum wage level, i.e. by 35% – from BGN 340 (not uprated since year 2014) to BGN 460;
- double expansion of the coverage of the targeted benefit for heating – a special tool expected to provide a vast support from low-income voters;
- a targeted reform of the flat PIT: the introduction of a twice higher marginal tax rate (20%) for incomes above BGN 120,000 annually, which is equal to about 10 average wages for 2017 (another "tool" for mobilizing ultra-left voters with the idea of "taxing the top incomes higher");
- a substantial revision of the PIT policy for treatment of the children – namely, introduction of a child tax-credit and abolishment of the regime for tax base exemption for raising children. The proposal is however generally formulated "to support the parents who work – and have taxable earnings – for raising their children". According to the proposal, they must receive an annual refund of the tax bill: BGN 600 for 1 child (BGN 50 monthly) and BGN 1,000 for 2 or more children.

All proposals originating from political fragments that strive to gain significant support are clearly justified by expectations of massive support from targeted social strata. In some cases – as will be shown below – these strata include a substantial number of potential voters. With the assumption of a 50% turnout, typical of parliamentary elections in Bulgaria (it reached actually 54% in 2017), the votes of even half of the potential "beneficiaries" from some of the proposals could provide significant positive shifts in the overall position of the respective party-proponent. However, what the budgetary effect of the introduction of any such proposal would be remains unclear, i.e. the question "how much is the bill and who will have to pay it" does not have any reasonable answer, and various speculations were floated during the election campaigns.

3 EVALUATION OF SELECTED REFORM PROPOSALS

3.1 METHODOLOGICAL ISSUES

The quantitative evaluation of selected proposals for income policy reforms in Bulgaria is performed by the method of tax-benefit microsimulation implemented

[4] Official platform for 2017 elections campaign (retrieved from: <http://bsp.bg/>).

in EUROMOD. Such a simulation method has several important qualities one of which is particularly valuable for the present study, namely, "… the possibility of accurately evaluating the aggregate financial cost/benefit of a reform. The results obtained … at the individual level can be aggregated (using the weights contained in the datasets where necessary) at the macro level, allowing the analyst to examine the effect of the policy on government budget constraints" (Spadaro, 2007: 20). Such a type of reliable weighting is available in the EU-SILC survey, which provides large representative datasets for the implementation of procedures within the EUROMOD model. In particular, the calculations here are performed on the basis of the Eurostat UDB data containing the results from the Bulgarian SILC 2015 operation, which provides income data at year 2014. All relevant variables are appropriately uprated to their projected levels for the year 2017, using official statistics for a range of income policy parameters and aggregates evaluated for the years 2015 and 2016. Certainly, some tax-benefit instruments appear to be over-simulated while others are under-simulated, for one reason or another (see Tosheva et al., 2017) – these deviations are inherent to tax-benefit microsimulation analyses and the results must be interpreted with some degree of caution.

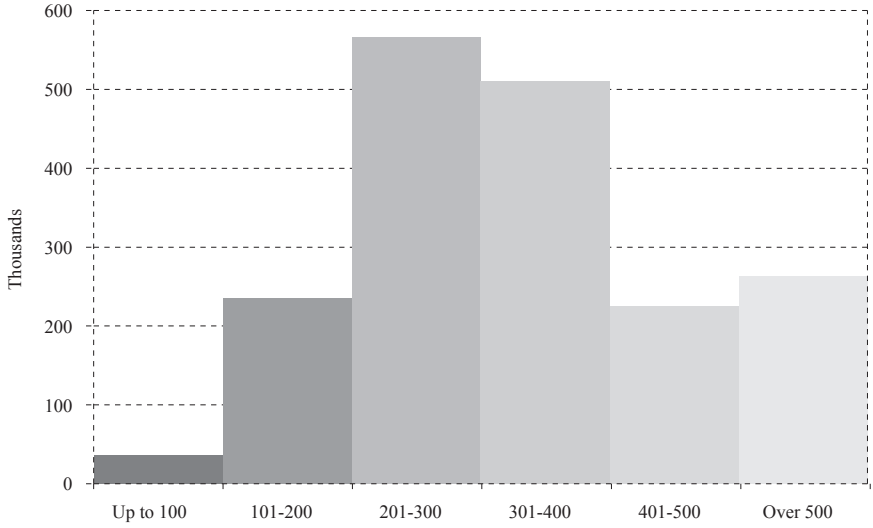
3.2 EMPIRICAL RESULTS FROM POLICY SIMULATIONS

Proposal 1. Minimum contributory old-age pension

The "pension for insurance and old age" (PIOA) is provided to individuals who have reached the standard retirement age (about 61 for women and 64 for men) with a minimum length of contributory service of 35 (women) and 38 (men) years. Figure 4 presents the distribution of PIOA recipients by the main intervals of the monthly pension and shows that 45% of them are below the line of the announced proposal: an unconditional floor of BGN 300.

Figure 4

Distribution of recipients of old-age pension by size of pension (BGN)



Source: EUROMOD output, author's calculations.

Table 1

Simulation results (Proposal 1: Minimum threshold for PIOA)

Indicator	Value	Note
Number of PIOA recipients	1,834,875	
Incl. recipients of pension < BGN 300	836,716	45.6% of the total number
Total expenditures for PIOA (baseline)	7,574	Million BGN
Total expenditures for PIOA (proposal)	8,399	Million BGN
Deficit:	-826	Million BGN
Deficit as a percentage of PIOA expenditures	-10.9	
Deficit as a percentage of expected 2017 GDP	-0.85	

Source: EUROMOD output; author's calculations.

The potential power of this political "pledge" is substantial. Having a mass of over 800 thousand receivers of PIOA below this threshold – and expected 50% electoral participation – the expected support for the proponents (United Patriots) seemed to have been at least few hundred thousand of pensioners recruited from the lowest income stratum.

The results from the simulation of this proposal (table 1) provide an estimate of BGN 826 million as a summary amount required for topping-up every pension below the BGN 300 threshold. The "bill" amounts to 0.85% of GDP – a serious potential deficit which requires harsh measures, cutting other budgetary items or lifting the taxation burden – otherwise, the achievement of the Maastricht limit for the central budget deficit could be substantially jeopardised. Nevertheless, during the political campaign such a "promise" can have (and it actually did have, although not to the expected extent) a decisive role in the final results of the nationalistic coalition.

Proposal 2. Expanding the scope of the targeted benefit for heating

The targeted benefit for heating (TBH) is provided as a non-contributory allowance which, however, is income-tested – it is granted to individuals that live alone or to families with incomes that are below the "differentiated minimum income for TBH purposes" (DMI); the claimants should also meet additional eligibility criteria. DMI is calculated by a procedure similar to that applied for the universal social assistance benefit for low income – based on a set of ratios linked to some preliminarily defined categories of beneficiaries and attached to the Guaranteed Minimum Income parameter (GMI = BGN 65; see Tosheva et al., 2017). If eligible, the unit (individual or a family) is approved to receive a monthly benefit of BGN 72 for 5 months during the heating season, targeted to cover some defined heating expenditures.

In order to expand the scope of the eligible receivers of TBH the thresholds have been relaxed in order to ease access to the benefit for a selection of targeted individuals (single mothers, the elderly, and the disabled). For example, any person with reduced work capacity of 50% or more (50% disability) who also lives alone,

gets an uprated threshold to guarantee eligibility if her/his income is below BGN 300 – the current ratio of 2.7268 is increased to 4.6154. Thus, if the test shows that the income of this individual is less than 4.6154*GMI = BGN 300, then her/his eligibility for TBH is approved. Further categories that get uprating of the threshold up to 4.6154 are:

– persons aged over 65 and living alone;
– persons older than 70;
– persons with reduced working capacity of 50% or more living alone;
– single parents with a child younger than 18 (or 20 and in education);
– children aged below 18, with a permanent disability.

Table 2 presents the results from the simulated proposal 2. The baseline estimates show about 368 thousand expected receivers of TBH under the standard conditions along with BGN 133 million on aggregate for the simulated amount of the benefit.

Table 2

Simulation results (Proposal 2: Targeted benefit for heating)

Indicator	Value	Note
Simulated TBH beneficiaries (baseline)	368,223	Number
Simulated amount of TBH (baseline)	133.4	Million BGN
Simulated TBH beneficiaries (proposal)	701,757	Number
Gain in recipients	**333,534**	
Simulated amount of TBH (proposal)	254.2	Million BGN
Deficit (million BGN)	**-120.8**	
Deficit as a percentage of TBH expenditures	-90.6	
Deficit as a percentage of expected 2017 GDP	-0.124	

Source: EUROMOD output; author's calculations.

After the introduction of the reform – although targeted only to the categories presented above – the number of eligible recipients is expanded by over 333 thousand. This number can still be increased by including another targeted category of individuals in the scope of the simulation exercise. The budgetary effect is not substantial – this political goal can be achieved by a small additional deficit of 0.1% of GDP (which will not even emerge if GDP actually grows at least by half a percentage point more than the macroeconomic budgetary forecast).

Proposal 3. Introduction of a 20% marginal PIT rate for top incomes

Various proposals for discarding the flat PIT rate regime have been initiated with the expectation that a return to the progressive income taxation (abandoned since year 2008) will provide higher PIT revenues along with "restoration of social equity". However, none of these succeeded in gathering enough political support among the governing coalitions led by CEDB after 2009. Paradoxically, the introduction of flat PIT rate was done while a coalition led by BSP (2005-2009) was in power, which was considered "abnormal" for a right-wing party – however, justi-

fied by the necessity to collaborate with their neoliberal coalition partners. Acting as opposition in the 2017 campaign, and expecting to mobilize a significant voting potential (i.e. supporters of the idea "to tax the rich higher"), the socialist platform raised a proposal for introducing a threshold (BGN 120,000) for the annual taxable income. All incomes above this threshold must be taxed at a rate twice as high than the standard rate (20%). Table 3 presents the aggregate results from the simulation exercise accomplishing this proposal assuming "all other things equal". These results however should be considered with caution due to problematic issues of the SILC survey related to underestimation of the "upper tail" of the income distribution due to under-coverage of such taxpayers (e.g. refusals to participate), under-reporting of earnings, etc. (Tosheva et al., 2017).

Table 3

Simulation results (Proposal 3: 20% marginal PIT rate for top incomes)

Indicator	Value	Note
Simulated PIT payers (baseline)	3.883	Million
Simulated amount of PIT (baseline)	3.336	Bn. BGN
Simulated PIT payers above the proposed threshold (BGN 120,000)	3,778	Number
Percentage of the total number	**0.1**	
Simulated amount of PIT (proposal)	3.353	Bn. BGN
Additional revenue (million BGN)	0.017	Bn. BGN
Percentage of the additional in total revenue	**0.5**	
Percentage of the additional PIT revenue in the expected 2017 GDP	**0.02**	

Source: EUROMOD output; author's calculations.

The results show clearly that negligible budgetary effects can be expected from such a reform, even in the case of the static calculations performed by EUROMOD – about BGN 17 million (0.5% of the total PIT revenues and 0.02% of the expected GDP for 2017). The taxpayers that have official (reported) incomes above the policy threshold are just 0.1% of all PIT taxpayers – the narrow scope of this reform proposal identifies it as much more of a propaganda tool than a genuine income policy reform.

Proposal 4. Introduction of PIT reform for child tax credit

In a similar manner, suggestions for joint filing and favourable tax treatment of the family have been discussed since the start of market transition in Bulgaria. Indeed, one special form of "family taxation" was introduced in 2005 and practiced for 3 years (removed in 2008 with the introduction of the flat PIT rate), namely, tax base deductions for raising 1, 2 or 3+ children. This practice was reintroduced in 2015 – one of the parents could reduce her/his annual tax base by BGN 200 for the first child, BGN 400 additionally for a second child, plus BGN 600 for all other children in the family. The tax exemption rule can be utilized by one of the parents (expectedly, the one with higher PIT base) without any joint filing. So annually, a family with 2 children can reduce the tax base by BGN 600 which provides a

reduction of the annual PIT by BGN 60 (or BGN 12 per month, 4 plus 8 for child 1 and child 2).

During the election campaign the BSP suggested the introduction of a child tax credit – reduction of the annual PIT duty by BGN 600 (if there is 1 child) or BGN 1,000 (if 2 or more children are being raised in the family). This makes an "allowance" of BGN 50 monthly for child 1 and BGN 33.33 additionally for the second child, which, however, is non-refundable. The political "message" seems clear – all those working parents who have low incomes (with PIT duty up to these thresholds) that raise their children will be supported by the government *not by social assistance*, but by leaving all of their (already) earned income – except the compulsory social insurance – in the family to meet the ever growing needs related to childcare.

Table 4 presents the results from the simulation of a simple scenario for the introduction of such a version of unconditional child tax credit. The data from the SILC survey show a predominant presence of cases of the "first" (which is often the only child in the family) and the "second" child being the targets of the policy.

Table 4
Simulation results (Proposal 4: Child tax credit)

Indicator	Value	Note
Number of children (total)	1,311	Thousand
Cases "first child"	873	Thousand
Cases "second child"	352	Thousand
Cases "third or next child"	86	Thousand
Simulated amount of PIT (baseline)	3.336	Bn. BGN
Simulated amount of CTC (proposal)	0.665	Bn. BGN
Simulated PIT, residual	2.671	Bn. BGN
Percentage of the reduction in baseline PIT	**19.9**	
Percentage of the reduction in the expected 2017 GDP	**0.68**	

Source: EUROMOD output; author's calculations.

The simulated child tax credit identified in these two cases amounts to BGN 665 million. In this static version of the simulation exercise no behavioural responses are assumed – the result shows what the expected change in the PIT revenue in 2017 would be if the parent (with the largest taxable income) were allowed to deduct the proposed amount of child tax credit from her/his tax liability. The question that concerns the budgetary planners – about how to compensate the deficit of 20% in the PIT revenue – requires additional calculations and initiation of parallel proposal(s) related to necessary alternations of the existing family support policies. At the stage of the electoral campaign, the sources of funds for the coverage of this "bill" were not clearly defined.

4 CONCLUSIONS

The empirical results about the effects of selected proposals for income policy adjustments evaluated in this article were obtained by the utilization of the capabilities of EUROMOD – European-wide microsimulation model that assists the analyses of tax-transfer interventions on personal and household incomes in the EU countries. The information basis of the empirical analysis here is derived from the annual large sample representative survey of household income components in the EU countries (EU-SILC) which ensures the required degree of reliability and validity of the achieved results. The capacities of EUROMOD for the evaluation of particular proposals about reforming tax-transfer policies are substantial but still underexploited, especially in the case of Bulgaria.

The paper suggests empirical results from simulation exercises conducted to obtain numerical estimates of the potential effects of proposals for policy reforms concerning income taxation, social assistance and child support. These proposals were suggested by some of the major participants in the Bulgarian 2017 parliamentary election campaigns. The results show that any introduction (or alteration) of policy instrument that has an impact on a large mass of potential beneficiaries will induce a substantial budgetary deficit, which, in some cases, can compromise the low-deficit policy of Bulgarian governments compliant with the Maastricht deficit criterion. In this respect, one example can be pinpointed, in respect to the proposal concerning the minimum threshold of BGN 300 for the old age pension – when they were part of the governmental coalition, the proposers compromised on a threshold of BGN 200 to be introduced from October 1st 2017 (which led to an agreement for parliamentary approval of the necessary adjustment of the central budget for year 2017.

The results presented above clearly show the need for further in-depth analysis of each of these proposals involving alterations of related policy instruments that could compensate fully or partially for the negative budgetary effect. Any such further analysis could include, in the first place, the design and simulation of an integrated scheme for child treatment through PIT, including joint filing and targeted coordination of family support policies – both contributory and assistance-based provision of child benefits. Another important and sensitive problem for Bulgarian society is pension system reform – it definitely requires the exploration of a refined simulation of minimum thresholds for contributory pensions coordinated with the provision of disability and inheritance pension components.

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The Spanish income tax reform of 2015: analysis of the effects on poverty and redistribution using microsimulation tools

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Abstract

In this work we analyze the effects of the 2015 reform of the Spanish personal income tax (PIT) on tax revenue, liquidity, redistribution, progressivity, and poverty, using microdata. Tax reform has increased the redistributive effect. The applicable legislation in 2016 is almost 6.3% more redistributive than that in 2011, as measured by the Reynolds-Smolensky index. This is a remarkable achievement since greater redistribution has been attained through significantly lower tax revenue. The 2016 legislation has produced 4.4% lower tax revenue, but progressivity, as measured by Kakwani index, has increased by 12.2% from the 2011 legislation. The redistributive and progressivity analysis has been conducted with the use of microsimulation tools developed in the Instituto de Estudios Fiscales (IEF), in Spain. The poverty analysis is made using EUROMOD, a tax-benefit microsimulation model for the European Union.

Keywords: personal income distribution, inequality, redistributive taxation, microsimulation, progressivity

1 INTRODUCTION

Spain has undertaken a reform of its personal income tax (PIT), which became applicable in 2016. The reform consists of a set of measures that affect the different components of the tax to a greater or lesser extent. Among these is a decrease of the tax rates in the tax schedule, which especially benefited lower income tax-payers. In addition, the threshold of taxation was raised, the limit to the exemption of severance pay was extended, and the reduction for labour income was substituted for by a fixed amount for deduction of expenses. Tax rates on income from savings are also raised while other measures were introduced to promote saving in the long term. There is an increase in personal and family minimums and new deductions are introduced. The new deductions – like those already existing for working mothers with children under three years old can operate as negative taxes for families with ascendants and descendants with disabilities, as well as for large families.

In this work, we analyze the effects of the 2015 reform of the Spanish personal income tax on tax revenue, liquidity, redistributive and progressive effects and poverty, using microdata. The tax reform increases the redistributive effect. The applicable legislation in 2016 is almost 6.3% more redistributive than that of 2011, as measured by the Reynolds-Smolensky index. This is a remarkable achievement since the greater redistribution effect has been attained by significantly lower tax revenue. The 2016 legislation has resulted in 4.4% lower tax revenue, but progressivity, as measured by the Kakwani index, has increased by 12.2% in comparison to the 2011 legislation. The redistributive and progressivity analysis has been conducted with the use of microsimulation tools developed in the IEF. The poverty analysis was conducted with the use of EUROMOD -version G2.1 (Sutherland and Figari, 2013).

