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income distribution and for model  
families in Lithuania**

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# Work Incentives at the Bottom of the Income Distribution and for Model Families in Lithuania<sup>1</sup>

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## Abstract

The aim of this paper is to evaluate the impact of cash social benefits on work incentives at the bottom of the income distribution and among selected model family types in Lithuania. The analysis of the work incentives in Lithuania is carried out for the period of 2005-2013 based on a combination of measures estimated using tax-benefit microsimulation model EUROMOD and official OECD/EC indicators. The analysis revealed high disincentives to work at the bottom of the Lithuanian income distribution, dominated by the effect of cash social benefits compared to taxes or social insurance contributions. A strong trade-off between benefit adequacy and work incentives is built into the design of the Lithuanian cash benefit system, that of social assistance in particular. The challenge for policy design is thus to encourage and promote active labour market participation among low earners without eroding the minimum income protection floor.

**JEL:** C15, D31, H31, I38

**Keywords:** work incentives, microsimulation, model families, Lithuania

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<sup>1</sup> The results presented here are based on EUROMOD version G1.0. EUROMOD is maintained, developed and managed by the Institute for Social and Economic Research (ISER) at the University of Essex, in collaboration with national teams from the EU member states. We are indebted to the many people who have contributed to the development of EUROMOD. The process of extending and updating EUROMOD is financially supported by the Directorate General for Employment, Social Affairs and Inclusion of the European Commission [Progress grant no. VS/2011/0445.]. The calculations in this paper are based on the microdata derived using the EU Statistics on Incomes and Living Conditions (EU-SILC) made available by Eurostat under contract EU-SILC/2011/55. The results and their interpretation are the authors' responsibility.

## 1. Introduction

The system of taxes and benefits, if designed appropriately, can be a powerful tool providing monetary incentives to increase labour supply at an intensive or extensive margin. Both positive and negative incentives to work can be built into the system of cash social benefits. In this paper the role of the Lithuanian cash benefit system in providing or hindering work incentives at the bottom of the income distribution and among selected family types in Lithuania is analysed.

Review of the previous studies suggests that disincentives to work or increase one's working efforts for those at the middle and upper parts of the income distribution in Lithuania are below the EU average due to relatively low levels of direct taxation and social insurance contributions (Jara & Tumino 2013, Jara & Leventi 2014). However, at the bottom of the income distribution the situation is different. High negative work incentives for low-wage earners in Lithuania were documented through both model family calculations (e.g. Tamašauskienė 2003, Lazutka & Poviliūnas 2010, UNDP 2010, Lazutka et al. 2013) and by using microsimulation techniques (Jara & Tumino 2013, Jara & Leventi 2014).

However, previous analysis only captured the effects of social assistance (Tamašauskienė 2003), incorporated Lithuania within a broader comparative analysis with only a short discussion of the national case (Jara & Tumino 2013, Jara & Leventi 2014) or discussed model-family-based indicators published by the OECD/EC (Lazutka & Poviliūnas 2010, UNDP 2010, Lazutka et al. 2013). There is thus scope for further analysis, looking at and cross-validating complementary indicators of work incentives, decomposing them to single out effects of different elements of the Lithuanian tax-benefit system and capturing distribution of work incentives in the actual Lithuanian population, especially those related to lower income groups.

**Hence, the aim of this paper is to evaluate the impact of cash social benefits on work incentives at the bottom of the income distribution and among selected model family types in Lithuania.**

The analysis of the work incentives is based on estimates made using tax-benefit microsimulation model EUROMOD (Sutherland & Figari 2013) and on official OECD/EC indicators. The use of EUROMOD allows analysing work incentives in the lower quintile of the income distribution, which is in line with at-risk-of-poverty rate fluctuating at around 20% in Lithuania (as measured at 60% of the median equivalized disposable income).<sup>2</sup> It also allows decomposing indicators to single out the effects of cash social benefits. Model family estimates are also used to capture work incentives among specific family types in Lithuania: those with inactive, unemployed members or low-earners. Both estimates by EUROMOD and OECD/EC are used and cross-validated to gain additional insight.

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<sup>2</sup> Income distribution statistics. EUROSTAT, [http://ec.europa.eu/eurostat/statistics-explained/index.php/Income\\_distribution\\_statistics#At-risk-of-poverty\\_rate\\_and\\_threshold](http://ec.europa.eu/eurostat/statistics-explained/index.php/Income_distribution_statistics#At-risk-of-poverty_rate_and_threshold)

The structure of this paper is the following. Calculation procedures and measures used for operationalizing work incentives are discussed in Section 2. Section 3 looks at work incentives in the Lithuanian population, especially at the bottom of the income distribution, cash social benefit effects and their changes over time. In Section 4 readily available and complementary model-family-based indicators of work incentives are analysed, cross-validated and decomposed to single out the role of cash benefits in Lithuania. The paper concludes with a discussion of the main findings and implications for development of cash social benefit system in Lithuania.

Several limitations of the below analysis need to be acknowledged. First, only direct effects of cash social benefits are accounted for when analysing work incentives. Benefits in kind, indirect compensations and value of deferred benefits bought by current contributions to social insurance are not considered. Second, the analysis only takes work incentives of the working age population into account, whereas those of old-age are excluded. Work incentives of the latter group in Lithuania would be affected by possibility to combine work-related incomes with pensions. The possibility to combine work-related income with pensions has been in effect since 2002 up to changes in the legislation of 2010 caused by the financial crisis (see Lazutka et al. 2013, p.165) and reinstated since 2012<sup>3</sup>. The latter change in legislation removed disincentives for labour market involvement among this group. Finally, the analysis does not capture the effects on work incentives of the most recent social assistance reform for long-term unemployed due to its phase-in period. The reform potentially has a positive effect on work incentives of the long-term unemployed social assistance recipients, its actual extent, however, it is expected to be limited (Lazutka et al. 2013b).

## **2. Measurement: Marginal Effective Tax Rates and Decompositions**

When analysing the role tax-benefit systems play in influencing work incentives, a distinction is usually made between the incentives to work versus not working and the incentives to work more. The two effects are often referred to as, respectively, incentives at the extensive and intensive margin of labour supply (Jara & Tumino 2013). Both effects can be captured through marginal effective tax rates (METR), i.e. a measure that shows the percentage of additional income that is taxed away through benefit withdrawal, direct taxation and deduction of social insurance contributions (Jara & Tumino 2013 p.29). In practice, taxes and social insurance contributions often play significant role at the higher levels of earning, especially in case of progressive taxation. On the other hand, benefit withdrawal gains more importance at the bottom of the income distribution where the benefit recipients are often located. Still, tax-benefit systems are often constructed in such a way that there are important

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<sup>3</sup> According to the following law: "Lietuvos Respublikos socialinių išmokų perskaičiavimo ir mokėjimo laikinojo įstatymo 5, 8 straipsnių ir 2 priedo pripažinimo netekusiais galios įstatymas. 2012 m. birželio 30 d. Nr. XI-2195. Žin., 2012-07-13, Nr. 82-4274"

interactions between cash benefits, taxes and social insurance contributions. These should be thus analysed together, rather than independently of one another.