The paper is structured as follows. Section 2 describes the changes introduced by the reform, which are explained in detail in the appendix. Section 3 describes the

amount and distribution of the increase in liquidity. Section 4 shows the effects on revenue, redistribution and progressivity generated by the reform, while section 5 is devoted to revealing their effects on poverty. Section 6 concludes.

2 MAIN ELEMENTS OF THE 2015 REFORM

To understand what the effects of the reform have been, it is necessary to know what the main changes that have occurred in the regulation of Spanish PIT are. The changes that have been put in place following the 2015 reform could be summarized as follows:

1) New tax schedule: both the number of brackets and the marginal rates applicable thereto are reduced.
2) Reduction in withholding tax rates.
3) Labour income can be reduced by 2,000€ for other expenses, and there are changes in the reduction for obtaining this kind of income.
4) A reduction of 30% instead of 40% will be applied for yields generated over a period of more than 2 years, or obtained irregularly.
5) Family taxation: the personal minimum amount is raised as is that relating to descendants or ascendants that live with the taxpayer.
6) New tax credits for taxpayers with higher family burdens, such as those who work outside, large families or with people with disabilities under their charge may deduct fees for care up to of 1,200€ per year. Possibility of early collection.
7) To improve investment and stimulate savings, a new tax schedule applicable to the base of savings in which the marginal rates of each tranche are reduced; Creation of Long Term Savings Plan.
8) Reductions in the limits of annual contributions to pension plans and those made in favour of a spouse.
9) Incentive to patronage.

The reform has been implemented via a transitional period, so we present information about the tax rules for 2015 (transitional) and 2016 (definitive). The main changes in the regulations in the PIT reform of 2015 are described in more detail in the appendix.

3 EFFECTS OF THE REFORM ON LIQUIDITY

The reform we analyzed had a positive effect of liquidity in favour of taxpayers. By "liquidity", we understand a greater availability of resources in the hands of the taxpayers. This means there is more money available, which is generated in two ways: on the one hand, through the types of retention, on the other, by the so-called negative deductions, which can be requested in advance payment. Our objective is to determine the extent to which liquidity has increased to the benefit of the taxpayers, using quantification for this purpose from:

– microdata (global magnitude of increase in liquidity, which may be sub-aggregated by sources of income), and

– the analysis of certain types of case (which family groups are those that perceive higher increases in liquidity, classified by family circumstances [number of children and level of dependency] and by the level of complete income that they obtain).

We used the most recently available data at the moment of calculation, corresponding to the 2011 Survey of Living Conditions. From the income distribution of 2011, we can obtain, by applying the basic regulations on withholdings of 2014, a theoretical reference framework. This scenario is compared with the application of the regulations of year 2015 and 2016 to the same data base. This means that the distributive structure of income is the same – marked by what happened in 2011 – and this distribution is applied before and after the reform. Thus, all the changes are due to the fact that a differentiated regulation is applied, without considering any change in the distribution of data (therefore, it does not include answers on the part of the taxpayer to the fiscal changes).

The microdata used affect the group of respondents because the information derived from the exploitation of retention models is not available. This leaves out an analysis of a large group of taxpayers who will also benefit from the reduction of withholdings, especially those whose labour income does not exceed 12,000€ per year, since, after the reform, they will not be subject to withholding.

According to the Ministry of Finance and Public Administration, it is estimated that as of January 2015, 750,000 employees are fully paid their wages because no type of withholding is applied.

The results derived from the application of the reformed withholding rates are showed in table 1.

Table 1
Withholdings calculated by different sources of income 2014-2016 (in mn euro)

Source of income withholdings	2014	2015	2016
Labour income	65,707	61,645	58,888
Income from capital	4,896	4,663	4,430
Leases of urban real estate	1,543	1,470	1,396
Economic activities	3,589	3,418	3,247
Capital gains	325	310	294
Total	76,060	71,505	68,255

Source: Authors' calculation using Spanish Tax Agency data.

Liquidity has increased in all cases, for all sources of income and for all tranches. The percentage increase in liquidity (reduction of retentions in relation to the amount withheld prior to the reform) occurs in inverse proportion to the level of labour income obtained. The largest increase in the volume of liquidity is concentrated in the labour income, since this represents the greatest weight in the set of income declared in PIT.

The absolute increase in liquidity is calculated as the difference between the amounts retained in 2014 and in the years 2015 and 2016.

Table 2

Absolute increase in liquidity by income sources (in mn euro)

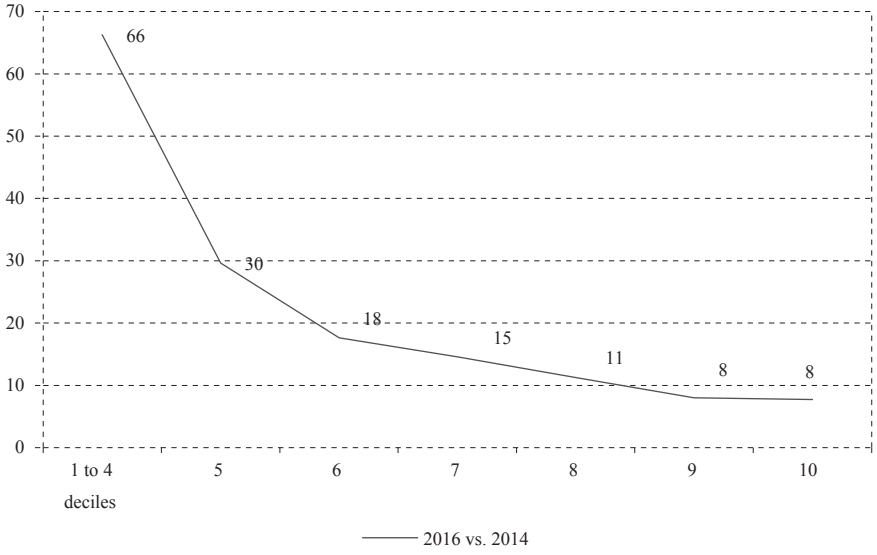
Source of income withholdings	2015 vs. 2014	2016 vs. 2014
Labour income	4,062	6,819
Income from capital	233	466
Leases of urban real estate	73	147
Economic activities	171	342
Capital gains	15	31
Total	4,555	7,805

Source: Authors' calculation using Spanish Tax Agency data.

If we compare the liquidity increase per decile, the result is always a decreasing effect as the level of income increases. In the first four deciles, the accumulated liquidity increase in 2016 is 66.28%, in the 5th decile it is 29.64%, reducing to almost 8% in the last two deciles in which the differences between the two deciles is only slightly appreciable.

Graph 1

Percentage increase in liquidity between 2014 and 2016 by deciles of income (in %)



Source: Authors' calculation using Spanish Tax Agency data.

The effects of increased liquidity depend on the amount of income, the source from which it comes, family circumstances, and the option for individual or joint declaration (in the case of an individual declaration, half the related benefits to the descendants). The percentage increase in liquidity is calculated by comparing the amounts retained in 2016 with those in 2014, and dividing between the amounts

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retained in 2014. The increases in liquidity were calculated applying the transitional regulations of 2015, and the conclusions are the same as those obtained for 2016. For that reason, we present the increases of liquidity according to income level and family circumstances exclusively for the year 2016.

Differences in family needs have been considered by including families without children and up to three children, as well as two children in which one of them suffers from a disability of more than 33% or 65%. Thus, moving to the right in the tables shows greater need, just as moving from bottom to top, shows a lower income level. The comparison between 2014 and 2016 yields these results for individual taxation.

Table 3

Percentage increase in liquidity by income level and family circumstances, individual taxation, 2016-2014

	Individual taxation 2016-2014					
Income amount	**No children**	**One child**	**Two children**	**Three children**	**2 chi. 1 disab > 33%**	**2 chi 1 disa > 65%**
12,000	100	100				
15,000	23	27	34	158	215	
20,000	14	15	17	51	81	153
25,000	12	13	14	33	52	74
30,000	9	9	10	23	36	46
100,000	7	7	7	9	11	11
150,000	7	7	7	8	9	9

Note: The last two columns (6 and 7) refer to families with two children, one of them with a level of disability greater than 33% or 65%, respectively.

Source: Authors' calculation using Spanish Tax Agency data.

An increase in liquidity is equivalent to a reduction in retained amounts. If the percentage of increase of liquidity is of 100%, it means that the retention is half of that in 2014. When the percentages are well above 100%, the effect of the anticipated collection of the negative deductions appears.

The liquidity increases in any case, for all levels of income, regardless of family circumstances, and for the options of both individual and joint declaration. The results on liquidity increase show the highest values in the top and right positions of tables 3 and 4, which indicates that the treatment of lower withholdings is more beneficial to the families that have the greatest need, either by income level or by family circumstances. This result occurs in the transitional year and in the definitive year, and whichever tax option is chosen, individual or joint. Comparing the results of tables 3 and 4 it can be seen that the joint declaration option shows increases of greater significance than the individual declaration option. The inclusion of differences not due to income but to family circumstances is introduced by privileging families who, for the same level of income, have a higher level of need because they have more children or if they have to support a greater disability.

Table 4

Percentage increase in liquidity by income level and family circumstances, joint taxation, 2016-2014

	Joint taxation 2016-2014					
Income amount	**No children**	**One child**	**Two children**	**Three children**	**2 chi. 1 disab > 33%**	**2 chi 1 disa > 65%**
12,000						
15,000	22	77				
20,000	18	24	39		826	
25,000	12	15	19	134	191	
30,000	11	12	14	65	103	317
75,000	9	9	9	16	22	27
100,000	7	7	7	11	15	18
150,000	7	7	7	9	11	13

Note: The last two columns (6 and 7) refer to families with two children, one of them with a level of disability greater than 33% or 65%, respectively.

Source: Authors' calculation using Spanish Tax Agency data.

4 EFFECTS OF THE REFORM ON REVENUE, PROGRESSIVITY AND REDISTRIBUTION

In this section, we conduct an analysis of the effects of normative changes of the Spanish Personal Income Tax between 2011 and 2016. As mentioned in the introduction, the effects on revenue, distribution and progressivity generated by the reform have been calculated using the personal income tax microsimulation tool developed by the Spanish Institute for Fiscal Studies (in Spanish: IEF, Instituto de Estudios Fiscales). Poverty measurement is carried out using EUROMOD.

The explanation for the use of these two different tools is based on the better fit of the data used for each purpose: whereas the redistributive analysis is based on the panel of tax filers provided by the State Tax Administration Agency with very rich information in terms of PIT, the poverty analysis comes from data provided by the Living Conditions Survey, which represents the left side of the distribution of income better.

The reference is the income declared in 2011. The regulations used for comparison are those in force in 2011 and those approved for 2016. The reason for using the legislation approved for 2016, is that it constitutes the final, and not a transitional, tax reform. On the other hand, the 2011 regulations have been prioritized with respect to 2014 in order to avoid distortions in the results derived from the temporary application of the complementary tax schedule.

We calculate the effects on the redistribution and progressivity achieved by the reform by comparing the distribution of income before and after taxes. However, we are interested not only in the total effect, but also in the achievements of different elements, so it will be useful to define the different income concepts relevant to the interpretation and the results. As relevant variables, we highlight the following:

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Pre-tax income is the most accurate approximation to the taxpayer's true income (i.e. in the absence of taxes) that can be obtained from the administrative data.

The *income net of taxes* refers to the amount left to the taxpayers after they have submitted the taxable base to tax of tariff and all the deductions except those that can turn the quota into negative have been considered. In other words, the deduction for maternity leave and the new negative taxes are left out. The result of this income net of taxes, in addition to the changes in the configuration of taxable base, will make it possible to show the changes in the tax collection capacity.

The *final net income* adds to the previous concept all those deductions that operate as negative taxes. This variable will be higher in value to the income net of taxes as a consequence of the application of the new negative taxes. This differentiation of income is advisable because it allows us to analyze in an isolated way the effects on redistribution of new negative taxes.

Table 5

Absolute and relative percentage differences on tax revenue and final net income between the pre- and post-reform periods (mn euro)

	Tax revenue	Final net income
2011	65,485	411,191
2016	62,606	414,070
Absolute difference	-2,878	-2,878
Percentage difference	-4.4	0.7

Source: Authors' calculation using PIT microsimulation tool developed at the IEF.

As shown in table 5, the reform produced a revenue loss of nearly 2,878€ million, which means a 4.4% decrease for the Tax Authorities from the tax collected in 2011, and an increase of 0.7% on taxpayers' net income.

Before redistribution analysis is conducted, it is convenient to remember (Lambert, 1996) that the Reynolds-Smolensky index of redistribution can be obtained as the difference between the Gini coefficients of pre-tax and post-tax income, or alternatively, from the consideration of the Kakwani index, weighted by the effect of the effective average rate effective and discounting the reranking effect.

Thus, the Reynolds-Smolensky index (*RS*) is obtained as follows:

$$RS = G(\text{pre-tax}) - G(\text{post-tax}) \tag{1}$$

Where *G* refers to the Gini index of income inequality. *RS* is decomposed as follows:

$$RS = \frac{t}{(1-t)} \cdot K - R \tag{2}$$

Where *t* is the average tax rate, *K* is the Kakwani measure of progressivity and *R* is the reranking effect (Kakwani, 1984).

The effects on redistribution are summarized in tables 6 and 7, for the income net of tax and final net income, which differ in the fact that the second concept includes negative tax deductions.

Table 6

Effects on redistribution, progressivity and revenue of PIT in 2011

Results 2011	Income net of tax	Final net income
Gini (pre-tax income)	0.42343	0.42318
Gini (after-tax income)	0.37998	0.37953
Reynolds-Smolensky	**0.04345**	**0.04390**
Concentration index (tax)	0.69717	0.70444
Concentration index (after-tax income)	0.37923	0.37868
Reranking effect	**0.00075**	**0.00085**
Effective average tax rate (t)	0.13901	0.13738
Revenue effect [t/(1-t)]	**0.16146**	**0.15926**
Kakwani index	**0.27374**	**0.28101**

Note: The values that have been used to obtain the Reynolds-Smolensky index have been given in bold.

Source: Authors' calculation using PIT microsimulation tool developed at the IEF.

As can be seen, the pre-reform income tax was progressive (Kakwani index is 0.27374) and achieved the redistribution of income (Reynolds-Smolensky index 0.04345), with an average rate of 13.7%. The effects are more pronounced when the negative deduction is taken into account (total net income instead of net of tax income) with a Reynolds-Smolensky index value of 0.04390 and Kakwani index value of 0.28101.

It can be concluded that the 2015 reform results in greater progressivity and redistribution than pre-reform legislation. Moreover, the effect is intensified when the negative deductions are considered, since these are more generous since the reform. The Kawani index is greater than before (0.295876 or 0.3152 including negative tax deductions), and the Reynolds-Smolensky index being higher (0.04566 or 0.04669 if we include negative tax deductions) indicates a greater redistributive effect after the reform. These effects are achieved despite the tax revenue being smaller (as showed by a smaller average tax rate after the reform, 13.1%) because the revenue effect decreases less than the progressivity effect increases, while the re-ranking effect is of very small magnitude.

It can then be concluded that the reform of 2015, although it implies less revenue, achieves more redistribution and progressiveness than were achieved before the reform.

Table 7

Effects on redistribution, progressivity and revenue of PIT in 2016

Results 2016	Income net of tax	Final net income
Gini (pre-tax income)	0.42343	0.42343
Gini (after-tax income)	0.37776	0.37674
Reynolds-Smolensky	**0.04566**	**0.04669**
Concentration index (tax)	0.71930	0.73863
Concentration index (after-tax income)	0.37709	0.37577
Reranking effect	**0.00067**	**0.00097**
Effective average tax rate (t)	0.13540	0.13134
Revenue effect [t/(1-t)]	**0.15661**	**0.15120**
Kakwani index	**0.29588**	**0.31520**

Note: The values that have been used to obtain the Reynolds-Smolensky index have been given in bold.

Source: Authors' calculation using PIT microsimulation tool developed at the IEF.

Although the results are not included here because they are very extensive, the contribution to progressivity and the redistributive effect of the different modifications undertaken in the reform were also calculated in an individualized way. The changes in the tax schedule, in the personal and family minimum amounts, in the tax credits, and in the negative deductions, were separated. Each group of changes was considered as if each of them was the only modification of the reform, and the base and the tax amounts were compared before and after the modifications were introduced.

When the parts of the reform are analysed individually, all of them can be seen to contribute positively to redistribution and progressivity, although in different ways. For example, negative tax credits are the most progressive measure of all those analyzed separately, but their low impact on tax collection makes the final effect on redistribution the lowest of all the measures considered. For this reason it is interesting to analyze progressivity and the redistribution separately, taking into account that a very progressive measure (but not applied extensively, and therefore with little collection impact), can generate a small effect on the final redistribution. As an inverse example there is the effect of the tax schedule, which, with a Kakwani index of half that obtained by negative tax credits, has finally almost twice the redistribution effect, due to the impact on the collection.

Turning to the global results, we calculate the absolute and percentage change of the reform on redistribution (measured by Reynolds-Smolensky index), revenue capacity (measured by the average tax rate) and progressivity (measured by Kakwani index) in table 8. Results are separated depending on whether negative tax credits are included or not.

TABLE 8

Absolute and percentage changes in Reynolds-Smolensky index, average tax rate and Kakwani index before and after the reform

	Without negative tax credits				With negative tax credits			
	2011	2016	Absolute difference	% Difference	2011	2016	Absolute difference	% Difference
Reynolds-Smolensky	0.04345	0.04566	0.00222	5.1	0.04390	0.04669	0.00278	6.3
Average tax rate	0.13901	0.13540	-0.00361	-2.6	0.13738	0.13134	-0.00604	-4.4
Kakwani	0.27374	0.29588	0.02214	8.1	0.28101	0.31520	0.03419	12.2

Source: Authors' calculation using PIT microsimulation tool developed at the IEF.