Several measures reflecting work incentives can be constructed using METR calculations. The most common are three types of ‘traps’: unemployment traps, low-wage / poverty traps, inactivity traps (Carone et al. 2004). Unemployment and inactivity traps reflect METR at an extensive margin – measuring the percentage of gross earnings taxed away through withdrawal of cash benefits, direct taxes and social insurance contributions when an unemployed or an inactive person gets a job. Low wage trap captures work incentives at an intensive margin – measuring the percentage of gross earnings taxed away through the same channels when the gross earnings of an employed person increase.

The three indicators of work incentives are regularly estimated by the OECD in partnership with the European Commission based on a selection of “model families” facing predefined situations. While useful, model-family-based estimates cannot be extrapolated and are insensitive to actual distribution of income and household characteristics within the population of any particular country. The latter would only be possible using a tax-benefit model in conjunction with representative household micro-data (Carone et al. 2004 p. 14).

Current analysis uses the discussed measures – unemployment traps, low-wage / poverty traps, inactivity traps – for the analysis of the work incentives provided through taxes and cash social transfers in Lithuania. Complementary to the readily available indicators reported by the OECD/EC, the actual structure and income situation within the Lithuanian population is taken into account using tax-benefit microsimulation model EUROMOD. The model allows using representative survey-based micro-level data, conducting model family type estimations, decomposing total work incentives indicators to single out the effects of withdrawal of cash social benefits with income or employment.

In brief, EUROMOD is a static tax-benefit microsimulation model developed for the European Union. EUROMOD models monetary social transfers, direct taxes and selected social insurance contributions according to the rules in place on the 30th June of each year. The labour market income and other non-simulated income sources are taken directly from the data and updated based on average growth by income source based on external statistics from administrative sources or official projections. The input data for simulations is derived from the EU Survey of Income and Living Conditions (EU-SILC). In addition, hypothetical data with model family types as defined by OECD/EC was used for estimations. The latest public release of the model (version G1.0) which covers the tax-benefit systems for the period of 2005-2013 in Lithuania is used. For more information see Sutherland & Figari (2013); for the information on the Lithuanian component of the model see Ivaškaitė-Tamošiūnė et al. (2014).

Simulations of METR in this paper are made for the period of 2005-2013 based on the EU-SILC data for Lithuania collected in 2006, 2008 and 2010. The general procedure for calculation of METR for a poverty trap indicator is:

$$METR = 1 - (\Delta Y_{net}) / (\Delta E_{gross}) \quad (1)$$

where,  $\Delta E_{gross}$  is the change in gross earnings of the household member.  $\Delta Y_{net}$  is the corresponding change in net household disposable income after taxes, social insurance contributions and changes in benefits are calculated at the household level.

The effects of both discrete and marginal changes in gross earnings are analysed. Discrete changes in earnings as set in the standard OECD/EC calculations (at 33%, 50%, 67% and 100% of the average wage) are complemented with additional thresholds at 50% and 100% of the minimum wage in Lithuania. Furthermore, effects of marginal change in income are evaluated, allowing for looking at actual earnings levels at the bottom of the Lithuanian income distribution. For this purpose, marginal increase in income is set at the 3% of earnings, corresponding roughly to an extra working hour per week for a full-time worker (at 40 hours per week). Similar to Jara and Tumino (2013), the latter calculations are performed using EUROMOD micro-simulation model based on an iterative procedure: calculating total household disposable income; increasing earnings of one earner in the household at a time; recalculating household disposable income taking increased earnings into account. Repeating the procedure METRs are assigned to every individual with earnings in the household, while the total poverty trap indicator is an average of individual METRs. The model family estimation are made recalculating the discrete change in earnings for a selected family member.

The total poverty trap indicator in (1) is further decomposed to single out the effects of changes in cash benefits on work incentives (Jara & Tumino 2013):

$$METR = 1 - \left( \frac{\Delta O_{hh} + \Delta B_{hh} - \Delta T_{hh} - \Delta S_{hh}}{\Delta E_{gross}} \right) \quad (2)$$

where changes in the total net household disposable income are decomposed into a change in original income  $O$  and changes in benefits  $B$ , direct taxes  $T$  and social insurance contributions  $S$ , all at the household level<sup>4</sup>. As the change in original income in (2) equals to the change in individual gross earnings, the expression can be rewritten as:

$$METR = - \left( \frac{\Delta B_{hh} - \Delta T_{hh} - \Delta S_{hh}}{\Delta E_{gross}} \right) = METR_B + METR_T + METR_S \quad (3)$$

where the total indicator is decomposed into METR due to the changes in cash social benefits, taxes and social insurance contributions. Each METR component may further be decomposed, e.g. to reflect the role of individual benefits, group of benefits, or for population subgroups.

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<sup>4</sup> Original income as defined in EUROMOD include employment, self-employment income, private pensions, investment income, income from property, income of children under 16 years of age, private transfers received and maintenance payments (Ivaškaitė-Tamošiūnė et al. 2014).

### 3. Work Incentives at the Bottom of the Lithuanian Income Distribution

In order to contribute to better understanding of work incentives in Lithuania and how those are affected by the system of cash social benefits, the discussion starts with analysing work incentives at the lower end of the Lithuanian income distribution. In this section the distribution of the marginal effective tax rates (METR) in the Lithuanian population is presented as captured by the representative SILC data. As already discussed, METR indicators reflect the percentage of extra gross earnings that is taxed away through social benefit withdrawal, direct taxation and deduction of social insurance contributions. Below, work incentives are estimated at the intensive margin – resulting from a marginal increase of the hours worked for those already in work, i.e. for low earners or sole earners of households with several dependents. Work incentives at the extensive margin, i.e. for those unemployed or inactive and moving into employment, are discussed in the Section 4.

Figure 1 reflects the size and spread of METR in five quintiles of the Lithuanian income distribution in the starting and final year of the period in question. Detailed data on the distribution of work incentives in all years between 2005-2013 can be found in Annex 1.