After comparing the situation before and after the reform it can be concluded that the rules applicable in 2016 reduce the inequality in the distribution of income to a greater extent than the norm of 2011. This effect is achieved even though the pressure exerted on taxpayers is lower (note that the reduction in the average effective rate of 2.6 percentage points when negative taxes are not included or 4.4 percentage points when they are computed). Taking into account this decrease in the tax collection effect, the improvement in redistribution is mainly explained by the greater progressivity associated with the reform (which is 8.1% higher in 2016 than in 2011 if negative taxes are not included, and 12.2% if they are). The tax reform in the Spanish PIT improves the redistribution of income by 6.3% despite revenue falls by 2,800€ million thanks to an increase of the progressivity of 12.2 percentage points.

5 EFFECTS OF THE REFORM ON POVERTY

The last of the analyzed effects of the reform of 2015 is a change of monetary poverty. It should be taken into account that the part of the income distribution that we focus on for poverty analysis is the left tail, which includes the lowest incomes. Many of the households here are not required to file for income tax, so it is more convenient to use the Survey of Living Conditions instead of the sample of income tax payers (the administrative data used in the analysis performed in section 4).

The poverty measurement has been obtained using EUROMOD (version G3.0) (Sutherland and Figari, 2013), a tax-benefit microsimulation model for the European Union, which is already pre-programmed and includes a more suitable data base for this purpose (EU_SILC 2012). It should be pointed out that not all the changes operated by the reform of the PIT can be included. We include all those for which information is available both separating the changes and also considering all the modifications together. We will refer to the changes analyzed by the following nomenclature:

C1 = Modification of labour income reduction

C2 = Changes in tax schedule

C3 = Modification of personal and familiar minima

C4 = Tax credits for large and single-parent families

C5 = Negative taxes for disabled descendants

RT = Total reform = Combination of C1, C2, C3, C4 and C5.

The calculated poverty indices are the Foster-Greer-Thorbecke (FGT) using parameter 0 for measuring the incidence, parameter 1 for including the intensity, and parameter 2 in order to introduce the inequality consideration. The FGT indices are obtained for a poverty line of 60% of median income.

Table 9

FGT poverty indices, poverty line is 60% of median income

	Without reform	With reform	C1	C2	C3	C4	C5
FGT(0)	21.31	20.94	21.27	21.21	21.25	21.12	21.24
FGT(1)	7.96	7.82	7.96	7.95	7.96	7.84	7.95
FGT(2)	4.85	4.77	4.85	4.85	4.85	4.78	4.84

Source: Authors' calculation using EUROMOD.

The results must be interpreted in the following way: before the reform, there was 21.31% incidence of poverty, which decreases to 20.94% if all changes from C1 to C5 (RT) are considered. Every change individually evaluated makes the percentage of poverty reduce, and the most effective measure in reducing the incidence is C4 (tax credits for large and single-parent families) which would on its own drive the incidence of poverty down to 21.12%). The overall effect does not derive from the addition of the effects individually considered. Intensity is also reduced for every measure, but as we use higher parameters for calculation of FGT indices, the changes are smaller and not visible at the hundredth level.

All measures analyzed are poverty reducers. When the analyses are done individually the effect may be very small (the effect may not appear to be in the second decimal place), but poverty is reduced in any case, and in all its dimensions.

It is convenient to assure the robustness of this result by checking if it is maintained for different poverty lines, as presented in table 10. The poverty lines (first column) are expressed in monthly amounts in euros.

For any of the poverty lines considered, it can be concluded that the reform reduces poverty in all its dimensions. Raising the poverty line involves the measurement of more poor people and a greater intensity. But whatever the situation of reference, the reform can reduce poverty.

Table 10

FGT poverty indices for poverty lines varying between 10% and 90% of median income

Poverty line month (euro)	Ponderation of median	FGT(0)		FGT(1)		FGT(2)	
		Without reform	With reform	Without reform	With reform	Without reform	With reform
103	0.1	2.5	2.45	1.84	1.82	1.71	1.69
206	0.2	3.95	3.90	2.52	2.47	2.08	2.05
309	0.3	6.39	6.23	3.36	3.29	2.56	2.51
413	0.4	9.86	9.49	4.52	4.41	3.17	3.12
516	0.5	14.22	13.97	6.02	5.86	3.92	3.83
619	**0.6**	**21.31**	**20.94**	**7.96**	**7.82**	**4.85**	**4.77**
722	0.7	28.68	28.30	10.35	10.11	5.99	5.85
825	0.8	35.41	34.83	13.06	12.79	7.33	7.16
928	0.9	42.86	42.30	15.96	15.65	8.84	8.65

Source: Authors' calculation using EUROMOD.

6 CONCLUDING REMARKS

The Spanish Personal Income Tax reform seems to have generated good results in terms of liquidity, redistribution, progressivity and poverty reduction.

The liquidity increases in any case, for all levels of income, regardless of family circumstances, and for both the individual and the joint declaration options. Besides, the percentage increase in disposable income is always greater the lower the level of income, with a progressive effect on the distribution of liquidity.

The redistributive and progressivity analysis has been conducted by using microsimulation tools developed in the IEF. From the results achieved in terms of distribution, a clear conclusion is obtained: the tax reform has brought about a positive redistributive effect among taxpayers since it reduces the inequality that, in terms of income, exists before and after payment of the tax. In particular, the analysis points out that the applicable legislation in 2016 is almost 6.3% more redistributive than the applicable legislation in 2011, measured by the Reynolds-Smolensky index. This is a remarkable circumstance since this redistribution has been achieved through the lowering of this progressive tax, specifically 2.87€ million less than the tax revenue if the 2011 legislation was applied. The legislation in 2016 results, in terms of progressivity and measured by Kakwani index, a 12.2% higher than that from the application of 2011 legislation.

The poverty analysis carried out using EUROMOD lets us conclude that regardless of the poverty line considered, the tax reform cuts poverty in all its key dimensions, although the cut is relatively modest.

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APPENDIX

This appendix outlines the main changes in the regulations for the Spanish PIT reform of 2015.

A1 TAX SCHEDULE

The minimum threshold of taxation is raised after the 2015 reform. The amount of income from which a worker is considered a taxpayer is 12,000€ per year. Spanish Fiscal Federalism rules allow some capacity of modification of the tax schedule for the different regions. As the research was conducted, and before actual data were available (which are being generated in 2017), it was simulated that all regions maintained the same rate as the central government. The real effect of the tax schedule on taxpayers will depend on the decisions that the Autonomous Communities take with respect to their proportion of the tax schedule. This change may be evaluated when the data for the 2016 statements are available.

TABLE A1

Global tax schedule in 2015 and 2016 (sum of state and autonomous schedules)

Amount of tax base (euro)	2015 rates (%)	2016 rates (%)
Up to 12,450	20	19
12,450 – 20,200	25	24
20,200 – 34,000	31	30
34,000 – 60,000	39	37
More than 60,000	47	45

Previously to the reform in 2014 there was a distribution of rent by tranches different from that existing after the reform.

TABLE A2

Global tax schedule in 2014 (sum of state and autonomous schedules)

Amount of tax base (euro)	2014 rates (%)
Up to 17,707.20	24.75
17,707.20 – 33,007.20	30
33,007.20 – 53,407.20	40
53,407.20 – 120,000.20	47
120,000.20 – 175,000.20	49
175,000.20 – 300,000.20	51
More than 300,000.20	52

A2 WITHHOLDING TAX

We consider that both the withholding system and the autonomous part of the tax schedule take the state as a reference. Withholding rates have also experienced declines following reform that could mean a decrease of five percentage points in the rate. The main measures regarding withholdings have been:

– Reduced rate of 19% for managers whose remuneration comes from entities whose turnover is less than 100,000€.

– Also reduced is the rate of retention applicable to professionals: 18% in general and 15% or 9% under certain circumstances.

A3 DEDUCTIBLE EXPENSES FROM LABOUR INCOME

Along with the elimination of a deduction of up to 400€ for taxpayers with incomes lower than 12,000€, the reform has increased the amount applicable as a reduction of the full income of the work that operates for taxpayers with lower incomes. This increase implies in practice an increase in the reduction from 4,040€ to 5,700€ to taxpayers with net income from work below 11,250€. The consideration of deductible expenses from labour income decreases as labour income increases.

A4 SAVING INCOME

All profits and losses derived from transmissions, irrespective of their generation period, are considered as savings income after the reform. It is a way of favouring the neutrality of investment decisions by ceasing to depend on the taxation of generation time. As a consequence of the incorporation to the base of the savings of all the gains or losses which derive from transactions of assets the compensation conditions are softened.

The types of tax applicable to savings income before and after the reform are showed in table A3.

Table A3

Tax rates applicable to saving incomes in 2014, 2015 and 2016

Amount of tax base (euro)	Tax rate 2014 (%)	Amount of tax base (euro)	Tax rate 2015 (%)	Tax rate 2016 (%)
Up to 6,000	21	Up to 6,000	20	19
6,000 – 24,000	25	6,000 – 50,000	22	21
More than 24,000	27	More than 50,000	24	23

A5 INCOME FROM CAPITAL

A5.1 DIVIDENDS

The main novelty of the reform is the abolition of the existing exemption of dividends and participation in profits with the limit of 1,500€ per year. Alongside this idea of greater uniformity in the treatment of savings income, it should also be borne in mind that this mechanism, initially set up as a corrector for economic double taxation, did not fulfil the purpose for which it was intended: minority stakes could be corrected by a much higher amount than the underlying corporate tax theoretically incorporated into the dividend, while the opposite would occur if the share was greater.

It was a "compensatory" measure, which allowed a peaceful transition between the previous system, which corrected economic double taxation and the current

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system which, in line with what happens in almost all European jurisdictions, does not carry out such correction.

As a result of the abolition of the exemption, all dividends are taxed in accordance with the new rates of the savings rate.

A5.2 PROMOTING LONG TERM SAVING

In order to encourage long-term savings, the Law provides for the exemption of positive capital income from life insurance, deposits and financial contracts through the so-called Long-Term Savings Plans (in Spanish: Planes de Ahorro a Largo Plazo, PALP), provided that the taxpayer does not make any disposition of the capital resulting from the plan before the end of the period of five years from its opening.

The main characteristics of the PALP are the following:

- The resources contributed to the PALP must be implemented through the so-called Individual Long-Term Life Insurance or an Individual Long-Term Savings Account which includes money deposits and certain financial contracts.
- The contributions to the PALP cannot exceed 5,000€ per year in any of the exercises of the Plan.
- The taxpayer may only hold one PALP at any given time although there is no limitation to successive ownership.
- The disposition of the capital can only be produced by the total amount of the Plan.
- The entity must guarantee the payment of at least 85% of the contributions at maturity.

A6 CONTRIBUTIONS TO RETIREMENT PENSION PLANS

The limit of deductible contributions to pension plans in the base are reduced from 10,000€ to 8,000€. This will achieve an approximation of the maximum limit of reduction to the average of the contributions made by the taxpayers of the tax and also an advance in progressivity (because the reductions operate at the marginal rate, and the allowance is greater for those who save more).

The reforms also increase from 2,000€ to 2,500€ per year the maximum limit of reduction in the taxable base for contributions to social security systems of which the taxpayer's spouse who does not obtain net income from work or business in an amount less than 8,000€ per year.

A non-tax measure should be emphasized, but it affects the substantive regulation of the plans, such as the possibility of being rescued, without cause within ten years. This is to avoid one of the biggest reluctances of taxpayers to contract pension plans and make contributions to them, such as the unavailability of the amounts contributed until the retirement age (except exceptional cases) and may constitute a key element in promoting social security savings.

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A7 TREATMENT OF FAMILY UNIT

In Spain, the Tax Law takes into consideration the family fundamentally in two moments: offering a joint tax regime, on the one hand, and through a system of personal and family minimums, on the other.

With the reform new personal and family minimums are set, such as the establishment of new support to families with higher social security charges and that therefore require special protection, such as those with more dependent children or people with disabilities.

Table A4

Amount of personal minima before (2014) and after (2016) the reform, amount in euro and percentage change

Concept	Amount (euro)		Variation rate (%)
	2014	2016	
Personal minimum	5,151	5,550	7.75
Minimum per descendant:			
1st child	1,836	2,400	30.72
2nd child	2,040	2,700	32.35
3rd child	3,672	4,000	8.93
More	4,182	4,500	7.06
Age minimum and ascendant < 75 years	918	1,150	25.27
Age minimum and ascendant > 75 years	2,040	2,550	25.00
Disability minimum < 65%	2,316	3,000	29.53
Disability minimum < 65% (reduced mobility)	4,632	6,000	29.53
Disability minimum > 65%	9,354	12,000	28.29
Deceased descendant	1,836	2,400	30.72
Deceased ascendant	0	1,150	100
Descendant less than 3 years	2,244	2,800	24.78

The new deductions are established as tax credits which will operate as negative taxes. These are "pure" subsidies, as they are applied regardless of the amount of the taxpayer's contribution. In particular:

- Negative tax for each descendant with disability entitled to apply the minimum per descendant: up to 1,200€/year.
- Negative tax for each ascendant with disability with right to apply the minimum by ascendancy: up to 1,200€/year.
- Negative tax for being part of a large family up to 1,200€ per year, or 2,400€ per year in the case of large families of special category.

Possibility of charging in advance the new family subsidies favours a considerable increase of the liquidity of the taxpayers.

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A8 PATRONAGE

The Spanish tax reform has also been characterized by introducing fiscal measures that contribute to boost patronage activities. The changes in the PIT are as follows:

- Increasing from 25 to 30% the percentage of general deduction.
- Establishment of an increased rate for stable donations 35%.
- New deduction introduced to enhance micro-patronage. Based on this, a deduction of 75% is set for donations of less than 150€ that are made after 2016. A donation that exceeds this amount will benefit from the other increased rates.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Patterns of welfare-to-employment transitions of Croatian Guaranteed Minimum Benefit recipients: a preliminary study

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Abstract

In this paper we explore the transitions of social assistance beneficiaries to employment in Croatia. Data was sourced from the social welfare register for 208 persons from the 2015 cohort of new, unemployed social assistance recipients in one Centre for Social Welfare, their outcomes tracked until June 2017. About a quarter of the recipients became employed within one year, in most cases with wages slightly higher than the statutory minimum. Out of them, about a quarter relapsed into social assistance status within a year. Following the World Bank Employment Barriers approach, we examine whether outcomes are associated with disincentives to work (inactivity trap), lack of work-related capabilities, or gendered engagement with in-household work. We found the average participation tax rate (PTR) for recipients to stand at 57%, yet no effect of PTR, benefit level, debt or PTR level on transition to employment was identified. With respect to capabilities, the role of human capital (vocational in particular), work experience and age turned out to be consistent with prior research. Substitution of in-house work is consistent with the finding that women are less likely to get employed if living in a household with dependents.

Keywords: welfare-to-employment transitions, social assistance recipients, participation tax rate, employment barriers

1 INTRODUCTION

There are two kinds of income support that unemployed persons in Croatia can access, in line with the continental social security tradition. The first is contribution-based unemployment benefit which is conditional on prior employment (at least 9 months of employment in the last 24 months) and related to the prior earnings of the individual. Unemployment benefit can be received for up to 15 months although most recipients qualify for 3-6 months. Such a conditionality and the limited duration make for a rather patchy coverage of the unemployed (graph 1, grey line), in particular during periods of economic growth, when few long-term employed enter unemployment.

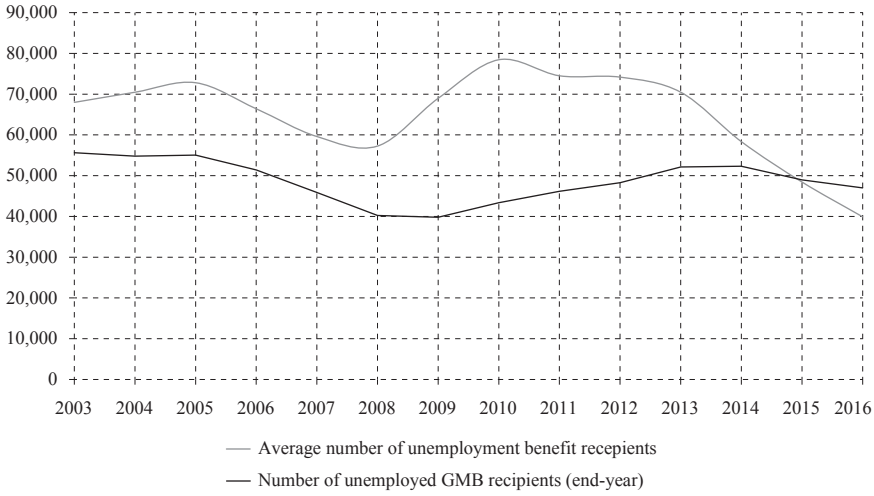
The second support option for an unemployed person is the guaranteed minimum benefit (GMB), a means-tested social assistance benefit granted at the household level. In order to qualify for GMB, citizens who are fit to work must be registered as unemployed and demonstrate efforts at activation. The number of unemployed GMB recipients over the past decade stood at a rather stable level, with oscillations (between 40,000 to 50,000) following the economic cycle. At the end of 2016, there were a total of 47,000 unemployed GMB recipients, which translates to 1.7% of the working-age population, 2.6% of active population (per Labour Force Survey, LFS), or about 19.9% of registered unemployed persons.

While the numbers of beneficiaries are substantial, to date there has been no empirical research on the patterns and challenges of transition to employment in the

case of GMB recipients. Since national SILC data are unsuitable for the task[1], this paper uses administrative data in order to establish the feasibility of such an effort, while providing basic insights about the incidence of transitions by GMB recipients to employment and the mechanisms involved.

Graph 1

Number of unemployment benefits recipients and GMB recipients from 2003 to 2016



Source: Croatian Employment Service and Ministry of Social Welfare.

The paper is organized as follows. In the second section we discuss the employment barriers involved in welfare-to-work transitions, identifying three distinct theoretical mechanisms. In third section we present our data collection, organization and analytical approach. The fourth section is composed of three parts. In the first we discuss the structure of unemployed GMB recipients, according to criteria identified as relevant in the initial discussion. In the second we observe welfare-to-employment transitions in general, differences between groups relevant for each theoretical mechanism, and estimate a joint Cox proportional hazards model. In the third part we examine outcomes of successful transitions: remuneration, realized PTR and relapse into GMB. In the final section we summarise the findings, discuss limitations and make case for applying this approach to more extensive data collection.

2 THEORETICAL MECHANISMS

We will broadly follow the Employment Barriers approach introduced by the OECD and the World Bank (Fernandez et al., 2016). In individual cases, barriers might emerge from lack of financial incentives or lack of work-related capabilities, each calling for a different set of policy interventions.

[1] Incidence of GMB is too rare to produce a subsample suitable for analysis, while survey design does not allow for precise identification of the group or timing of events/outcomes.

Incentives to work might be low due to high non-labour income, but GMB is strictly means-tested and non-labour income of recipients is monitored, so this dimension does not feature as a barrier in the case of GMB recipients. However, the inactivity trap due to a high level of earnings-replacement benefits might act as a barrier. The income criterion that qualifies a household for GMB is lower than the net minimum wage for all but the largest households[2], making GMB effectively limited to jobless households, or households with very low (formal) work intensity. Consequently, the first employment of any household member usually leads to withdrawal of GMB for the entire household (or a household member leaving the household). While household benefit level is capped at the level of a single gross minimum wage (HRK 3,276 in 2017), in most cases GMB is supplemented by other benefits that use GMB as prerequisite[3]. Those additional benefits are all withdrawn if household income exceeds the GMB qualification threshold. Such a setup leads to an "inactivity trap" in which unemployed persons with low earnings potential and receiving benefits face a situation where taking up employment may lead to little (or no) increase in disposable income as a result of the combined effects of benefit withdrawal and higher tax burdens on in-work earnings (Carone et al., 2004). In other words, for households in the inactivity trap, work does not pay off. The inactivity trap is characterised by a very high marginal effective tax rate (METR), which is effectively the participation tax rate (PTR) in cases when starting work-based income equals zero (Jara Tamayo, Gasior and Makovec, 2017). The level of PTR is strongly associated with social security setup, household structure and earning potential. In Croatia, Bejaković, Urban and Bezeredi (2013) have identified that transition from inactivity to single-earner minimum-wage bears PTR above 100% for individuals from jobless households with dependent children and single-parent households. Similar inactivity trap estimates for such individuals are published by the EU Tax and Benefits Indicator Database (EU-TBID), at 102% and 110% respectively. For a single person household or two-adult household PTR for such a transition is still substantial but lower (63% and 72%), primarily due to GMB being far lower than the minimum wage. This leads us to expect that unemployed GMB recipients from households with dependent children and single-parent households would face greater PTR, and thus have lower economic incentives to make the transition to employment.

Lack of work-related capabilities makes for another set of barriers to employment (Fernandez et al., 2016) that hinder access of GMB recipients to the labour market. In particular, the role of human capital, drawn either from education or work

[2] Income threshold for qualification since 2014 stands at about 30% of net minimum wage (HRK 800) for single households, and 37% of the minimum wage (HRK 960) for households with two adult persons. The latter is increased by a further 18% of the minimum wage (HRK 480) per additional adult member of the household and by 12% (HRK 320) for any minor dependents – up until the cap is reached (comprising about 6 to 8 household members). The amount is additionally increased by a further 4.5% of the minimum wage (HRK 120) per additional minor dependents if it is a single-parent household.

[3] GMB is coupled with other benefits that use GMB as a prerequisite – such as free school textbooks, electricity grant fee which amounts HRK 200 introduced in September 2015, a grant for firewood, housing allowance or local government benefits (Šućur et al., 2016). These coupled benefits are not considered as income for the purpose of being qualified to receive GMB.

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experience is crucial to understanding employability. Level of human capital has been consistently identified as the strongest predictors of career progression (Fugate, Kinicki and Ashforth, 2004), confirmed by several research efforts in the Croatian context (Šverko, Galić and Maslić Seršić, 2006; Botrić, 2009; Matković, 2011; Urban and Bezeredi, 2016; Lucić, forthcoming). While access to employment improves with level of education and work experience, both are rather scarce among unemployed GMB recipients. Advanced age might also act as a barrier, due to the greater incidence of health limitations or obsolescence of human capital, as well as the less favourable perceptions of employers (Van der Heijde and Van der Heijden, 2005; for Croatia Vehovec, 2008).

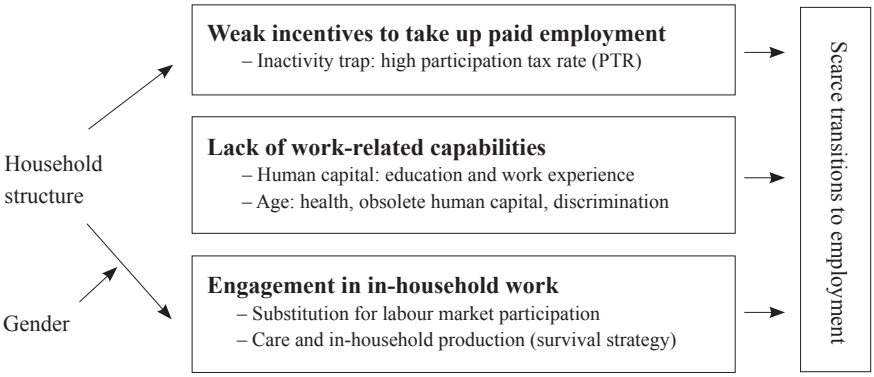
Engagement in in-household work and production can act as a barrier to employment. The need for household work increases with household size, in particular with care responsibilities for dependent household members. However, with very limited funds to procure goods and services on the market, GMB recipients are likely to adopt strategy of producing/providing them within the household themselves (cf. Bagić et al., 2017). Yet there is strong evidence from the general population that in Croatia women are still the prevailing providers of household work (Bijelić, 2011; Bartolac and Kamenov, 2013), as well as evidence of motherhood penalty on labour market participation (Dobrotić, Matković and Baran, 2010; Dobrotić, Matković and Zrinščak, 2013; Lucić; forthcoming). The traditional household division of labour, in line with the new home economics theory, would lead to weaker labour supply for women as they substitute household production for labour market participation – and the greater labour market engagement of men (cf. Grotti and Scherer, 2014)[4]. Goods and services produced for own household provide substantial utility for the household, are not treated as income and thus do not involve risk of sanctions on GMB recipients. Therefore, substitution of household work/production for labour market participation is an attractive option for GMB recipients and a common survival strategy among households living in poverty (Bagić et al., 2017). Such a pattern is more likely to be found among women, when there is a partner within the household and dependent family members present.

In short, we identify three distinct (and non-exclusive) kinds of barriers to employment of GMB recipients: weak incentives to work because of high PTR, scarce work-related capabilities, and substitution of household work for labour market participation (graph 2). We identified household structure as an important factor in both incentives to work and substitution of female labour market participation.

[4] Grotti and Scherer assume positive partner effect of "additional resources", but in the jobless households observed in this study there is no variation – as lack of financial, social and cultural resources in jobless households (Matković, 2006; Šućur, 2014) are likely to adversely affect all adult members of the household.

Graph 2

Barriers to employment faced by GMB beneficiaries: schematic of theoretical mechanisms involved



Source: Authors, adapted from Fernandez et al. (2016).

3 DATA AND ANALYTICAL APPROACH

In this paper, we are pioneering the empirical evidence on welfare-to-employment transitions in Croatia in an effort to identify the dynamics and patterns of the exits of benefit recipients to employment status. For this purpose, with the consent of the Ministry of Social Welfare, we collected data on all the unemployed persons who were granted GMB in 2015 in one Croatian Centre for Social Welfare[5], and then followed their status up until June 2017.

An anonymised dataset was created using the digital social welfare register (SocSkrb) data containing information on household benefit level, beginning and end of benefit usage. For each member of those households, we collected information on age, gender, settlement, prior recipient status, grounds for admission into beneficiary status. SocSkrb data was supplemented by additional information from the centre's case record: prior employment experience, grounds for cessation of beneficiary status[6], education level and field, amount of debt and duration of unemployment prior to being granted GMB, level of GMB and other benefits, as well as wage for those who made the transition. Also, we generated household-level attributes (household type: single, single-parent, several adults without dependents, several adults with dependents; presence of nursery age children). For each household, a PTR for taking up a minimum-wage job (HRK 2,496) was calculated, taking into account their given level and structure of benefits.

[5] Centre for Social Welfare, Požega, located in a moderately underdeveloped region covers about 1% of population of Croatia. The region is one of the twelve counties within the lowest grouping of the national Development Index, and among the five with the lowest GDP/per capita – as it stands at about 60% of the national average. However, the share of GMB recipients in the population in 2015 (2.2%) was slightly lower than the national average of 2.4%.

[6] GMB beneficiaries can have their beneficiary status changed due to employment but also due to personal non-compliance or non-working income generated by any other member of the household.

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We have tracked all the sampled households from January 2015 (or the month when they were first granted GMB in 2015) all the way to June 2017. Thus episodes were created containing duration, outcome, episode-specific (e.g. level of GMB) and person-specific (e.g. gender) data. Most households had one episode of GMB on record, but some had several. Also, changes in composition of households (e.g. a person moving out of the household or a dependent child becoming unemployed) were accounted for. In cases where the status of unemployed GMB recipients had not changed for some members of the household (e.g. one household member had lost the GMB benefit – warranting a new administrative act and formal episode), adjacent episodes for those members were merged in one continuous spell.

During 2015, a total of 142 households with unemployed members were granted GMB; in all, there were 344 beneficiaries[7]. Over the observed 30 month period, a total of 208 individuals from those new households were classified as unemployed GMB recipients for at least a month[8], for a total of 239 episodes of unemployment. Four persons who turned 18 or 65 during the period were excluded from the analysis.

Data was analysed using the event history (also known as survival analysis) approach, with general employment dynamics being described by estimation of Kaplan-Meier failure function, and differences of failure functions between groups being tested with log-rank test. For the multivariate framework exploring contribution of covariates associated with the aforementioned mechanisms, we have applied Cox proportional hazards regression model (Box-Steffensmeier and Jones, 2004; Cleves, Gould and Marchenko, 2016) with shared frailty at the level of individuals.

4 RESULTS

4.1 STRUCTURE OF NEW GMB BENEFICIARIES

Before venturing forth with outcomes, we will describe the structure of our GMB cohort (cf. table A1 for source data on structure, estimated PTR and employment outcomes within 12 months for each category).

Starting with characteristics likely to affect incentives to work, unemployed GMB beneficiaries are heterogeneous with respect to the total level of GMB-related benefits their household receives (graph 3, upper pane), interdecile range stretching from HRK 1,000 to HRK 2,040, yet the modal value received by 29% of beneficiaries being exactly HRK 1,000 (single household benefit with electricity supplement). When child benefits are added, the distribution widens towards HRK 1,000 to HRK 3,518, and the average total of household benefits increases from

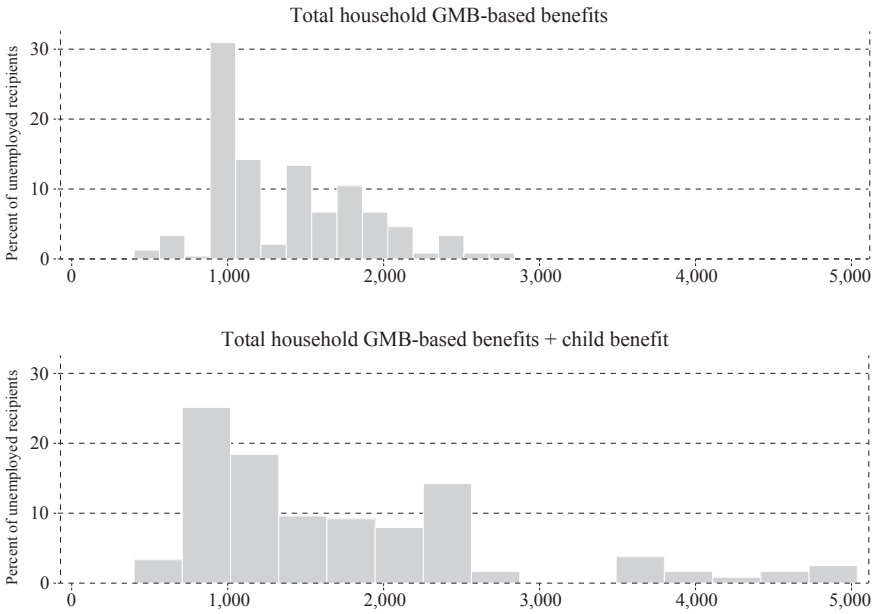
[7] This number represents only a minority of the stock of the GMB recipients within the centre, which at the end of 2015 amounted to 728 active GMB with a total of 1,420 beneficiaries. There were 610 unemployed users most of them long-term beneficiaries.

[8] Out of them, 9 (in 12 episodes) were not required to be registered as unemployed with the CES due to being older than 60 or having a child younger than one year – none of them got employed during the observation period, but were included in the analysis as they are still categorized as unemployed in the Social Welfare Act.

HRK 1,388 to HRK 1,781 (graph 3, lower pane). More than half of GMB beneficiaries had their bank accounts blocked due to indebtedness, and 42% were under debt execution/repossession orders exceeding two minimum wages.

Graph 3

Histogram of GMB-related benefits and social transfers including child benefits



Source: SocSkrb, calculation of the authors.

With respect to the household structure, about half of the new beneficiaries belong to household types supposedly characterised by the inactivity trap: single-parent households and households with two or more adults with dependents[9]. Yet about a third of new unemployed GMB beneficiaries resided in a single-person household, and about one fifth recipients were living in a multiple-person household without dependants[10], supposedly facing considerably lower PTR as barrier to employment. However, the average calculated PTR for taking up a minimum-wage job based on household structure and benefit levels of cohort observed resulted in PTR estimates within a 9 percentage point range: the lowest for single-person household (52%), and the highest for household with dependants (61% – yet much lower than 102% in TBID). Therefore, we will turn our analytical focus toward the calculated level of PTR as a direct indicator of work disincentive.

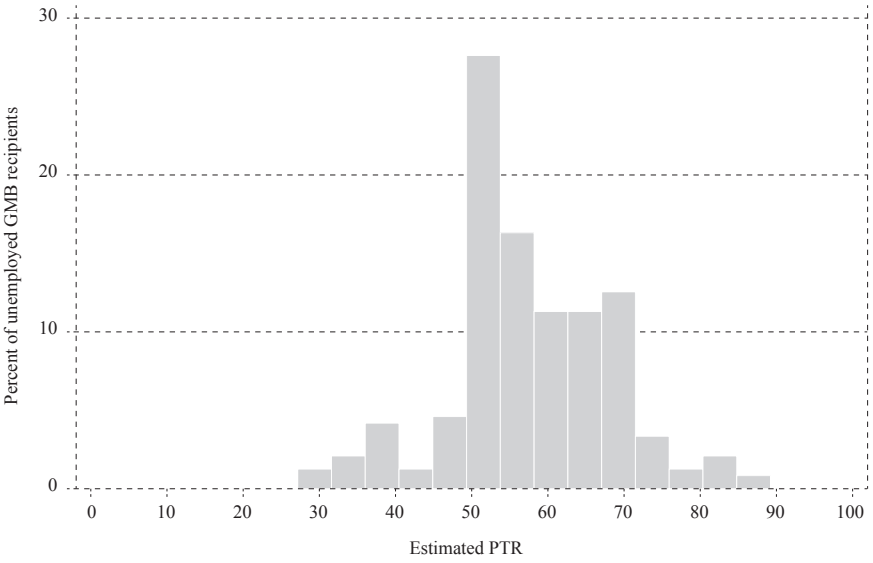
We have calculated average PTR for taking a minimum wage job for unemployed GMB recipients that we have tracked at 57%. For about three quarters of them minimum wage PTR stands between 50% and 70%, with modal bin about 50%

[9] In all but ten cases those were minors, while other were persons unfit for work.
[10] In most cases those were "empty nest" households with partners aged 50+, sometimes one grownup child.

(graph 4). A minimum wage PTR lower than 40% is mostly observed for large families with large child benefits, or small households where not all members qualify for GMB. High minimum wage PTR is to be found among households with GMB-based benefits close to the minimum wage (coupled with housing and electricity supplement), while receiving no or limited child benefits. However, in no case in our cohort did PTR for taking up a minimum wage job exceed 90%.

Graph 4

Estimated participation tax rate for taking up a minimum-wage job



As for work-related capabilities, the majority of newly unemployed GMB recipients (56%) had just compulsory education or no education, 43% had secondary education and 1% had tertiary education. The educational structure of the tracked GMB cohort is roughly similar to that of all the GMB beneficiaries of the Centre for Social Welfare, about one fifth had no prior employment experience whatsoever, and similar share had more than ten years of tenure, while the majority of unemployed beneficiaries had a modest amount of employment experience.

The age structure of new GMB recipients is diverse, with most beneficiaries in the 30-50 age group, trailed by the 50-64 group. Slightly more than half of new beneficiaries were at least once registered as GMB beneficiaries prior to 2015 and were effectively returning to GMB. About one fifth were long-term unemployed by the time GMB kicked in.

With respect to households more inclined to in-household work, altogether 48% of recipients lived with frail or underage dependants in the household, and 15% had nursery-aged children (0-3). Our tracked cohort has characteristics very similar to those of general GMB beneficiaries within Požega Centre regarding gender

ratio. While men are somewhat overrepresented (57%) among newly unemployed GMB beneficiaries and in particular among single-person households (75%), women account for the majority (85%) of single-parent recipients.

4.2 TRANSITIONS TO EMPLOYMENT

About 43% of tracked episodes had not been completed by the end of the observation period, while other users had made the transition out of GMB status (table 1). A GMB episode most often ended due to the employment of recipient (22.3% out of whom 2.6% were still receiving GMB after employment) or employment of another household member (13.5%). About 18% of episodes ceased due to other reasons: in 4.7% episodes, beneficiaries were sanctioned due to inactivity (leaving the unemployment register leads to withdrawal of benefits), and in 4.3% due to excessive household income.