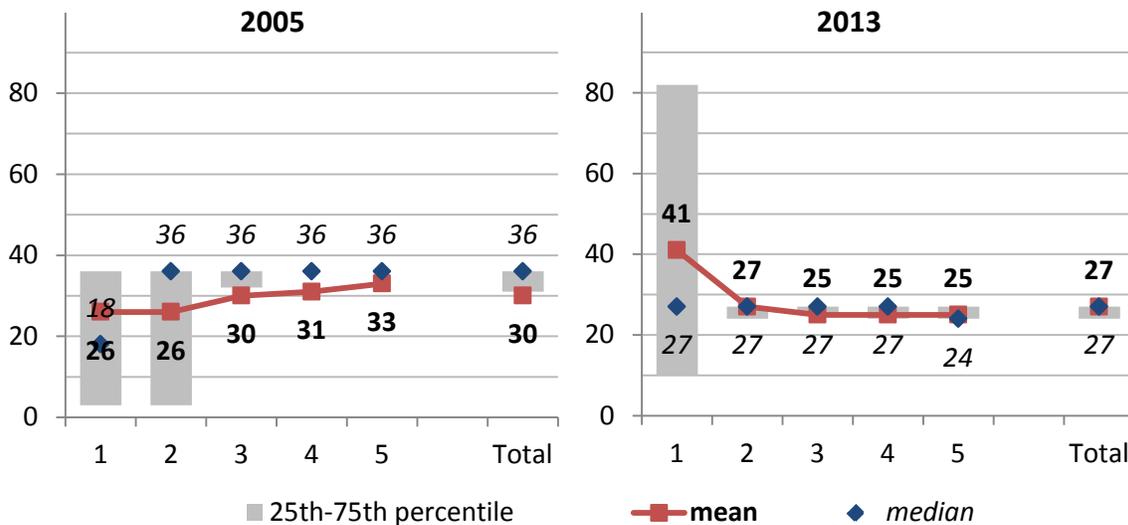


Figure 1. Distribution of the marginal effective tax rates by income quintile, %

Source: authors' calculations using EUROMOD v. G1.0

Note: Employer social insurance contributions not included. METR estimated among those in receipt of employment or self-employment income for a marginal increase in income by 3%. Income quintiles by equalized household disposable income in the total population.

Figure 1 reveals several important aspects of METR distribution in Lithuania. First, the average level of METR in 2013 is slightly below that in 2005, which highlights an improvement in work incentives on average in Lithuania between 2005-2013. However, reduction in METR came through the decrease in their levels at the top and increase at the bottom of the income distribution. In effect, work incentives were strengthened for richer and

were hindered for poorer households. This holds both looking at the mean, median METR and at its spread. The distribution of mean METR can be said to have been progressive in 2005 and have become regressive by 2013. Looking at the detailed data in Annex 1 this transformation happened gradually between 2006-2008 and more substantially in 2009. For the period from 2009 the distribution of METR was similar to the picture presented in Figure 1 for the final year of analysis.

Moreover, the spread of METR in the first income quintile widened substantially by 2013 compared to 2005 levels. As reported, half of the population within the 1<sup>st</sup> quintile faced METR of 3-36% in 2005. These boundaries changed to 10-82% in 2013. High levels of METR at around 80% observed at the end of the analysed period in the first income quintile are alarming. High METR faced by the poor households may undermine work incentives and discourage more active labour market participation, thus contributing to the formation of low wage traps.

Below the reason of such change are disentangles by decomposing the total METR. The first decomposition if made to identify effects of three elements of the Lithuanian tax-benefit system are: cash social benefits, direct taxes and social insurance contributions (Figure 2). Again, the figures reflect the situation at the beginning and in the end of the period, while detailed data on all the years between 2005-2013 can be found in Annex 2. Total METR are then decomposed to single out effects on the recipients and non-recipients of cash social benefits (Figure 3).

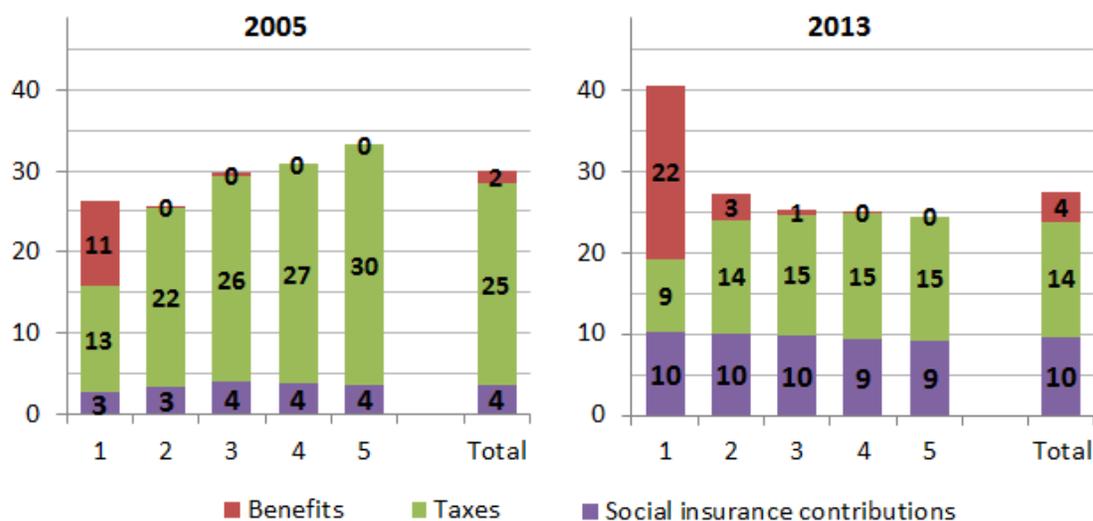


Figure 2. Decomposition of mean METR by tax-benefit component and quintile, %

Source: authors' calculations using EUROMOD v. G1.0

Note: Employer social insurance contributions not included. METR estimated among those in receipt of employment or self-employment income for a marginal increase in income by 3%. Income quintiles by equalized household disposable income in the total population.

Figure 2 shows that these were all three elements – benefits, direct taxes and social insurance contributions – that caused the change of the METR distribution between 2005-2013. The three factors are discussed in turn below.

First, there was a substantial increase in the share of METR caused by benefit withdrawal between 2005 and 2013. Different to the situation in 2005, work disincentives caused by benefit withdrawal play a major role compared to direct taxes and social insurance contributions in the lower income quintile in 2013.

As METR in Figure 2 are estimated at an intensive margin (for a marginal increase in income rather than change in employment status), the increase in benefit-driven METR could be due to either introduction of additional income-tested benefits or due to the changes in levels and procedures of income testing.

Indeed, on the one hand, child benefits in Lithuania became the means tested for children aged 3 and above in families with one or two children since 2009<sup>5</sup>, income test levels were tightened and extended to families with three and more children since 2010<sup>6</sup> and for children below 3 years of age since 2012<sup>7</sup>. Introduction of income testing for child benefits potentially have negative effects on work incentives of families with children in Lithuania. This, however, mainly affects families with income close to the income test threshold, as by design child benefits are not reduced with additionally earned income, but withdrawn once the income test threshold is crossed.

On the other hand, there was a substantial increase in the level of income testing for social assistance benefits in Lithuania. The level of state supported income, which is used for income testing in social assistance, rose in nominal terms from around 40 EUR (135 LTL) in 2005 to around 100 EUR (350 LTL) since 2008<sup>8</sup>. While in real terms the increase was not that substantial, it coincided with a drop in the disposable income in the population during the economic crisis since 2009 and resulted in a sharp increased number of social assistance recipients at the bottom of the Lithuanian income distribution who qualify for the income test. As social assistance benefits in Lithuania are withdrawn at near 100% rate of additionally earned income<sup>9</sup>, it is unsurprising that the share of people facing high METR in the first

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<sup>5</sup> According to the following law “Lietuvos Respublikos Išmokų vaikams įstatymo 6, 8, 12, 13, 20 straipsnių pakeitimo ir papildymo ir 22 straipsnio pripažinimo netekusiu galios įstatymas”. 2008.12.19 Nr. XI-90. Žin. 2008, Nr. 149-6016.