Table 1

Outcome of the unemployment episode of GMB recipients

Outcome	%
GMB ceased – in employment	22.3
GMB ceased – household income other than employment	4.3
GMB ceased – employment of another household member	13.5
GMB ceased – not seeking job	4.7
GMB ceased – other (e.g. death, migration, prison…)	8.6
GMB recipient – disability	0.4
GMB recipient – in employment	2.6
Status unchanged as of May-2017	42.9

Source: SocSkrb, calculation of the authors.

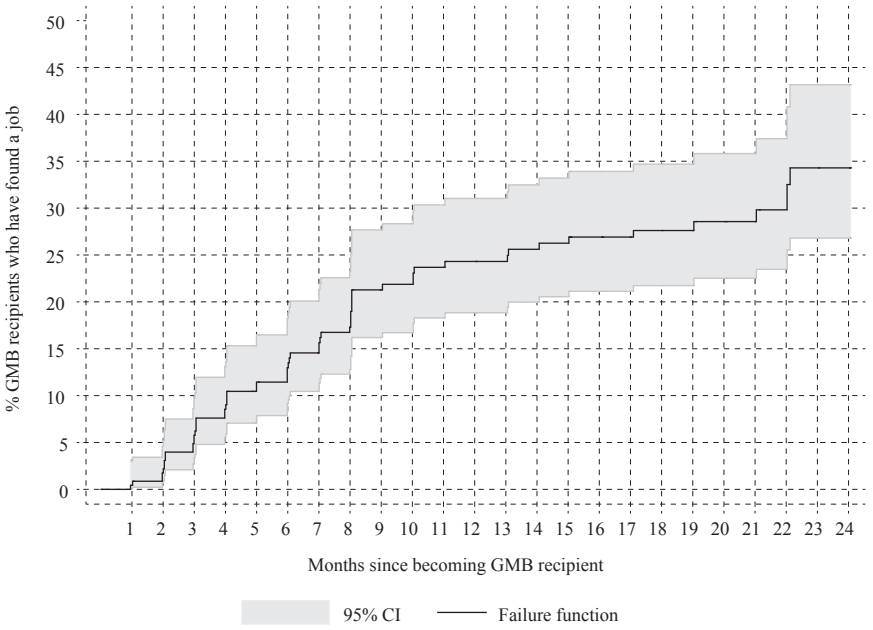
Such distribution of outcomes, with varying time windows of observation, limited number of participants and a lot of censoring due to the employment of other household members led to a choice survival analysis framework, with transition to employment being observed as a relevant event.

The Kaplan-Meier estimate of failure function indicates that about 24% of unemployed GMB recipients found a job within one year of entering GMB (graph 5). This is significantly less than 55% of employed within 12 months among all who entered unemployment in the 2012-2014 period (Lucić, forthcoming). Within two years, the share had increased to 34%, indicating a decline of the hazard rate for transition towards employment, yet no isolation from the labour market[11]. However, when the employment of any household member is observed as an outcome (effectively ending the GMB episode), then transitions stand at 36% within a year and 47% within two years.

[11] Transitions into employment of long-term beneficiaries might be facilitated by the provision that they are eligible for staggered withdrawal of benefits after receiving GMB for a year or more.

GRAPH 5

Kaplan-Meier failure function: exit into employment (recipient)



Source: SocSkrb, calculation of the authors.

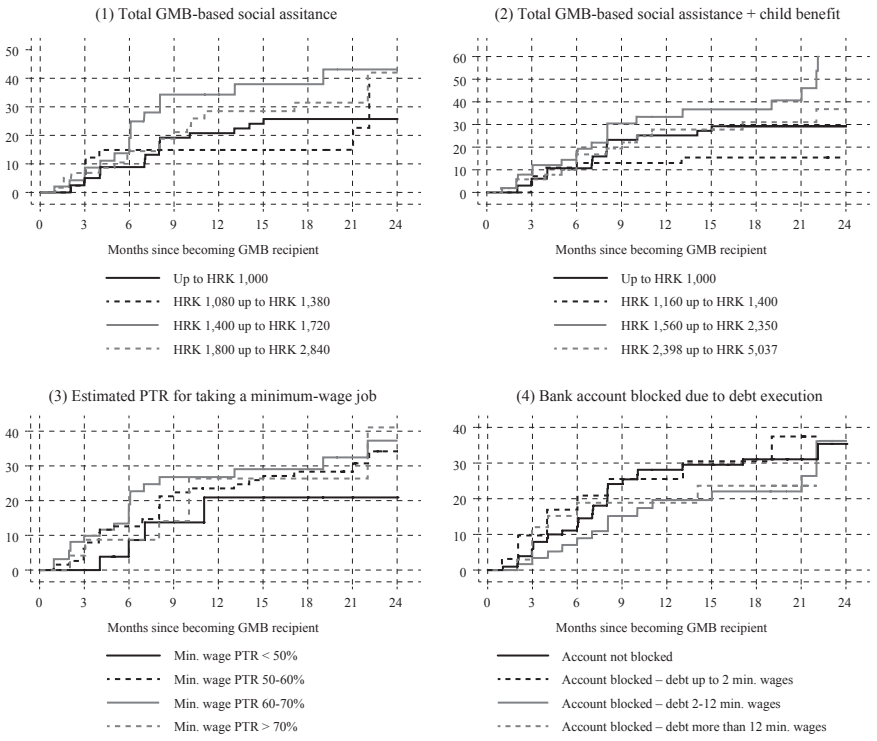
Moving on to exploration of the role of employment barriers, we start with criteria indicating lack of incentives to work. However, with the observed cohort of GMB recipients, we fail to observe a consistent association between either PTR, benefit level (GMB-related benefits only, or coupled with child benefits) or indebtedness and transitions to employment. That is, unemployed GMB recipients with a higher level of benefits, deeper in a debt spiral or those who would be exposed to higher PTR if getting into a job are not less (or more) likely to find a job than others (graph 6). The only criteria where diverging outcomes were identified is total benefit level – with beneficiaries from two middle income groups underperforming (HRK 1,160 – 1,400) or overperforming (HRK 1,560 – 2,350) respectively. Such observations do not conform to the patterns that would be expected if lack of incentives due to inactivity trap were the prevailing mechanism at work.

Descriptive evidence is stronger with respect to the lack of work-related capabilities acting as a barrier (graph 7). Formal education level is associated with employment outcomes among GMB recipients. The few beneficiaries with tertiary education had bounced back into employment quickly. Among other, more prevalent, groups, there is an advantage for persons who have completed short vocational education programmes (such as waiters, cooks, electricians, hairdressers, salespersons, etc.), with about 40% getting a job within a year. On the other hand, less than one fifth of beneficiaries with no upper secondary education got employed within a year. Yet unlike studies following the general population, outcomes of

beneficiaries with four-year upper secondary education (technical or general) are no better than for those with no upper secondary education. Yet, observed outcomes for GMB recipients for any given level of education are substantially weaker than those demonstrated at the national level for persons entering unemployment in the 2012-2014 period (Lucić, forthcoming).

Graph 6

Kaplan-Meier failure function: transitions into employment (recipient), by disincentive for work criteria

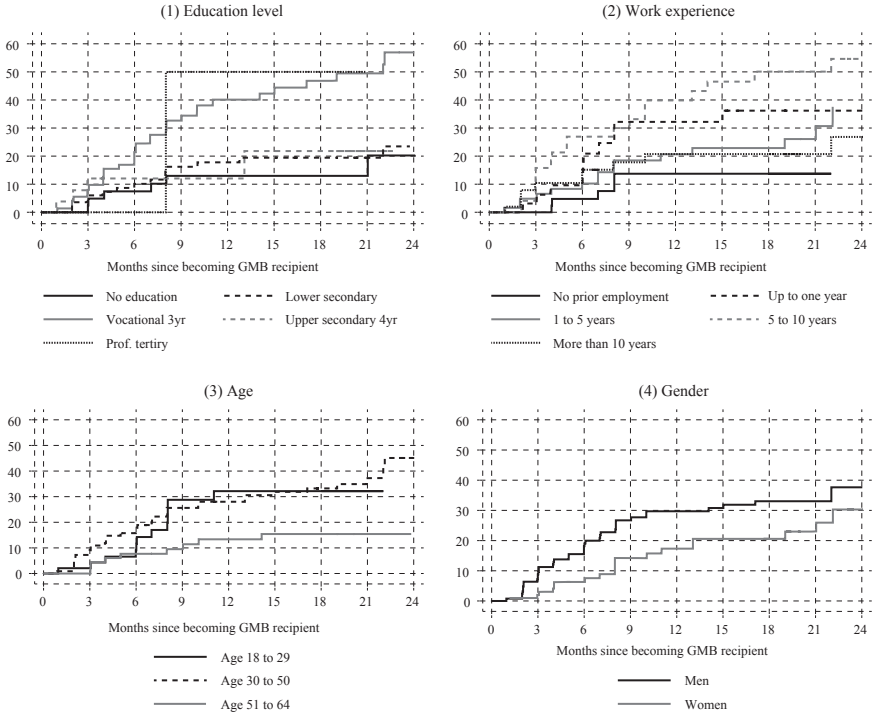


Log-rank tests: (1) chi²(3)=3.67; (2) chi²(3)=8.38; (3) chi²(3)=0.98; (4) chi²(3)=2.10.*
Source: SocSkrb, calculation of the authors.

There is some evidence for the importance of work experience for the employment of GMB recipients. The association, however noisy, broadly fits the commonly found inverse U pattern: those with no prior employment experience and those with more than 10 years having a weaker chance for employment. Failure functions with respect to age demonstrate a well-established age effect: only 10 per cent of recipients older than 50 got employed within one year (cf. 37% in the general population of the unemployed), but no distinction in employment transitions is to be found for persons 30-50 and those under 30. So far, at the descriptive level employment patterns of unemployed GMB recipients seem to be in line with the human capital framework – patterns for education, tenure and age being consistent in direction but subdued compared to those observed for the general population (Urban and Bezeredi, 2016; Lucić, forthcoming).

GRAPH 7

Kaplan-Meier failure function: transitions into employment (recipient), by work-related capabilities criteria



*Log-rank tests: (1) chi²(4)=17.46**; (2) chi²(4)=12.12*; (3) chi²(2)=5.37⁺; (4) chi²(1)=4.24*.*
Source: SocSkrb, calculation of the authors.

There is a substantial difference in transition dynamics with respect to gender, with almost twice as many men than women finding a job within a year from entering GMB (but with indication of convergence later on). However, such a difference is not found among the general unemployed population (cf. Lucić, forthcoming), and merits exploration of the gender-specific effect of household structure.

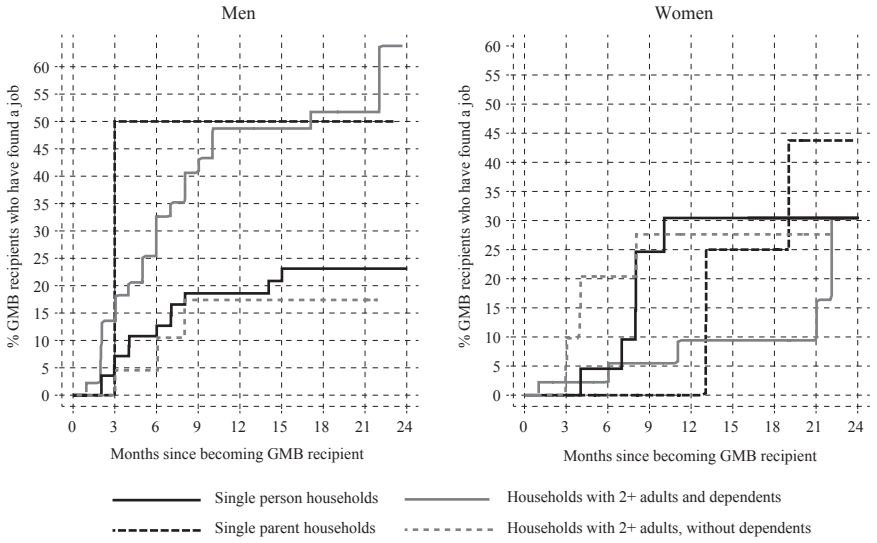
Employment of men and women in GMB follows different patterns, depending on household type and their family role (graph 8). Male GMB recipients are more likely to make the transition to employment when there are dependants in the household. It is exactly these configurations in which female GMB recipients have very weak chances for employment during first twelve months. Yet female employment performance is similar to that of men when there are no other dependants in the household. Such patterns are in line with traditional gendered specialisation within the family, and the substitution of in-household work for labour supply for unemployed female GMB recipients, consistent with care responsibility hypothesis.

The descriptive findings are broadly confirmed with the Cox proportional hazard model (table A2 in appendix). The model simultaneously includes variables cor-

responding to all three barriers, albeit some in reduced (dichotomized) form due to the limited number of observations. We have introduced both PTR and total household benefit level simultaneously in order to distinguish the effect of total available resources from non-labour income with the inactivity trap due to potential taxation of labour income. Interaction of gender with household structure and the presence of a nursery-age child was introduced to account for the gender-specific substitution of in-household work for labour income. The proportional hazard assumption was tested using Schoenfeld residuals on the fitted model, proving satisfactory in general, apart for the gender/single parent household interaction (rho -0.24, $p<0.1$) and total benefit level (rho -0.23, $p<0.05$).

Graph 8

Kaplan-Meier failure functions: transitions into employment, by gender and household configuration



*Log-rank tests: (Men): chi²(3)=12.09**; (Women): LR test chi²(3)=3.67.*

Source: SocSkrb, calculation of the authors.

Starting with work-based capacities, in the multivariate model, advanced age still seems to be hindrance for both men and women, net of human capital. Vocational education and to lesser extent prior employment experience contribute to transition to employment, implying the role of (lack of) capabilities. Notably, duration of unemployment prior to entering GMB status and history of using GMB do not hinder transitions to unemployment.

With respect to disincentives to work, no linear contribution of benefit level, PTR for getting a minimum-wage job, or existence of substantive debt was identified in terms of transition to employment.

With respect to household work substitution, no effect was identified for household configuration per se. Other things being equal, women who receive GMB

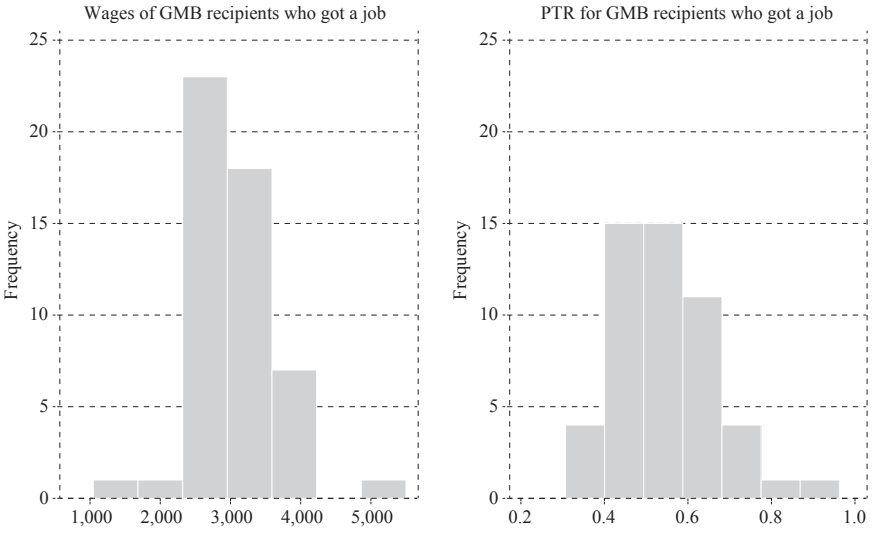
seem to be less likely to make the transition to employment than men, yet this seems not to be the case when there are no dependants to care for, or for women in single-person households. No additional effect was identified when a child was present in the household.

4.3 WAGES, ASSUMED AND REALIZED PARTICIPATION TAX RATE OF GMB RECIPIENTS WHO FOUND A JOB

The information accessed through SocSkrb system during the process of GMB administration allows for detailed information on benefits of household members, as well as wages of beneficiaries that managed to find a job. In 58% of cases, achieved wage was higher than 110% of the 2016 statutory net minimum wage (HRK 2,496), in 44% of cases higher than 125% of statutory wage, and in 12% of cases higher than 150% of minimum wage, the highest on record being 2.2 times higher than minimum wage, although still lower than the average wage level (graph 9). However indicative, this is not representative of the earning potential of GMB recipients in general, as those who failed to find a job might have had even less capacities – and worse opportunities (cf. Bezeredi and Urban, 2016). While an extension of this research might lead to estimation of potential wages, the data at hand can be used to calculate actual PTR for those GMB recipients who did find a job. The spread of actual PTR for those who made the transition was rather broad (table 2): from 31% to 96%, standing at an average 53%. Average realized PTR was somewhat higher for households with dependants (58%), and about 50-55% for other household types. It is worth mentioning that for any given household type, the average realized PTR was slightly lower than one hypothesised under the minimum wage assumption – as in many cases wages turned out to be higher than minimal.

Graph 9

Wages and realized PTR for GMB recipients who made the transition to employment



Source: SocSkrb, calculation of the authors.