<sup>6</sup> According to the following law “Lietuvos Respublikos socialinių išmokų perskaičiavimo ir mokėjimo laikinasis įstatymas”. 2009.12.09 Nr. XI-537. Žin., 2009, Nr. 152-6820.

<sup>7</sup> According to the following law “Lietuvos Respublikos Išmokų vaikams įstatymo 2, 3, 4, 6, 8, 9, 12, 13, 14, 15, 17, 18 straipsnių, trečiojo, šeštojo skirsnų pavadinimų pakeitimo ir papildymo ir 21 straipsnio pripažinimo netekusiu galios įstatymas”. 2011 m. gruodžio 1 d. Nr. XI-1756. Žin., 2011, Nr. 155-7350.

<sup>8</sup> According to the resolutions of the Government of the Republic of Lithuania: „Lietuvos Respublikos Vyriausybės nutarimas Dėl valstybės remiamų pajamų dydžio patvirtinimo“ Nr. 696 (Žin., 2005, Nr.80-2900), Nr. 1 (Žin.2006, Nr.3-25), Nr. 934 (Žin., 2006, Nr.104-3969), Nr. 1217 (Žin., 134-5087, Nr.), Nr. 824 (Žin., 2007, Nr.91-3633), Nr. 1328 (Žin., 2007, Nr. 135-5472), Nr. 538 (Žin., 2008, Nr. 67-2531).

<sup>9</sup> According to the following law: “Piniginės socialinės paramos nepasiturintiems gyventojams įstatymas”. 2003m. liepos 1d. Nr. I x-1675. The internet link: [http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc\\_l?p\\_id=461758](http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=461758)  
[http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc\\_l?p\\_id=415160](http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=415160)

quintile of the income distribution went up between 2005-2013 (see Figure 1), thus increasing the contribution of benefits into the total METR (see Figure 2).

Importantly, this highlights a trade-off between adequacy of social assistance and its effects on work incentives built into the design of the benefit. Strict proportional withdrawal of social assistance with earned income in Lithuania was criticized as 'naïve' with multiple proposals to decrease the benefit's withdrawal rate with earned income (e.g. UNDP 2010, Zabarauskaitė 2008). Around 80% of male and 90% of female social assistance recipients were reported to be not in work in 2006 survey of social assistance recipients (Lazutka et al. 2008). There were, however, no income disregards imbedded into the system of cash social assistance, except for work related income of full-time students since 2008 and temporary income disregards for long-term unemployed since 2012<sup>10</sup>. The latter changes however are episodic, with potentially marginal effects on work incentives of the income poor households (Lazutka et al. 2013b).

Second, the role of taxes that directly affect household disposable income and their interactions with cash benefits should be discussed. Direct taxes as defined for calculations include property, wealth and personal income taxes. Among the three, it is the personal income tax that has potential first-order implications on work incentives. Personal income tax in Lithuania is calculated on individual basis using a flat tax rate, with tax allowances for low income earners, those raising children and people with disabilities.<sup>11</sup>

Several important changes in the system's design between 2005-2013, affecting the levels and distribution of METR across income groups, need to be noted. Most importantly, the differential tax rate of 15% and 33% depending on income source was gradually reduced to a single rate of 15% in 2009; lower tax rate of 5% was introduced in 2010 on the specific types of individual income. Furthermore, the amount of the general tax allowance was gradually increased since 2005 and reformed in 2009 to gradually decrease with income.<sup>12</sup>

The design and above-mentioned changes of the personal income tax in Lithuania contributed to decreasing average METR levels between 2005-2013 as portrayed in Figure 2 (and Annex 2). While based on a flat tax rate, the system is slightly progressive at the bottom of income distribution in Lithuania due to allowances for low income earners, families with children or people with disability. The positive effect of progressivity of tax allowances on work incentives at the lower part of the Lithuanian income distribution is, however, undone by high METR caused by strict cash benefit withdrawal and an increase in social insurance contributions (see below for details). This highlights a limited role of income tax reforms in improving work incentives among low income groups and importance of design of cash social benefits and its interactions with tax system in Lithuania.

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<sup>10</sup> According to the relevant amendments of the law: "Lietuvos Respublikos piniginių socialinės paramos nepasiturintiems gyventojams įstatymas". 2003 m. liepos 1 d. Nr. IX-1675, Žin., 2003, Nr. 73-3352

<sup>11</sup> According to the following law: "Lietuvos Respublikos gyventojų pajamų mokesčio įstatymas". 2002 m. liepos 2 d. Nr. IX-1007. Žin., 2002, Nr. 73-3085

<sup>12</sup> According to the relevant amendments of the law: "Lietuvos Respublikos gyventojų pajamų mokesčio įstatymas". 2002 m. liepos 2 d. Nr. IX-1007. Žin., 2002, Nr. 73-3085

Last but not least, the effects of social insurance contributions on work incentives in Lithuania need to be discussed. As portrayed in Figure 2, the effects of employee and self-employed social insurance contributions on the total METR in Lithuania are proportionally distributed across all income groups. This is due to their flat-rate design and inexistence of either grounds or ceilings for social contributions in Lithuania, except for the self-employed. Increase in the level of the employee social insurance contributions by about 6 percentage point between 2005 and 2013 was due to a shift of deductions towards health social insurance from personal income tax to social insurance contributions in 2009.<sup>13</sup> Although being technical, this reform had a potentially negative effect on the work incentives at the bottom of the income distribution, since no deductions or allowances apply to social insurance contributions in Lithuania. In effect, METR due to combined effect of taxes and social insurance contribution increased in the first income quintile from around 15% in 2005-2008 to almost 20% since 2009 (see Figure 2 and Annex 2). Again, interactions between the elements of tax-benefit system should not be overlooked.

To further illustrate the role income testing of cash social benefits plays in undermining work incentives in Lithuania, METR indicators are decomposed by tax-benefit element for those in receipt and not in receipt of cash social assistance (Figure 3). As mentioned above, cash social assistance is the major income-tested benefit in Lithuania, potentially contributing to high work disincentives among recipients due to its design and strict withdrawal with income.

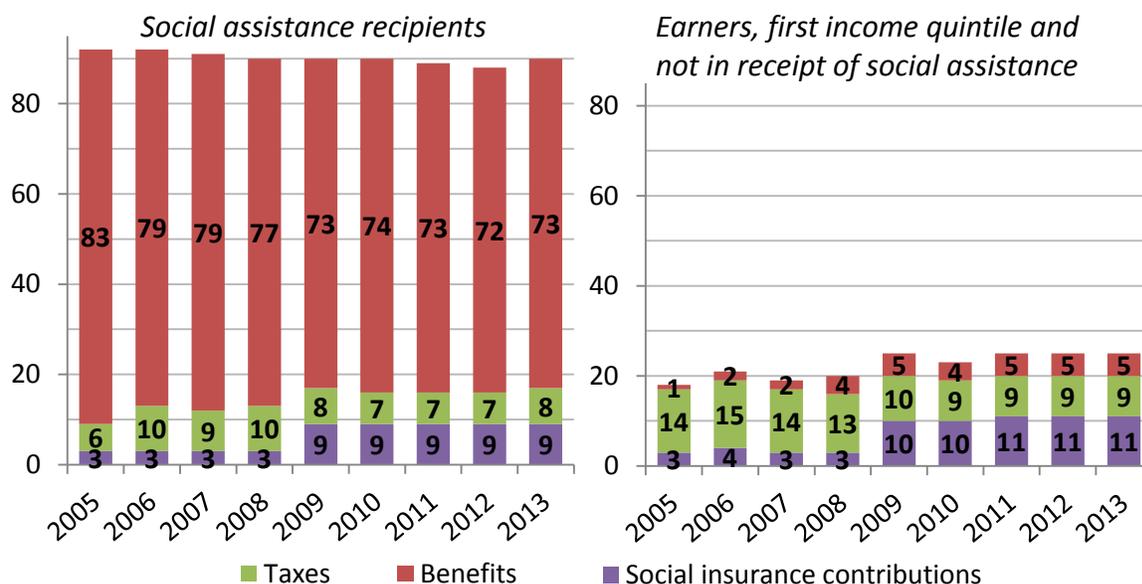


Figure 3. METR among earner in receipt and not in receipt of social assistance, %

Source: authors' calculations using EUROMOD v. G1.0

<sup>13</sup> According to the following law: "Lietuvos Respublikos gyventojų pajamų mokesčio įstatymas". 2002 m. liepos 2 d. Nr. IX-1007. Žin., 2002, Nr. 73-3085

Note: Employer social insurance contributions not included. METR estimated among earners (those in receipt of employment or self-employment income) for a marginal increase in income by 3%. Income quintiles by equivalized household disposable income in the total population.

Figure 3 reveals high disincentives to work among social assistance recipients. Around 90% of extra earned gross earnings is estimated to be taxed away through combined effects of withdrawal of cash benefits, direct taxes and social insurance contributions. As expected, withdrawal of cash social assistance is the dominant contributor into the total METR for those in its receipt. The estimates are in line with model-family based estimations on the effects of cash benefits for Lithuania reported by the UNDP (2010). Moreover, the *naïve* reduction in social assistance at 100% rate of additionally earned income mitigated the effects of changes in other elements of the tax-benefit system what concerns work incentives for those in receipt of social assistance. Thus, the potential of tax reforms to increase work incentives among social assistance recipients is limited in Lithuania, unless income disregards or other measures are introduced into the design of social assistance that ensure gradual rather than strict proportional withdrawal of cash social assistance benefits with additionally earned income.

On the other hand, the total METR among the earners in the lower quintile of the Lithuanian income distribution and not in receipt of social assistance were at substantially lower levels of around 20%-25% between 2005-2013 (see Figure 3). The total METR in this sub-group were at lower levels compared to the rest of the income distribution before 2009 and at similar levels thereafter. Direct taxes and social insurance contributions play a dominant role, while benefit withdrawal has a marginal effect on work incentives in this group, especially before 2009. As mentioned above, the introduction of means-testing into the design of child benefit in Lithuania since 2009 might have undermined work incentives for families with children with earning close to the income-test threshold.

Finally, it can be noted that while the latest estimated in the above graphs relate to 2013, there were no structural reforms in either the system of cash benefits, direct taxation or social insurance contributions in 2014 and 2015. Thus the overall current distribution of METR should be comparable to the latest estimates presented above, talking both about levels and distribution across income groups.

#### **4. Model Family Indicators of Work Incentives for Lithuania**

In this section model family estimates are used to capture work incentives among specific family types in Lithuania: those with inactive, unemployed members or low-earners. EUROMOD-based and official readily available OECD/EC indicators are used and cross-validated to gain additional insight. Using EUROMOD for calculations also enables to decompose total indicators of work incentives to single out the effects of cash benefits on work incentives in Lithuania.

Table 1 shows the latest OECD/EC estimates of work incentives across the model family types. To remind, higher inactivity, unemployment and low wage traps indicate

potentially lower incentives to increase one's labour supply at an extensive (getting into employment) or intensive (increasing the number of hours worked) margin.

Table 1 shows that among the analysed family types, single persons and members of the one-earner couples with or without children face high negative incentives to transition from inactivity or unemployment into employment. Two-earner married couples with or without children face high unemployment traps, while disincentives to seek work after the periods of inactivity are substantially lower. Low wage traps are above the 50% threshold only at lower wage levels among one-earner couples with two children according to the OECD/EC estimates.

Table 1. OECD/EC indicators of work incentives for Lithuania in 2013, % of extra gross earnings that is taxed away

	Single person	One-earner married couple	Two-earner married couple	Lone parent	One-earner married couple	Two-earner married couple
	No children			2 children		
<b>Inactivity trap<sup>14</sup></b> . <i>Transition of a household member from inactivity to employment at:</i>						
33% of AW	<b>62</b>	<b>91</b>	14	<b>84</b>	<b>82</b>	34
50% of AW	<b>50</b>	<b>75</b>	18	<b>64</b>	<b>83</b>	41
67% of AW	44	<b>63</b>	21	<b>62</b>	<b>84</b>	37
<b>Unemployment trap<sup>15</sup></b> . <i>Transition of a household member from unemployment to employment at:</i>						
33% of AW	<b>102</b>	<b>102</b>	<b>102</b>	<b>97</b>	<b>97</b>	<b>102</b>
50% of AW	<b>77</b>	<b>77</b>	<b>77</b>	<b>73</b>	<b>73</b>	<b>86</b>
67% of AW	<b>64</b>	<b>64</b>	<b>64</b>	<b>68</b>	<b>61</b>	<b>71</b>
<b>Low wage trap<sup>16</sup></b> . <i>Increase in household members' gross earnings:</i>						
33% to 67% of AW	27	35	27	40	<b>85</b>	41
50% to 100% of AW	27	27	27	36	<b>60</b>	27
67% to 100% of AW	27	27	27	27	46	27

Source: OECD <http://www.oecd.org/els/benefits-and-wages-statistics.htm> [last accessed on 25/05/2014]. Note: AW – gross average wage. Income levels sorted in ascending order. Traps over 50% in bold. Children aged 4 and 6, neither childcare benefits nor childcare costs are considered. For married couples the percentage of AW relates to one spouse only; the second spouse is assumed be "inactive" with no earnings in a one-earner couple and to have full-time earnings equal to 67% of AW in a two-earner couple. Where receipt of benefits is subject to activity tests, these are assumed to be met.