TABLE 2

Hypothetical PTR, average realized PTR and wage of GMB recipients who made transition to employment, by household type

	Hypothetical PTR for all recipients, % (at 35% avg. wage)	Actual PTR, % (for those who got employed)	Average wage, HRK (for those who got employed
Single person household	52	50	2,831
Single parent household	56	54	3,577
Household with dependents	61	58	3,029
Household without dependants	58	55	2,915
Total		53	2,998

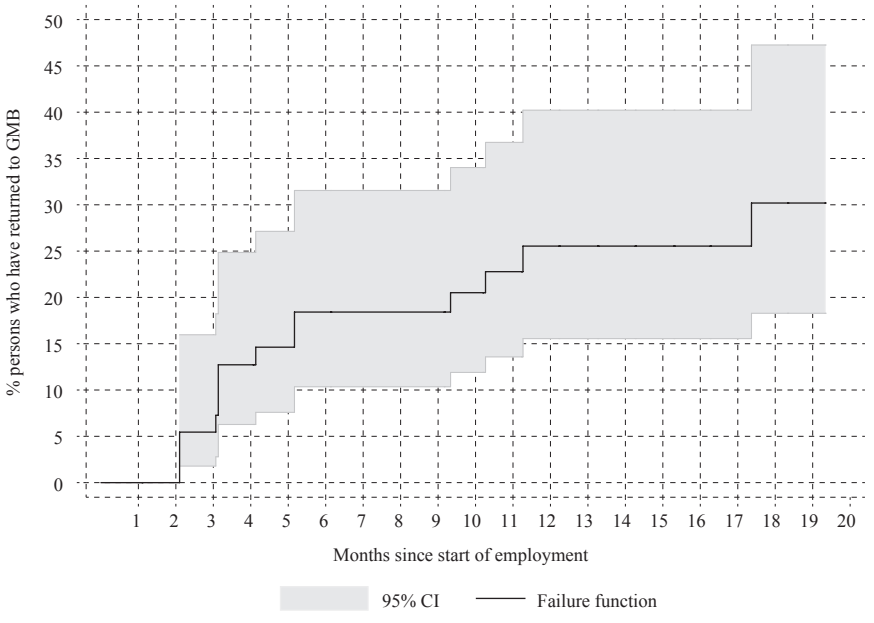
Source: SocSkrb, calculation of the authors.

4.4 RELAPSE INTO SOCIAL ASSISTANCE

Transition into employment itself does not guarantee stable labour market attachment. Successful activation should lead to stable employment, but the same set of barriers might push the vulnerable part of the population back into the social assistance system. Therefore, relapse into social assistance was another outcome that we have observed within the survival analysis framework, although only for the 58 GMB recipients who did manage to get a job, and for a considerably shorter period of observation. About a quarter of GMB recipients who got into employment had relapsed into GMB within 12 months from employment (graph 10).

GRAPH 10

Kaplan-Meier failure function: relapse from employment into GMB

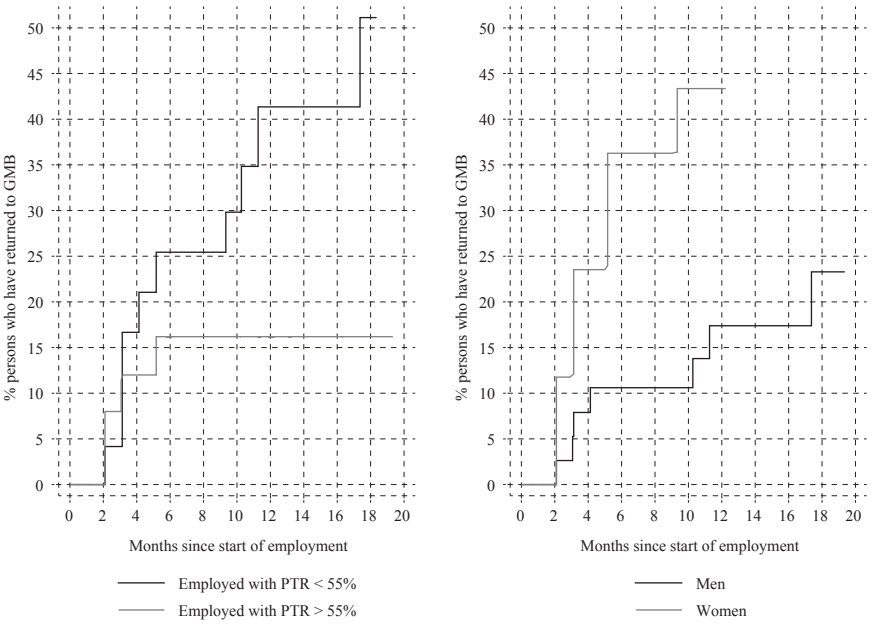


Source: SocSkrb, calculation of the authors.

While the number of observations was insufficient for application of more sophisticated model, we have compared patterns of relapse with respect to gender and effective PTR of employment (based on wage and prior benefit level). It seems that women are more likely to relapse into GMB than men, while persons who faced above-average PTR when entering employment (for whom work paid off to lesser extent) were less likely to return to GMB (graph 11). This warrants more research.

GRAPH 11

Kaplan-Meier failure function: relapse from employment into GMB, by realized participation taxation rate and gender



Log-rank tests: (METR) chi²(1)=3.86; Gender LR test chi²(1)=4.08*.*

Source: SocSkrb, Tax Administration, calculation of the authors.

5 CONCLUSION

In this small-scale analysis based on a rich collection of data used in the administration of social assistance, we have managed to show that transitions from GMB to employment do happen, but are far from commonplace. In the case of this particular centre for social welfare, about one quarter of unemployed persons who were granted GMB got into employment within a year, in most cases for wages less than 150% of the statutory minimum wage, and about one quarter of those who got employed returned to GMB within another year.

While the population of GMB recipients is quite heterogeneous, the majority has failed to complete upper secondary education, and a substantial share has advanced age, no work experience, or are living in large households burdened with

family responsibilities. Being exposed to strict means testing, their financial resources are very limited (or even negative due to debt) and they face withdrawal of most benefits as soon as they get into employment. For this reason, we set about examining the role of three distinct barriers to employment: lack of work-related capabilities, lack of incentives to work and the substitution of in-household labour.

Our analysis suggests that transition to work varies greatly due to individual employability and the gender-household configuration nexus. In terms of work-based capabilities, findings are consistent with prior research with the general population or unemployed in Croatia (Šverko et al., 2006; Botrić, 2009; Matković, 2011; Urban and Bezeredi, 2016; Lucić, forthcoming). Namely, GMB recipients with vocational education make the transition to employment about twice as often as others, confirming the key role of education, while differences due to tenure and age are consistent in direction but their effect is subdued compared to those observed for the unemployed in general (Urban and Bezeredi, 2016; Lucić, forthcoming). As for disincentives to work, we found that individually calculated PTR for finding a minimum-wage job to be a substantial 57% on average, but more compressed (interquartile range 50-60%), and less divergent with respect to household types than established for hypothetical households (e.g. Bejaković, Urban and Bezeredi, 2013). However, we found no conclusive evidence that level of minimum-wage PTR, total level of household benefits, or indebtedness are associated with transition to employment. Possibly the incentives for job search due to low benefit level might have been negated by the negative effect of financial hardship towards finding a job (Šverko et al., 2006; Galić, 2011). As for substitution of in-household work as survival strategy and answer to care responsibilities, we found no evidence of single-person households having better access to labour market, but female GMB recipients are less likely to find a job if they live in households with partner and dependants.

Our findings are best taken as provisional proof of the concept, as the scope of our analysis has several shortcomings. First, it follows up only about one per cent of one year's entrants into GMB in Croatia, all from the same region. Possible idiosyncrasies of social welfare centre or local (predominantly rural) community lead to caution in the generalisation of findings. Extending the scope of analysis to the entire country would not only provide a more sophisticated model and reliable estimates by increasing the sample by two degrees of magnitude, but would introduce enough variation to estimate the effect of job opportunities (another barrier in the WB conceptual framework) and role of other contextual variables. Second, as only new entrants into GMB were observed, and outcomes were traced for quite a short period (at most two and a half years), our findings extend only to "short-term" GMB beneficiaries. However, by the end of 2015, 72% of beneficiaries in Croatia received GMB for more than one year and 26% for more than five years, making a strong case for an extension of the analysis of transitions and barriers to employment towards long-term GMB beneficiaries. Third, in all the cases where a household loses GMB status due to reasons other than the employment of

the observed individual (e.g. employment of partner), our observations are effectively censored, and no information on subsequent employment for given individual was gathered under the current approach, probably resulting in an underestimation of transitions to employment.

Until such an extension is made, this analysis provides some circumstantial evidence in favour of activation interventions targeting all adults in beneficiary households, providing GMB beneficiaries vocational education and care services where needed in order to facilitate transitions to employment.

Disclosure statement

The authors do not have any conflict of interest. Also, in accordance with her ethical obligations as a researcher, Dinka Caha reports that she is working directly with social assistance beneficiaries at the targeted Centre for Social Welfare.

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APPENDIX

Table A1

Attributes of individuals and households within the tracked population

Attribute	Individuals % (first episode)	Average PTR for min. wage	% employed by Jun 2017
Education			
No formal education	19	55	12
Compulsory education (ISCED 2)	37	54	15
Vocational education – 3yr (ISCED 3C)	32	60	36
Upper secondary education – 4yr (ISCED 3AB)	11	62	9
Professional tertiary education (ISCED5)	1	71	34
University education (ISCED 6)	0		
Prior employment history			
No	22	57	11
Up to 1 year	14	56	29
1-5 years	29	58	18
5-10 years	15	55	34
More than 10 years	20	58	17
Unemployment duration *(when starting GMB episode)*			
Less than 6 months	68	56	23
6-12 months	6	64	8
1-3 years	12	58	28
3 or more years	7	57	13
Not required or unknown	7	57	0
Age (as of 2016)			
0-17	2	53	0
18-29	22	60	26
30-50	47	57	26
51-64	28	55	9
Gender			
Male	57	57	26
Female	43	57	14
Received GMB prior to 2015	53	56	22
Household type			
Single household	34	52	18
Single parent	6	56	7
Household with dependents	42	61	24
Household without dependants	18	58	21
Number of dependent children			
No	52	54	19
1	19	60	21
2	16	65	21
3 or more	13	55	24
Child – nursery age (0-3)	15	57	19

Attribute	Individuals % (first episode)	Average PTR for min. wage	% employed by Jun 2017
Debt – account due to debt execution process			
Account not blocked	43	57	23
Account blocked – up to 2 min. wages	15	58	23
Account blocked – 2 to up to 12 min. wages	28	58	15
Account blocked – more than 12 min. wages	14	55	20
Estimated participation tax rate for taking up a minimum-wage job			
Less than 50%	13	40	15
50-60%	47	53	19
60-70%	29	66	24
More than 70%	11	77	22
Total household benefit level (including child benefit)			
Up to HRK 1,000	28	48	21
HRK 1,160 to HRK 1,400	25	55	12
HRK 1,560 to HRK 2,350	23	65	28
HRK 2,390 to HRK 5,037	24	62	22
Total		57	20

Source: SocSkrb, calculation of the authors.

Table A2

Cox regression results: transitions of GMB recipients to employment

	Coeff	Std. err
Barrier: lack of work-based capacities		
Education (ref: no formal education)		
Compulsory education (ISCED 2)	0.046	(0.525)
Vocational education – 3yr (ISCED 3C)	1.053*	(0.497)
Upper secondary education – 4yr (ISCED 3AB)	0.354	(0.707)
Professional tertiary education (ISCED5)	1.046	(1.289)
Age (ref: 18-29)		
30-50	-0.173	(0.415)
51-64	-1.352	(0.524)
Employment history (at least some tenure)	1.097+	(0.562)
Unemployed <12 months when started receiving GMB	0.344	(0.371)
Prior GMB recipient (received GMB prior to 2015	0.276	(0.310)
Barrier: lack of incentives to work		
Bank account blocked (debt greater than 2 minimum wages)	-0.419	(0.305)
Total household benefit level (including child benefit) (per HRK 1,000)	-0.061	(0.209)
Estimated PTR for taking up a minimum-wage job min (per %)	0.007	(0.014)
Barrier: in-household work and care		
Gender: Female	-1.791**	(0.576)
Household configuration (ref: 2+ adults, with dependent members)		
Single person household	-0.752	(0.506)
Single parent household	0.087	(1.180)
Household without dependants	-0.612	(0.731)
Interaction: gender and household configuration		
Female*Single person household	2.419**	(0.794)
Female*Single parent household	0.627	(1.404)
Female*Household without dependants	2.235*	(0.999)
Female*Nursery-age child in household	-0.326	(0.891)
Observations	233	
Individuals	202	
Events (employment)	58	
Log likelihood	-265.4	

Standard errors in parentheses; $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Source: SocSkrb, calculation of the authors.

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Political determinants of social expenditures in Greece: an empirical analysis

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Abstract

A view prominently expounded is that the interaction between the composition and the volume of public expenditures is directly affected by political, institutional, psephological and ideological indicators. A crucial component of public expenditures, social expenditures play an important role in the economy as they directly and indirectly affect the distribution of income and wealth. Social expenditures aim at reallocating income and wealth unequal distribution. These expenditures comprise cash benefits, direct in-kind provision of goods and services, and tax breaks with social purposes.

The aim of this study is to determine the relationship between political structure, i.e. government fragmentation, ideological composition, elections and so on, and the social expenditures in Greece. Employing data from the Comparative Political Dataset (CPDS) and the OECD Social Expenditure Database (SOCX), a time series analysis was conducted for Greece for the 1980-2014 period. The findings of the study indicate that voter turnout, spending on the elderly population and the number of government changes have positive and statistically significant effects on social expenditures in Greece while debt stock and cabinet composition have negative effects.

Keywords: social expenditures, political indicators, time series analyses

1 INTRODUCTION

Until the Great Depression began in August 1929, the role and responsibility given to the public sector by the fiscal traditionalist view was rather limited. This approach, which holds the duties, powers and responsibilities of the public sector in a narrow framework, rejected the concept of the "welfare state" in particular and did not consider the role of public policy aiming to equalise the distribution of income and wealth as a primary function. However, social expenditures became prominent as the Keynesian view dominated economic theory, stating that public sector expenditures on social welfare in different countries of the world are efficient instruments to achieve a fair distribution of income and wealth. With the general acceptance of this viewpoint, social expenditures were perceived as they indisputably are, as the main task of the public sector. The fact that these expenditures increased considerably in the 1960s tended to increase the importance of the concept of "welfare state". Welfare states devote resources to education, healthcare and social protection, transfers to low-income groups being particularly prominent in this context.

The size and composition of social spending is influenced by many financial, economic, social and political variables. Numerous theoretical and applied studies indicate that the size and composition of social expenditures are influenced by many fiscal, economic, social and political variables. This study focuses on the political determinants of social expenditures in Greece for the 1980-2014 period. The first part of the study focuses on social expenditures and their historical devel-

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opment, and the second part on the political determinants of social expenditures. In the next section, the structure and development of social expenditures in Greece are examined. In the empirical part of the study, time series analysis aims at showing the effects of the indicators determining the political structure on the volume of social expenditures in Greece for the period of 1980-2014.

2 SOCIAL EXPENDITURES AND THEIR HISTORICAL DEVELOPMENT

In about 1930, some countries began to support a significant increase in social expenditures, such as unemployment benefits, pensions, health spending, and education spending, which influenced public welfare; other countries pursued policies with a minimum of social spending aimed at supporting a redistribution of income (educational spending excepted). The reason for this opposition can be attributed to the relatively different quantitative histories of countries and their political economies (Lindert, 1994; 1996).

During the 19th century and the First World War, the share of tax revenue in the national income was around 10%. With this limited budgetary revenue, the states fulfilled their primary tasks, while the volume of public services such as education and health was restricted. Political constraints can explain the low social spending in this century (Lindert, 2004:22). Regarding the political process in this period, the regulation of some restrictions in Europe in the late 19th century was observed, provided that the right to vote and the conduct of policies for social spending and increasingky redistributive income was limited to landowners and income-earning males.

After the Great Depression of 1929, in many countries the share of tax revenue in national income increased and "the return of the state" occurred. The social functions undertaken by the state brought the concept of welfare state into the literature and the importance of social expenditures began to be discussed (Piketty, 2015:514-516). In this process, with the assumption that all adult citizens had an equal and single voice in the political decision-making process, the pursuit the franchise and equal citizenship in the process of political decision-making enabled universalization of the right to vote and transmission of social demands to parliaments in the 20th century.

The intervention area of the welfare state is defined by Cochrane and Clarke (1993) as social security and social services. Briggs (1961), on the other hand, refers to a more comprehensive definition and states that the government must act in three ways in this manner. The areas of intervention of the welfare state are the provision of social services, meeting social needs and ensuring minimum living standards for the family and the individual. Mishra (1999) defines the welfare state as a middle way between socialism and capitalism. Esping-Andersen (1990) defines the welfare state, in a broader definition, as a set of institutional arrangements and rules that shape current social policy decisions, spending patterns, solutions and demand structures of citizens. Within the framework of these definitions,

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it is possible to say that this kind of view of the nature of the welfare state has widened the scope of the tasks with which government is charged and that governments have had to fund an increase in social spending.

In the third quarter of the 20th century, there was a turning point in countries in which the tendency towards solidarity decreased and neo-liberal policies came into prominence. In this period, the world was faced with many problems such as inflation in the USA, the Vietnam War, oil crises and stagflation crisis. As the cause of these problems was not the welfare state policy pursued, the solution should not have been criticism of the welfare state (Stiglitz, 2015). Despite the perception that developments, international competition, supply-side policies and the more rapidly globalizing world were treated as the end of the welfare state by some researchers (Özdemir, 2007), with the World Bank's 1997 Report called "Changing State in the World", an effective understanding of the state was adopted once again and an understanding of the facilitator state was adopted (World Bank, 1997).

3 LIMITS AND POLITICAL DETERMINANTS OF SOCIAL EXPENDITURES

In the literature, Alesina and Perotti (1996) have been highly influential with their definition of "budgetary institutions" in studies examining the effects of political indicators and political structure on public finance. According to this definition, budgetary institutions are are all rules and regulations which are in control of the design, approval and implementation of the budget. These conditions led to the endogeneity of budgetary institutions. Budgetary institutions can change, especially if the fiscal performance is not at an expected level or if it is a function of different social/political/historical variables that affect elections and fiscal performance indicators among different budget agencies. Milesi-Ferretti (1996) aggregated studies on budgetary institutions in two main groups. Contributions in the first group focused on constitutionally balanced budgetary amendments, international agreements, convergence criteria such as the Maastricht Criteria, macroeconomic program criteria, and statutory upper limits on public debt while the studies in the second group focused on budgetary procedures, spending ministers representing the interests of a particular electoral district, the role of budgetary institutions, the effects of the privilege of different ministers, parliamentarians, pressure groups and public institutions. Von Hagen (1992) and Von Hagen and Harden (1995), claim that the performance of public finance is related to two factors: principal-agent and common pool problems. According to the authors, these are the factors that directly result in increases in public expenditures.