Table 1 also shows that incentives to work tend to be higher for higher levels of earnings in Lithuania and lower for households with lower earning capacity. This confirms the above analysis of distribution of the marginal effective tax rates (METR) across income groups

<sup>14</sup> The estimates relate to the situation of a person who is not entitled to unemployment benefits, instead, social assistance and other means-tested benefits are assumed to be available subject to relevant tests.

<sup>15</sup> The estimates relate to the situation of a person who has just become unemployed and receives unemployment benefits based on previous earnings equal to earnings in the new job. No social assistance "top-ups" or cash housing assistance are assumed to be available.

<sup>16</sup> Hourly earnings correspond to AW level (i.e. half-time employee has earnings equal to 50% of AW).

in Lithuania. The regressive pattern of work incentives in Lithuania is also in line with the previous finding on the above EU-average prevalence of high METR at the bottom of the Lithuanian income distribution (Jara & Tumino 2013).

As discussed in the previous section, the regressive pattern of work incentives in Lithuania is mainly due to the system of personal income taxation and cash benefit withdrawal. Moreover, the gap between in-work income and cash benefit provisions was highlighted to be narrow for Lithuania (Zabarauskaite & Blaziene 2010, UNDP 2010). There are no in-work benefits or refundable tax credits aimed at increasing this gap. The latter is especially important for labour market transitions on an extensive margin, i.e. from inactivity or unemployment into employment. Thus, a combination of the Lithuanian system of income taxation, strict withdrawal of cash social benefits with income or employment and a narrow gap in levels of in-work income and cash benefit provisions in Lithuania create higher poverty, inactivity and low wage traps for those with lower earning capacity.

Several points of caution should be noted when discussing OECD/EC work incentives indicators for Lithuania presented in the Table 1.

First, the OECD/EC indicators show high unemployment traps in Lithuania, especially at the lowest income levels (at 33% of average wage). High reported unemployment traps are contradicting numerous estimates showing low replacement rates of the unemployment benefits in Lithuania. For example, the net replacement rate of the social insurance unemployment benefit was estimated to be at 35% on average in 2010 when the benefit ceiling of around 190 EUR (650 LTL) was introduced (Lazutka et al. 2013). Average unemployment benefit replacement rates over a one year period for low wages in the first quintile of the wage distribution were estimated to be at around 60% in 2010-2012 in Lithuania (Navicke 2015).

The estimates of the unemployment trap in Lithuania by OECD/EC contradict to these findings as the estimates relate to situation of a person who has just become unemployed and receives unemployment benefits at its initial rate. In Lithuania this relates to 3 initial months of unemployment benefit receipt, as the amount of the benefit is reduced thereafter and withdrawn altogether after 6-11 months depending on previous contribution history and age<sup>17</sup>. On a substantial level, high replacement rates of the social insurance unemployment benefits at the initial stage of benefit receipt should not be problematic, even if present. While unemployment benefits can discourage job seeking and put upward pressure on wage levels, they also contribute to a more efficient match between the workers and jobs and thus prevents the waste of human capital in the long-run (see e.g. Carone et al. 2004).

Second, relatively low levels of low wage traps in Lithuania are unexpected, especially what concerns lone parent families. High disincentives to increase work intensity among the households with children working at minimum wage was documented through the model family calculations for Lithuania by the UNDP (2010). The analysis of the distribution of METR in the Lithuanian population presented above also suggest higher levels of low wage

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<sup>17</sup> According to the following law: "Lietuvos Respublikos nedarbo socialinio draudimo įstatymas". 2003 m. gruodžio 16 d. Nr. IX-1904. Žin., 2004, Nr. 4-26 [Aktuali red.]

traps, especially for low income families with dependents eligible for social assistance receipt. Relatively low inactivity traps estimated by OECD/EC for the mentioned groups thus require some caution when interpreting.

Third, it can also be noted that the levels of earning used in the model calculations, i.e. transitions to 2/3 or full average national wage and above, are over-optimistic when talking about the low-wage transitions in Lithuania. According to Statistics Lithuania (2015), around 20% of all employees worked at a minimum or below minimum wage in Lithuania in 2010-2013<sup>18</sup>. Thus, low wage transitions at half a minimum and a minimum statutory monthly wage would bring the analysis closer to the national context. The minimum wage was at around 45% of the gross average national wage in Lithuania in 2013, while within the period between 2005-2013 this fraction was at around 40%<sup>19</sup>. Moreover, including households with one child into this analysis would contribute to its external validity, while decomposing results to single out the role of cash social benefits would strongly contribute to the aim of this research.

Following these points of critique, indicators of work incentives are estimated and decomposed using tax-benefit model EUROMOD. Alternative calculations provide a possibility to cross-validate estimates and gain additional insight. To ensure comparability, model families and income levels are defined in line with those used by the OECD/EC. In addition to the standard indicators work incentives are reported for families with one child and for the income thresholds at half and full statutory minimum monthly wage. Moreover, the estimates of the total levels of inactivity, unemployment and low wage traps are decomposed to identify the role of cash social benefits.

Comparison of two sets of indicators in Tables 1 (above) and Table 2 (below) shows that the EUROMOD based indicators of work incentives are to a large extent consistent or even identical to those reported by the OECD/EC. Consistent among both groups of estimates, higher unemployment, inactivity and low wage traps are observed at lower income levels. Both models produce nearly identical results for inactivity traps among families with no children and for low wage traps. There are however important differences when looking at unemployment traps and for inactivity traps among families with children. These are discussed below in turn.

First, Table 2 (below) shows considerably lower unemployment traps for dual earner households and singles without children, i.e. in situations when social assistance system does not interact or interacts to a lesser extent with contributory unemployment benefits. The total unemployment traps of 40%-60% in Table 2 are lower compared to those shown by the OECD/EC estimators and are better in line with the previous research on low generosity of unemployment benefits in Lithuania. As mentioned, the difference is due to EUROMOD estimations showing average annual unemployment traps. This reveals disincentives to seek

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<sup>18</sup> Structure of employees by wage levels as of October: full and part-time employees at minimal monthly wage and below, % of all employees including individual firms. Estimates available for 2010-2013. Source: Statistics Lithuania (2015) Database of Indicators. Online resource: <http://osp.stat.gov.lt/en/statistiniu-rodikliu-analize1> [accessed 27/07/2015]

<sup>19</sup> Author's calculations based on annual gross earnings [earn\_nt\_net] and averaged bi-annual data on monthly minimum wages [earn\_mw\_cur] in Lithuania. Source: Eurostat (2015b) [accessed 15/04/2015]

work in a longer one-year timeframe – the period when high unemployment traps are of more concern compared to the initial unemployment period.

Table 2: EUROMOD-based indicators of work incentives for Lithuania in 2013, % of extra gross earnings (total/due to cash benefit withdrawal)

	Single person	One-earner couple	Two-earner couple	Lone parent	One-earner couple	Two-earner couple	Lone parent	One-earner couple	Two-earner couple
	No children			1 child			2 children		
<b>Inactivity trap</b> <sup>20</sup> . <i>Transition of a family member from inactivity to employment at:</i>									
50% MMW	<b>81/70</b>	<b>94/83</b>	10/0	<b>94/84</b>	<b>87/78</b>	21/10	<b>87/78</b>	<b>84/75</b>	19/5
33% AW	<b>63/48</b>	<b>94/79</b>	14/0	<b>92/88</b>	<b>88/75</b>	21/7	<b>87/78</b>	<b>84/75</b>	18/4
MMW	<b>53/35</b>	<b>81/63</b>	18/0	<b>75/58</b>	<b>89/72</b>	23/5	<b>88/74</b>	<b>85/71</b>	20/3
50% AW	<b>51/31</b>	<b>76/57</b>	19/0	<b>70/52</b>	<b>89/71</b>	23/5	<b>86/71</b>	<b>85/70</b>	30/12
67% AW	45/23	<b>64/42</b>	21/0	<b>63/43</b>	<b>76/56</b>	24/3	<b>71/53</b>	<b>86/68</b>	29/9
<b>Unemployment trap</b> <sup>21</sup> . <i>Transition of a family member from unemployment to employment at:</i>									
50% MMW	<b>81/70</b>	<b>99/88</b>	<b>58/48</b>	<b>98/89</b>	<b>95/86</b>	<b>70/59</b>	<b>95/86</b>	<b>94/85</b>	<b>62/49</b>
33% AW	<b>63/48</b>	<b>98/83</b>	<b>51/37</b>	<b>96/83</b>	<b>94/81</b>	<b>58/44</b>	<b>94/84</b>	<b>92/82</b>	<b>52/37</b>
MMW	<b>53/35</b>	<b>84/66</b>	<b>47/29</b>	<b>78/61</b>	<b>94/77</b>	<b>52/34</b>	<b>93/79</b>	<b>91/77</b>	<b>47/29</b>
50% AW	<b>51/31</b>	<b>78/59</b>	<b>45/26</b>	<b>73/55</b>	<b>93/75</b>	<b>50/31</b>	<b>90/75</b>	<b>91/75</b>	<b>55/36</b>
67% AW	45/23	<b>66/44</b>	41/21	<b>65/45</b>	<b>80/59</b>	45/24	<b>75/56</b>	<b>90/72</b>	<b>48/28</b>
<b>Low wage trap</b> <sup>22</sup> . <i>Increase in family members' gross earnings:</i>									
50 to 100% MMW	26/0	<b>69/43</b>	25/0	<b>57/32</b>	<b>90/65</b>	25/0	<b>89/70</b>	<b>86/68</b>	22/0
33 to 67% AW	28/0	34/6	27/0	35/7	<b>65/37</b>	27/0	<b>56/28</b>	<b>88/60</b>	40/14
50 to 100% AW	28/0	28/0	27/0	32/5	36/8	27/0	37/9	<b>51/23</b>	27/0
67 to 100% AW	28/0	28/0	27/0	28/0	35/7	27/0	42/14	31/4	27/0

Source: authors' calculations using EUROMOD v. G1.0

Note: MMW – gross monthly minimum wage, AW – gross monthly average wage. Income levels sorted in ascending order. Traps over 50% in bold. Children are aged 4 and 6, neither in-kind childcare benefits nor childcare costs are considered. For married couples the wage relates to one spouse only; the second spouse is assumed be "inactive" with no earnings in a one-earner couple and to have full-time earnings equal to 67% of AW in a two-earner couple. Where receipt of benefits is subject to activity tests, these are assumed to be met.

On the other hand, higher disincentives to seek employment are estimated for single parents and single earner couples with children. This reveals interaction between the systems of unemployment benefits, social assistance and also child benefits at higher income levels. Again, the interaction is of particular importance after the initial period of unemployment, as

<sup>20</sup> The estimates relate to the situation of a person who is not entitled to unemployment benefits, instead, social assistance and other means-tested benefits are assumed to be available subject to relevant income conditions.

<sup>21</sup> Average annual unemployment traps with an unemployment duration of one year assumed, person receives unemployment benefits based on previous earnings equal to earnings in the new job. Eligibility for social assistance according to statutory rules, active job search requirement is assumed to be met.

<sup>22</sup> Hourly earnings correspond proportionally to the AW or MMW levels throughout.

unemployment benefit gets reduced after 3 months and terminated after 6-11 months of receipt<sup>23</sup>.

Second, the EUROMOD-based indicators of inactivity traps for Lithuania are largely consistent with those reported by the OECD/EC. However substantially higher inactivity traps are estimated for lone parents with children for transitions at 50% of average wage and above. Similar to the previous case, EUROMOD better captures the effect of social assistance and child benefit withdrawal for lone parents. On the other hand, somewhat lower inactivity traps are estimated for dual-earner families with two children. This might be due to the fact that the OECD/EC indicators incorporate indirect compensations for school lunches and teaching materials for pupils, while EUROMOD estimates only include benefits and taxes that directly affect household disposable income.

Talking about complementary indicators, work incentives at additional levels of income further highlight the regressive effect of the Lithuanian tax-benefit system on work incentives in Lithuania. Furthermore, inactivity and unemployment traps at half a minimum wage and low wage traps for transitions between half a minimum and a minimum wage are at highest levels compared to virtually all other family and income situations. This reveals economic unattractiveness of half-time employment in Lithuania, especially for lone individuals and people with dependent household members or children. As noted above, a combination of a narrow gap in levels of wages and cash benefit incomes in Lithuania, and inexistence of in-work benefits, refundable tax credits or wider system of income disregards in social assistance contribute to this phenomenon.

The work incentives in the complementary family types with one child are largely consistent with those in families with two children, except of lower low wage traps for lone parents with children and lower inactivity traps for the same family type at earnings level at or above the minimum statutory wage.

Decomposition of the total levels of inactivity, unemployment and poverty traps in Table 2 reveals the dominant role of cash social benefits at creating disincentives for those not in work or earning low wages in Lithuania. Again, this highlights a trade-off between adequacy of cash social benefit provisions for the able-bodied working age adults and work incentives in Lithuania, both due to design of the cash social benefit system and its components, as well as to low levels of earning in Lithuania. This challenging situation was pointed out as “the glass ceiling of minimum income protection”– a situation when disposable income of low wage earners are at the levels below or about the minimum incomes for jobless persons (Cantillon et al. 2015 p. 8). The challenge for policy design is to encourage and promote active labour market participation through ensuring sufficient work incentives for low earners without eroding the minimum income protection floor.

Finally, work incentives in different family types are analysed looking at their changes over time. The period of 2005-2013 is decomposed into two sub-periods of 2005-2009 and

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<sup>23</sup> According to the following law: “Lietuvos Respublikos nedarbo socialinio draudimo įstatymas”. 2003 m. gruodžio 16 d. Nr. IX-1904. Žin., 2004, Nr. 4-26

2009-2013. The former period was characterized as a period of expanding generosity of the cash transfer system, while the latter period can be characterized as a period of austerity – with cuts on cash benefits (Ivaškaitė-Tamošiūnė 2013).