To examine the political reflection of the concept of welfare, Spicker (2003) examines the most rough expression of the concepts of "left" and "right" in two separate perspectives. While the left wing supports the welfare state, social spending and an active state, the right wing is individualist and adopts the residual welfare state conception (Özdemir, 2007). This political reflection, of course, also affects social expenditure policies. It is possible to say that the level of social expenditure policies change from country to country. There are many historical, fiscal, economic and

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political reasons behind this dispute. In this study, the change discussed and analysed above in the context of political science, is studied in the perspective of political determinants. These political determinants can be aggregated as political fractionalization, party ideology and electoral systems and periods.

3.1 POLITICAL FRACTIONALIZATION

Political fractionalization, one of the political determinants of public expenditures, is associated with the number of parties that have representatives in parliament, the number of ministers in the cabinet and the ministers' party and membership status.

It is possible to explain political fractionalization by the "common pool problem". In a coalition consisting of *N* politicians, a politician will try to maximize the interests of his constituency (Le Maux et al., 2011), which will lead to an increase in public expenditures. In a coalition consisting of *N* politicans, different fractions indicate different numbers of budgetary demands and different interests.

Geys (2004) deals political fractionalization in two aspects, namely, voter and decision-maker perspective. Political fractionalization corresponds to the number of alternatives proposed by the politicians, or in other words the number of parties competing in the election. The voter can choose between options *p1* and *pN*. For decision-makers, political fragmentation corresponds to scattered political power (Alesina and Rosenthal, 1995) or to a coalition. A politician discusses and evaluates the demands placed between *p1* and *pN* within the framework of public policies and applies a policy choice to the current problem by going to a common decision.

Weingast, Kenneth and Christopher (1981) emphasize that the fractionalization process in the decision-making process has a significant impact on public expenditure. Since there are different interests from a geographical point of view, it is difficult to choose the most suitable project from the political point of view, which emphasizes the importance of the institutions and rules in the process.

According to Ricciuti (2004), political fractionalization is based on the fiscal policies of the 1980s. The financing of public activities and the scope of fiscal policy instruments are shaped by political actors. The lack of time optimization between public deficits, the amount of debt, the collection of taxes and the making of expenditures in the 1980s caused social welfare costs. From this point of view, the concept of political fractionalization, which partially regulates fiscal policy, has begun to be take the place in discussions of the benevolent state that tries to increase social welfare. Ricciuti (2004) categorises political fragmentations in terms of *the number of fragmentations, institutional fragmentation and temporal fragmentation*.

Alesina and Drazen (1991) argue that instability may arise in the fiscal policies observed during coalition periods. They state that the lower the degree of political

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integration, or, in other words, the greater the political fractionalization, the greater the public expenditure, and therefore the likelihood of a budget deficit arising.

Lijphart (1984, 1999) concludes that there is a relationship between political fractionalization and tax policies, while coalition governments follow a more optimistic government policy. In support of this view, there are also studies that have found that bipartite party coalitions have higher public expenditure than single-party governments (Perotti and Kontopoulos, 2002).

3.2 PARTY IDEOLOGY

The relative strengths and ideological differences of the parties place importance on the share of the budget allocated for social welfare policies in the national income. It is not only the power of government, but also the ideology of parties, the number of seats in the assembly, the power of the opposition and the weight of the coalition of the parties and the weight of the parliaments that affect social expenditures, thereby affecting welfare (Hicks and Swank, 1992:668).

The concepts of "right" and "left", which has been used to express ideological divergence for 200 years, are used to indicate the contrast of thought and actions of political parties (Bobbio, 1996). According to Cameron (1985), the concept of ideology is based on the 1789 French Revolution. The division of the parliament, which is frequently discussed in the political science literature, into a left wing and a right wing, influenced the session of the French parliament.

From an economic point of view, the concepts of left and right wing are correlated with the need for state intervention and the free market, respectively. The left wing focuses on low income groups and the concept of labor, preferring income redistribution policies, while those on the right side argue that redistribution of income policies product a substitution effect, therefore these expenditures should be limited (Budge, Robertson and Hearl, 1987).

Cameron (1985) reached the conclusion that with the increase in the number of delegates on the left-hand side in the assembly for the period of 1960-1975 and an increase was observed in gross domestic product and public expenditures. As a result, left wing had higher public expenditures than right-wing governments.

Rose (1984) opposed the view that it is the difference in party ideology that influences spending policies. The study of Rose (1984) indicates that there is a very small difference between the parties in terms of the volume of public expenditures and that the effect of ideology on public expenditure is insignificant. He supported this viewpoint with the increase in public spending during the periods each government was in power in England from 1957 to 1982, the rate of increase during the Labor Party periods being less than in periods in which the Conservative Party was in power. According to the author, party which win election can change the cabinet but can not change the formal rules. Rose (1984) underlines the fact that

spending commitments will put pressure on party groups and that public spending will not change significantly.

Alesina and Tabellini (1990) assessed a situation in which two different party ideologies or decision makers have different views on the total level of public spending rather than on the composition of government expenditures. While "conservative" policymakers prefer reducing public spending not to have budget deficit, liberal policy makers are following policies aimed at achieving a budget surplus. In addition, different experiences and political fractionalization of countries indicate that public expenditure influences the flexibility of the political decision-making process.

Hicks and Swank (1992), Hicks and Misra (1993) examined the effects of ideological differences on social spending. They pointed out that social spending increases during periods when left and center parties are in power; Solano (1983) has concluded that there is no link between social expenditures and ideological changes.

Kittel and Obinger (2002) employed cross-section regression analysis to discover the relationship between the long-term impact of political parties and institutional constraints. Their findings indicate that secular conservative parties supports social expenditures, while the positive impact of leftist parties is fragile and Christian democratic parties are conservative in social expenditures.

3.3 ELECTORAL SYSTEMS AND PERIODS

The effect of policies on the economy was first examined by Nordhaus (1975), who has introduced into the literature the concept of *political business cycles*. In his work, Nordhaus notes that the politician who wants to be elected again, or who has the desire to win the election and the vote-maximizing mentality, tends to favour higher public expenditure. Rogoff (1990) states that in the election periods, politicians invest in expenditure items that the voter can visually see, and aim to win the votes of the median voter. Undoubtedly, social spending is also an important expenditure component that affects voters' voting decisions.

In his study of the relationship between social welfare spending and election periods in the US between 1960-1978, Tufte (1978) points out that there is a significant increase in transfer payments such as old-age pensions, disability and insurance payments and social security expenditures during the election period. Hicks and Swank (1992) argue that the competition in the election period has strengthened the social welfare considerations. On the other hand, some part of the literature shows that the competition in the election period is not a factor that has much effect on social expenditures (Lago-Penas and Lago-Penas, 2009).

Electoral systems are divided into proportional and majority systems. In proportional electoral systems, parties are awarded seats in proportion to the votes they

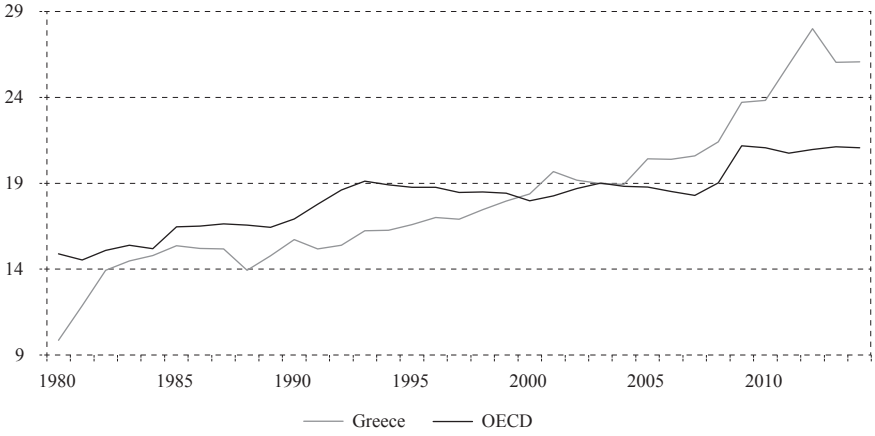
receive, while in the majority system, the party that receives the most votes has the largest number of parliamentary seats. Iverson and Sockice (2006) investigated the relationship between social spending patterns and electoral systems, and found that social spending is more prevalent in the proportional than in the majority election system. Jurado (2014) emphasizes that party systems have a positive influence on social spending; Jurado and Leon (2013) point out that in the majoritarian electoral system, politicians are more sensitive to citizens who demand social spending in narrow regions and that social spending in the majoritarian electoral system is higher than the relative election system.

4 SOCIAL EXPENDITURES IN GREECE

Greece's social modernization program which is "the Mediterranean welfare state" (Tinios, 2015) gained importance because its accession to the European Union in 1981. Within this period, an egalitarian policy for the redistribution of income was accepted, extending social insurance coverage, improving access to social services and eliminating regional inequalities. In the last thirty years, the level of social expenditure in Greece has increased rapidly, reaching a limit. Graph 1 compares social expenditures as a percentage of *GDP* in Greece and OECD countries for the 1980-2014 period.

Graph 1

Social expenditures in Greece and OECD countries between 1980-2014



Source: OECD Social Expenditure Database (SOCX).

As indicated by graph 1, social expenditures in Greece in the 1980s were lower than the average of OECD countries. However, between 1980-1982, there was a significant increase in Greece and this rise continued in the 1982-1987 period. The major reason behind this increase was the health reform program in 1983. During the PASOK government (Pan Hellenic Socialist Party), the health system was revised and social security expenditures were raised (Sakellaridis, 2009). In the same period, an expansionary income policy was also implemented to reduce income inequality.

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From the graph 1 a decrease in social expenditure is observed in Greece in the 1985-1988 period. In this time interval, the PASOK government began to pursue a right wing policy in economy and aimed at reducing the budget deficit and inflation (Sakellaridis, 2009). These restrictive policies caused a reduction of the share of social spending in total government expenditures.

The 1989-1990 period was witness to political instability in Greece. In 1990 the New Democratic Party came to power and remained in power until 1993 (Sakellaridis, 2009). With neoliberal policies in most of the world in this period, privatization and liberalization policies were also experienced in Greece. These neoliberal policies affected social policy and there was a decrease social expenditure rate in 1990-1991.

The period between 1991-1997 included dramatic increase in social expenditures in Greece. This situation can be linked to social security expenditures. While in 1981 each person who had a job used social expenditure provided by the government, in 1990 anyone who had a job at home or was part time employee was also able to benefit from the social security network. In addition, in 1996, Law No. 2434 on "Policy Measures for Employment and Vocational Education and Training and Other Provisions" was enacted. It provided that the government make a payment each month for low income pensioners regardless of the age limit and elders who did not receive a salary (OECD, 2013). Due to the social security reform in 1996, in Law No. 2434, the population is included in the social security network increased, and this increase led to an increase in social expenditues.

As inferred from graph 1, the greatest rises in social expenditures can be observed after 2004. The most important reason for that was that Greek National Reform Programme (NRP) was signed by European Commission. That programme emphasized fiscal consolidation, public administration modernization, employment, education and increasing the importance of lifelong learning. Social policies gained in importance via that programme and the share of social expenditures in total expenditures were increased (Yfantopoulos, 2010).

In accordance with this report, the government published the Greek National Strategy Report on Pensions in 2005, the aim of which was to set out a rational and objective pensions reform. After this reform, measures to solve the problem of social security were taken and several banking sector funds were created. The main policies were an increase in the minimum pension age and the requirement for people to stay longer in active employment (OECD, 2013).

Greece reached the limit of its social expenditure with the 2008 crisis, and the number of funds in the social security system was reduced from 130 to 13. These 13 funds still cover the majority of the population. Furthermore, the Manpower Employment Organisation (OAED), an independent institution as a part of Ministry of Labor, Social Security and Welfare, provides unemployment insurance and family benefit (OECD, 2013).

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While the poverty rate in the country in 2009 was 19.6%, this ratio has risen to 36% by 2014, with the economic recession and austerity measures (EUROSTAT, 2017). After the crisis, the unemployment rate in Greece tripled from 8.5% in 2007 to 26.7% in 2014 (EUROSTAT, 2017). The 2008 crisis and austerity policies led to an increase in the rate of poverty in the country and it has caused a significant rise in the number of people who are social assistance recipients.

The share of social expenditures was about 26% of GDP in 2014 in Greece. While the share of pension and social security expenditures was 22% of GDP, the other expenditures remained at 4% of GDP. The highest rate of pension and social security is a critical issue. The Greek pension system is a "pay as you go". In this system, current contributions collected from workers are for current pensioners. It is also based on pension funds. But in Greece this pension policy was not successfully implemented. Although some groups, who are subject to a lower retirement age, such as 42 or 50, and have low contribution rates, generous and high replacement rates were paid. In addition to this, the speed of population aging creates unequal redistribution and problems for the pension system (Tinios, 2016).

In the 2016 sustainable governance report, it is emphasized that the pension system in Greece is unsustainable. The reason for this is that there are many opportunities for early retirement and a large of citizens who pay low pension. In 2011, fewer than 40% of Greeks who were 55 to 64 were still working and this is a disadvantage for the system. Furthermore, Greece has a high replacement rate. This represents that ratio of retirement pensions to contributions during work. While for workers with average earnings, the gross replacement rate averages 57% in the 34 OECD countries, in Greece, the replacement rate was more than 95% in 2011. Although, the normal pension age in Greece is 65, the early retirement option and pension ages for women reduce the will to work. *In Greece, both the "income effect" from a high level of pension wealth and the "substitution effect" from reductions in pension wealth from working until age 65* motivates people to leave working life (OECD, 2011).

Greece has had to cut pension payments, decrease family benefits and raise the retriment age due to the crisis, causing a decline in overall social expenditures.

5 DATA, EMPIRICAL AND ANALYTICAL FRAMEWORK

In the empirical part of the study, the effects of indicators determining the political structure of Greece on the volume of social expenditures will be investigated by the time series methods for the period between 1980 and 2014.

The study is based on 3 hypotheses.

1) Social expenditures increase in proportion to political fractionalization and the number of changes in the governments.
2) Ideological differences and changes in the opinion of the cabinet increase social expenditures.
3) An increase in the number of elections and voter turnout increase the social spending.

TABLE 1

Data: definition and source

Variables	Source	Definition
Gov_party	Comparative Political Data Set (CPDS)	*Cabinet composition* The differences of the opinions in the cabinet. This indicator is measured by the Schmidt Index and the opinions on the cabin can be classified as right party hegemony, center and right party domination, right and left party balance, dominance of social-democratic and other left parties and hegemony of social-democratic and other left parties.
Gov_gap	Comparative Political Data Set (CPDS)	*Ideological gap* In the simplest terms, it is defined as the ideological difference between the old and the new cabinet.
Gov_chan	Comparative Political Data Set (CPDS)	*Number of changes in the government* Number of changes in government per year termination of government due to (a) elections, (b) voluntary resignation of the Prime Minister, (c) resignation of Prime Minister due to health reasons, (d) dissension within government (break up of the coalition), (e) lack of parliamentary support, (f) intervention by the head of state, or (g) broadening of the coalition (inclusion of new parties).
Rae-ele	Comparative Political Data Set (CPDS)	*Index of electoral fractionalization of the party system* The index of electoral fractionalization of the party system according to the formula proposed by Rae (1968). It is formulized as below: $\text{Rae_ele} = 1 - \sum_{i=1}^{m} v_i^2$ where v_i is the share of votes for party i and m the number of parties (without the category "others"). The Index can take values between 1 (maximal fractionalization) and 0 (minimal fractionalization).
Vturn	Comparative Political Data Set (CPDS)	*Voter turnout in election*
Elect	Comparative Political Data Set (CPDS)	*The election for the parliament*
Debt	Comparative Political Data Set (CPDS)	*Public Debt/GDP*
Deficit	Comparative Political Data Set (CPDS)	Budget Deficit/GDP
Eld	Comparative Political Data Set (CPDS)	Population over 65, as a percentage of population
SOC	OECD Social Expenditure Database (SOCX)	Social Expenditures/GDP

Source: The description of the first four data is taken from Comparative Political Data Set (CPDS).

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Political indicators used in the study were extracted from the Comparative Political Data Set (CPDS). The CPDS is a political and institutional dataset prepared annually by the researchers of Bern University since 1960. Although the data for Greece began in 1960 in the CPDS, the starting year for the study was based on 1980. The reason for this is the lack of access to the social expenditure data for Greece before 1980.

The variables, definitions and data sources to be used in the time series analysis aiming to specify the relation between the social expenditures and the political indicators are given in table 1.

As inferred from table 1, Social Expenditures/GDP (SOC) was taken from OECD Social Expenditure Dataset while Cabinet Composition (Gov_party), Ideological Gap(Gov_gap), Number of Changes in the Government (Gov_chan), Index of electoral fractionalization of the party system(Rae-ele), Voter Turnout(Vturn) Election (Elect), Public Debt/GDP(Debt), Population over 65, as a percentage of population (Eld) were extracted from the Comparative Political Dataset (CPDS).

Time series analysis was conducted to show to what extent social expenditures were affected by political indicators in Greece for the 1980-2014 period. The analysis was conducted in EViews 9. We first tested whether the series have unit root in the empirical part of our work by employing the augmented Dickey Fuller test (ADF) (Dickey and Fuller, 1979; Dickey and Fuller, 1981). Three ADF models (the first with trend and intercept; the second with intercept and the third without trend and intercept) will be tested. According to the results from these tests, we will check whether the series have significant trends or intercepts.

Table 2
ADF test results

Variable	Model	t	Decision
s.g.	1	-4.654	I(0)
	2	.	
	3	.	
rae_ele	1	-2.514	I(0)
	2	.	
	3	.	
lnvturn	1	-4.827	I(0)
	2	.	
	3	.	
lneld	1	-3.081	I(0)
	2	.	
	3	.	
lndebt	1	-2.680	I(0)
	2	-3.504	
	3	.	
deficit	1	-3.112	I(0)
	2	-3.226	
	3	.	

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Since the *soc* variable contains a deterministic trend, the difference extraction process is applied to eliminate the trend. *s_g* is denoted as the new derived variable. For the 1st, 2nd and 3rd models, the critical values at 5% significance level are -3.56, -2.96 and -1.95, respectively. As the *lneld* and *rae_ele* variables contain a significant deterministic trend under the unit root hypothesis, the test statistics obtained are compared with the critical values of *t* rather than the ADF critical values. In this case the unit root for both variables can be rejected. All variables are stationary at level (i.e., they are all I(0))[1].

The regression equation to be estimated is given below in equation 1:

$$S_G = \beta_0 + \beta_1 RAE_ELE + \beta_2 LNVTURN + \beta_3 LNELD + \beta_4 LNDEBT + \beta_5 GOV_PARTY + \beta_6 GOV_GAP + \beta_7 GOV_CHAN + \beta_8 ELECT + \beta_9 DEFICIT + \epsilon \quad (1)$$

The model estimated by the least squares method, standard linear regression procedure, is as follows.

Table 3
OLS test results

Dependent variable: S_G				
Method: least squares				
Variable	**Coefficient**	**Std. error**	**t-statistic**	**Prob.**
RAE_ELE	-2.4359	5.7531	-0.4234	0.6761
LNVTURN	6.0825	3.3630	-1.8086	0.0842*
LNELD	6.1479	2.0586	2.9864	0.0068**
LNDEBT	-1.9069	0.5424	-3.5159	0.0019**
GOV_PARTY	-0.1823	0.0962	-1.8952	0.0713*
GOV_GAP	0.1794	0.1169	1.5347	0.1391
GOV_CHAN	0.5749	0.3343	1.7196	0.0995*
ELECT	-0.3704	0.4958	-0.7471	0.4629
DEFICIT	-0.0576	0.0616	-0.9359	0.3595
C	20.3649	16.0078	1.2722	0.2166
R-squared	0.5878	Mean dependent var		0.5656
Adjusted R-squared	0.4191	S.D. dependent var		0.8601
S.E. of regression	0.6555	Akaike info criterion		2.2435
Sum squared resid	9.4534	Schwarz criterion		2.7016
Log likelihood	-25.8962	Hannan-Quinn criter.		2.3953
F-statistic	3.4853	Durbin-Watson stat		2.3651
Prob(F-statistic)	0.0081			

In the above model, the *lneld* and *lndebt* variables are statistically significant at the 5% significance level. The variables *lnvturn* and *gov_party* are statistically sig-

[1] *lneld* and *rae_ele* test results for the significance of the trend are 8.068 and 7.074 respectively. The critical value at 5% for this test is 5.18. According to this results, these two series have deterministic trend. For this reason their t-statistics obtained from the ADF test will follow normal distribution for the first ADF model and therefore we accepted these series are I(0).

nificant at the level of 10 percent significance. The results of the analysis indicate that voter turnout, spending on the elderly population and the number of government changes, a proxy for political instability, have positive and statistically significant effects on social expenditures while debt stock and cabinet composition have negative effects. However, the negative effects of the index of electoral fractionalization of the party system, elections, budget deficit and the positive effects of ideological gap on the level on the social expenditures was not found to be statistically significant.

6 CONCLUDING REMARKS

OECD (2017) defines social expenditure as follows: *Social expenditure is the provision by public (and private) institutions of benefits to, and financial contributions targeted at, households and individuals in order to provide support during circumstances which adversely affect their welfare, provided that the provision of the benefits and financial contributions constitutes neither a direct payment for a particular good or service nor an individual contract or transfer*. Undoubtedly, this multi-dimensioned concepts is greatly influenced by political indicators.

Three hypotheses have been tested by time series techniques in this study, which examined the extent to which social expenditures were influenced by political indicators in Greece for the period 1980-2014.

The first hypothesis in the study was partially confirmed. In this context, the number of government changes, a proxy for political instability, has positive and statistically significant effects on social expenditures. This result confirms theoretical expectations and the results of previous studies. For all that, the negative but statistically insignificant effects of the index of electoral fractionalization of the party system were observed in Greece. In our opinion, this insignificant relation arises from the lack of any relationship between the ideology of the governments and the policies conducted in Greece. One should keep in mind that the PASOK government in the 1980s pursued both and left and right wing policies. However, in 2012, Prime Minister George Papandreou from a left wing party, implemented an austerity policy, because of the current situation in the country and the decisions taken by the EU Commission. Also, SYRIZA, which came to power in 2015, had to compromise its ideological stance for Greece to resolve economic problems.

The second hypothesis was not confirmed in our study. Our theoretical expectation was the positive relationship between social expenditures and ideological differences and changes in the opinion of the cabinet. The results of the analysis verify the positive effects of ideological gap on the level on the social expenditures but this relationship was not found to be statistically significant. On the other hand, in contrast to theoretical expectations, cabinet composition has negative and statistically significant negative effects on the level of social expenditures in Greece. The main reason why this hypothesis is not confirmed can be attributed

to Greece's understanding of the state. Esping-Andersen (1990), for instance, classifies Greece as a social welfare state, providing social and economic services for welfare maximization purposes. With this act, it can be stated that although there were changes in the cabinet, social expenditures increased due to the settled perception of the state in Greece.

In relation to the third hypothesis, while the positive impact of voter turnout on social spending was clearly observed, no findings were found to indicate the effect of the elections on the volume of social expenditures. This evidence validates the hypothesis that during the election times, governments in Greece do not employ social expenditures as a policy instrument.

Regarding control variables, not surprisingly, a positive and robust relationship was observed between the population over 65 as a percentage of total population. This finding was in accord with our expectation, as early retirement opportunities and comprehensive social security expenditures were prominent in the specified period. While debt stock and budget deficit have negative effects, only the former has a statistically significant relationship.

According to OECD Report (OECD, 2013), Greece as a social welfare state follows complex, fragmentary welfare system without a clear strategy. Despite reforms made in the system, the desired success have not been attained. This situation is an indicator that the system needs to be revised. Reforms under the Ministry of Labour, Social Security and Welfare should continue and provide a coherent strategy for efficient and effective social welfare policy and public governance. These results and observations confirm that Greece has a peculiar political structure and social spending system.

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Occupational change and wage inequality: European Jobs Monitor 2017

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There is almost no need to underline the importance of employment and income equality in a society. However, there is a serious lack of surveys on the relations between occupational change and wage inequality. Enrique Fernandez-Macias and John Hurley from Eurofound in Dublin, and Jose Maria Arranz-Munoz from Universidad de Alcalá have successfully addressed this demanding task in the publication *Occupational change and wage inequality: European Jobs Monitor 2017*[1]. This analysis is an outcome of the Eurofound project entitled *European Jobs Monitor*.

In the first chapter, *Labour market context*, the authors explain how in 2016, employment levels in the EU made up for all the serious net losses registered during the global economic crisis. While in 2008 there were more than 223 million people employed in the EU, according to the Labour Force Survey in 2016 223.6 million were in work. Between mid-2013 and mid-2016, in the EU 8 million net new jobs were created. As the structure of employment has changed significantly, this report tries to encapsulate these changes and then using the "jobs-based approach" to explain further details on diversities in the world of work, regarding sectors, gender, working time and/or contractual status. Moreover, employment growth outstripped the increase in GDP. There are two possible explanations why employment growth surpassed output growth. The first one is that companies may hesitate to hire at the beginning of a recovery until the conditions are estimated stable. In that way, a noteworthy part of later job growth is caused by delaying decisions to hire. The second explanation may be consumption-driven rather than motivated by increase in investment and/or exports. This has led to solid job creation in the services sector, which is usually more labour intensive and more dependent on changes in consumption. Such employment growth is less related to any increase in productivity, which could explain the relatively modest GDP growth.

In all member states (MS), the increased number of employees in the service sector has followed the reduction of employees in manufacturing and construction. Thus, the service sector now represents 71% of EU employment. In some countries – like Austria, Germany and Hungary – the shift to services has been moderate, but in 13 MS, it has been very sharp. Next to the changes of shares of particular economic sectors in total employment, there are also some other salient differences in employment. This is primarily linked to an increased share of older workers, caused by a decrease of youth participation and employment, increased motivation for staying longer in the labour force and reduced possibilities for early retirement. Moreover, there is an obvious increase of part-time work, mostly caused by a replacement of – mostly male – fulltime employment by new forms of part-time employment, where both genders participate more or less equally. Further characteristics of the modern world of work are a diminishing gender employment gap and an increasing share of employment in white-collar occupations that require

[1] Available at: <https://www.eurofound.europa.eu/publications/report/2017/occupational-change-and-wage-inequality-european-jobs-monitor-2017>.

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high educational attainments and skill levels, like managers, professionals and associate professionals. Such changes reflect modes of labour demand biased towards the service sector, higher skills and the normal upgrading of the workforce. This happens as older workers withdraw from the labour market due to retirement and younger persons with higher average educational and qualification attainment enter it.

Regarding the spatial distribution on growth of employment, there were positive trends in Germany and the UK, where between the second quarter 2008 and the same quarter of 2016, 2.9 and 2 million new jobs were created. On the other hand, over the same period, Spain lost more than 2.3 million jobs, Greece and Romania both lost more than 900 thousand jobs and Portugal over 500 thousand. In the case of Greece, Portugal and Spain, the severity of the economic crisis and the effects of the implemented political measures explain much of the job reduction.

The employment shifts in the EU during the period 2011-2016 are the topic of the second chapter. At first, overall trends in the EU are presented, with different patterns of change in particular MS. The observed period has been divided into two parts. The earlier part from mid-2011 to mid-2013 is characterised by employment decline caused by economic recession, the global financial and the sovereign debt crisis. Because of the global financial crisis (from 2008 to mid-2013), job losses were around 6.2 million. The second period is characterised by significant employment growth, so around 8 million new jobs were created. Dividing mentioned trends by income quintiles, new employment since 2013 has been equally distributed through the whole wage and salary range, with only a slight slant towards the top quintile. During the period 2013-2016, employment increased in each of the job-wage quintiles. Employment growth was more pronounced in the top quintile, followed by the lowest and mid-high quintiles, while the feeblest growth was documented in the middle and mid-low quintiles.

It is necessary to recall that the number of well-paid jobs have increased even during the crisis period from 2008 to 2010, and contributed strongly in all periods to total growth in employment. On the other side, there is a relative weak employment increase in the mid-low and middle quintiles. The main driver of employment change is technology. Its crucial outcome is to raise the demand for skilled labour force in post-industrial societies at the expense of less skilled labour. There are also some other influences like employment protection legislation and minimum wage legislation, labour taxation, collective representation and differences in welfare regimes. In many countries, employment trends do not follow any obvious path, are irregular or are some mix of the different patterns. This is partly due to the short period covered by the analysis, because structural changes are usually obvious only after three or five years.

In many countries (including Croatia), there are intensive discussions on the enrolment policies and occupations that young people should select. Of course, edu-

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cation cannot be adjusted only to current needs on the labour market, because current students are learning and obtaining skills that will enable their employability and labour for next forty or even more years. However, without doubt there is a need for adjustments of the need on the labour market and output of the education system. For such adjustment, the authors present top twelve fastest-growing and fastest-declining large-employing jobs. In general, trends in both the fastest-growing and fastest diminishing jobs are probably going to contribute even more to employment polarisation, characterised with significant demand for some occupations and an alarmingly reduced demand for others.

In the third chapter, employment changes are presented according to the most important sectoral aggregations, employment positions and worker characteristics. The goal is to show how the service change defined in the quintile structure interconnects with development of other dimensions of the labour market, like the growing share of the service sector in total employment, the rapid increase of non-standard (primarily part-time) work and the growing share of female employment. The long-term shift to employment in the service sector speeded up during the period after the 2008 economic crisis. At that time, there was an obvious strong adverse employment impact of the crisis on non-service sectors, primarily manufacturing and construction. In the EU in the period between 2008 and 2013, despite the total net loss of 7.5 million jobs, employment in the service sector actually grew. As regards construction and manufacturing, both sectors continued to reduce employment through to 2013. After that, there has been growth in both sectors, although only slight in construction, but more noticeable in manufacturing. In both sectors, net new employment possibilities have been biased to better-paid jobs. Furthermore, manufacturing employment in the EU has been shifting from the *old* MS to eastern European MS that became EU members after 2004.

One consequence of the crisis was the lowering of the share of European workers among full-time permanent employees, in the so called *core employment* status. Since the recovery in EU labour markets, there has been only modest increase of net new employment in core employment status. On the other hand, there was a constant enlargement of part-time work, so this form of employment is the main vector of destandardisation. Furthermore, next to working part-time, there are many who are on temporary contracts, self-employed or some combination of these categories. As labour market conditions improved since 2013, the share of core employment has stabilised in the majority of MS. Core employment status has accounted for the biggest share of employment growth in all quintiles, though only in top well-paid quintile jobs does it account for the majority of net new employment. Part-time employment grows across all quintiles, while self-employment is mostly present in the groups of high paid jobs of experts in the education, health, and legal and accounting services as well as by ICT professionals.

The second part of the book entitled *Wage inequality from an occupational perspective* contains five shorter chapters. The fourth chapter is dedicated to back-

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ground and methodology, where the authors remind us that in the past two or three decades, wage inequalities have been growing in many developed economies. There are of course important exceptions and variations in the extent and timing of the changes in different economies. They evaluate to what extent wages are an essential explanatory factor for wage inequalities in France, Germany, Italy, Netherlands, Poland, Romania, Spain, Sweden and UK. Furthermore, as this study covers European countries with different institutional and economic models, the focus is on differences that occupations have in the distribution of wages. Finally, the attention is oriented towards the time dimension, having in mind changes in the role of occupational wages during the recent economic crisis.

Static analysis of the role of occupations in determining the wage dispersal is presented in the fifth chapter. In classical economics literature, wages mostly reflect productivity differentials among individuals, and occupations are almost fully neglected. However, there are reasons for thinking that occupations could be linked to wage differentials without having a direct impact on wage determination. Various preferences and labour market discrimination caused by cultural and social factors can produce a systematic over- or under-representation of particular social groups in specific occupations. This may affect the status, influence and social power associated with the occupations and may end up strengthening the inequality that initially generated the segregation.

When the data are grouped by occupations, the total variance of wages in a country can be divided into the variance from between-group differentials and the variance that results from within-group variability. Between-job differentials explain about 50% of the total variance, while within-job variabilities account for the other half, but there are significant variations across the countries. The reasons why occupations represent such a significant factor in wage inequality are differences in human capital, but there is also impact of the characteristic of employment contracts and skill levels. Furthermore, in the Netherlands and to a lesser magnitude in Sweden and the UK, one should not neglect occupational segregation by gender and age as important causes of wage inequality. Unfortunately, the available data did not allow the direct evaluation of the role of occupational mechanisms, but the authors provide possible explanations for some of the observed discrepancy in wages.

Occupational wage differentials across European institutional models are examined in chapter six. The authors re-evaluate the levels of overall wage inequality, the variance of wages that can be clarified by occupational differentials. They try to find the connection between occupational differentials and human capital, age, gender and social classes. Of the observed countries, the most unequal wage distribution is that of Romania (Gini overall wage inequality is 39.02), followed by the UK and Poland, and then Italy and Spain as examples of southern Europe model. On the other side, inequality is lower in France, Germany and the Netherlands, the countries from so called *continental* or *corporate* model, and finally the

lowest level of wage inequality is recorded in Sweden (Gini overall wage inequality is 18.91), as an example of Scandinavian model. Next to the presentation of the situation in a particular country, the authors underline that there is an outstanding similarity in occupational wages in observed MS. When a particular job is very well paid in one country, it tends to be very well paid in all other countries. Thus, regardless of the inequality in the distribution of wages in a particular country, everywhere there is the same the proportion of such inequality within occupations (approximately between 50% and 60%), while the remaining 40-50% of inequality results from occupational wage differentials. It is also interesting that the big differences in wage-setting institutions and mechanisms (coordinated by markets or collective agreements, with various levels of centralisation of collective negotiation and/or coverage of collective agreements, or with different systems of occupational licensing) at the end have very similar outcomes.

Occupations and the evolution of wage inequality in Europe are examined in the seventh chapter. According to various surveys, it is not fully clear if the recent increase in wage inequality was caused by more pronounced occupational wage differentials, or whether they remained mostly stable. While some authors found a decreasing role of occupations in wage inequality, some others had completely the opposite results. These inconsistencies are probably caused by the methodological challenges in the evaluation of the significance of occupations in wage inequality over long periods. According to various methodological approaches (ANOVA test and Theil decomposition of wage inequality), the latest data for the past decade show a stable or slightly increasing impact of occupational wage differentials in structuring wage inequality in Europe. Changes in wage inequality *within* jobs or occupations cause total inequality, not changes in occupational wage differentials or in occupational employment shares. In that way, changes in occupational structures (mentioned job upgrading or polarisation) do not have significant consequences on the trends of wage inequality.

In the final chapter eight, the authors provide a conclusion, reiterating the finding that occupations are an important structuring factor of wage inequalities in all analysed European countries. There were differences among observed countries in the way in which occupations influence wage inequalities. For instance, in some examples, there were big outliers in the distribution of wages that seemed unrelated to the occupational structure. In some countries, like the UK, occupational wage differentials seem to be strongly influenced by the nature of employment relations or forces in labour markets. On the other hand, in some other countries, like the Netherlands, occupational wage differentials are more related to mechanisms of occupational segregation by age, gender or other sociodemographic factors. The occupational structure provides a unifying support to wage distributions in Europe, with occupational wages accounting for a very similar part of overall wage inequality in all countries and occupational importance and ranking being very similar despite huge differences in wage inequality levels. The support is the same, but it is comparatively stressed in the observed countries ac-

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cording to the total level of wage inequality, connected with institutional differences in bargaining and educational systems as well as some other factors.

This relatively short book is unbelievably rich in details and it should be an object of interest for all readers interested in the labour market, inequality and the development of occupation structure. The reader can only praise the authors for their efforts and the clear explanation of this complex topic. One can only hope that the future researches on the same or similar subject can include data from more countries (including Croatia) and for a longer period.

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