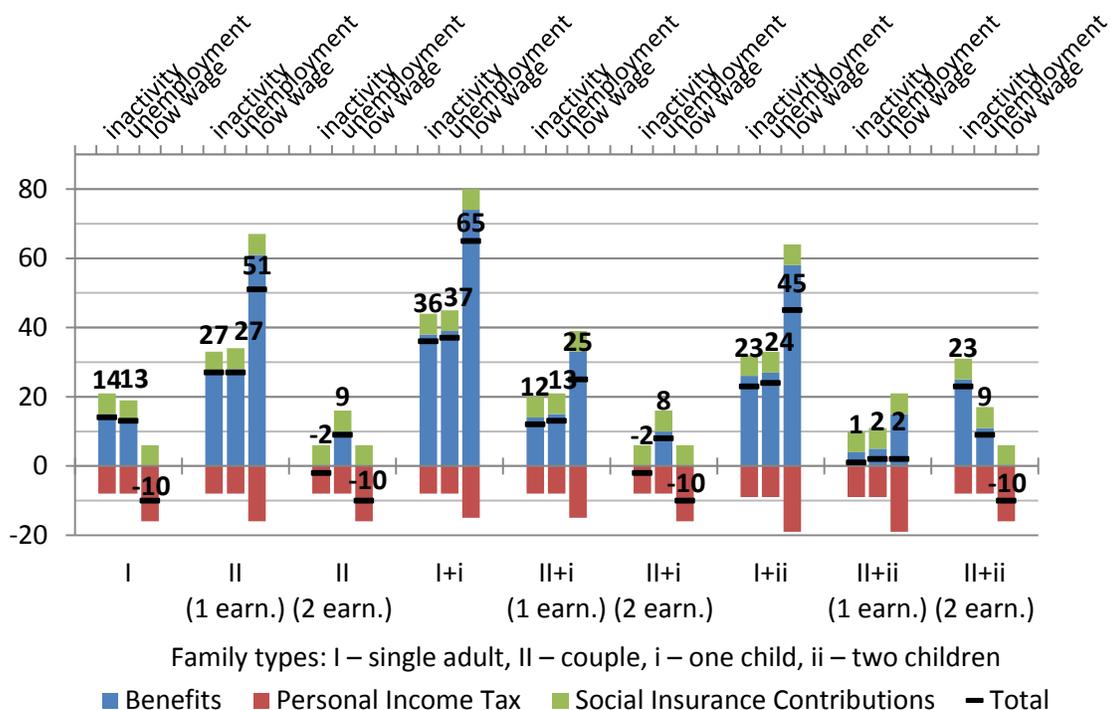


Figure 4. Change in the work incentives between 2005-2009: inactivity, unemployment and low wage traps by family type, %

Source: authors' calculations using EUROMOD v. G1.0

Note: Number of earners in brackets. Inactivity and unemployment traps estimated as in Table 2 for the transition to monthly minimum wage; low wage traps estimated for transition between half a minimum and a minimum monthly wage.

Figure 4 shows increase in inactivity, unemployment and low wage traps in the majority of family types between 2005-2009. Changes in cash benefits played the dominant role compared to deductions for the personal income tax and social insurance contributions. The increase in levels of cash benefits in Lithuania between 2005 and 2009 resulted in increasing disincentives to work - this highlights the design of the system that embeds a trade-off between the adequacy of the system and work incentives. Indeed, between 2005-2009 the minimum wage increased by around a half in Lithuania from around 152 EUR (525 LT) to 232 EUR (800 LTL)<sup>24</sup>. At the same time state supported income which is the base for estimation of both social assistance and for the basic part of unemployment benefits increased rapidly in

<sup>24</sup> According to the resolution of the Government of the Republic of Lithuania: "Lietuvos Respublikos Vyriausybės nutarimas dėl minimaliojo darbo užmokesčio didinimo". 2007 m. gruodžio 17 d. Nr. 1368. Žin., 2007-12-28, Nr. 137-5592

nominal terms from around 40 EUR (135 LTL) in 2005 to around 100 EUR (350 LTL)<sup>25</sup>. The observed increase in work incentives due to benefit withdrawal was not homogenous among groups – with highest changes for those with income levels close to the minimum wage level and eligible for assistance and/or unemployment benefits. These were single parents with one or two children and one-earner couples.

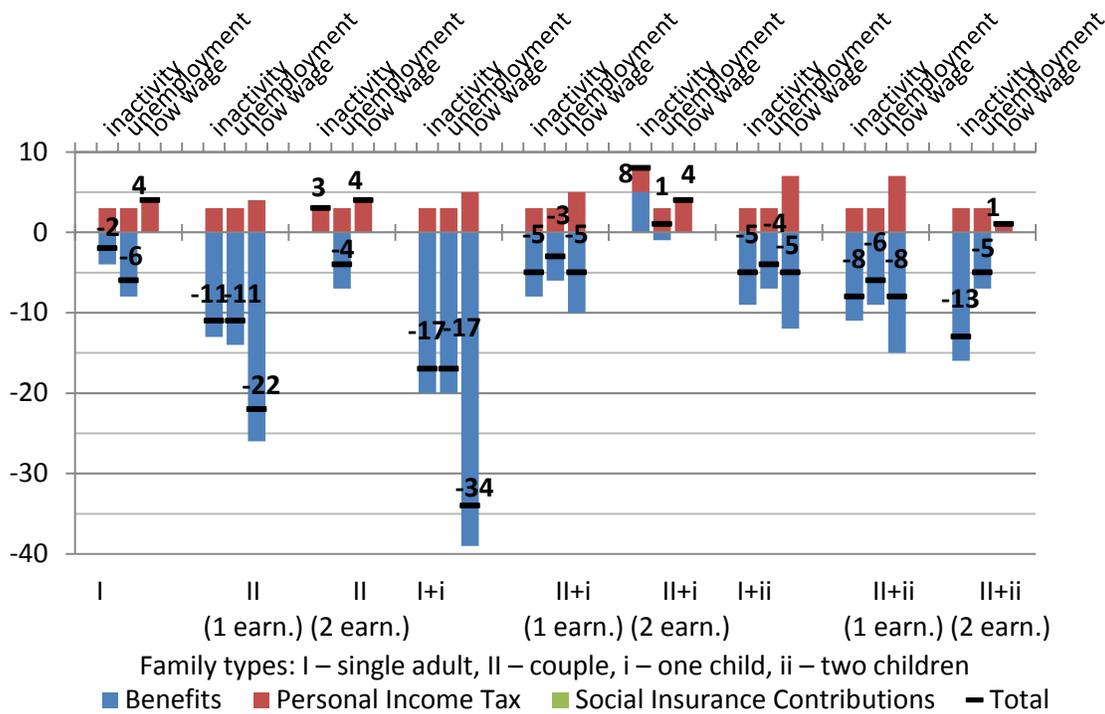


Figure 5. Change in the work incentives between 2009-2013: inactivity, unemployment and low wage traps by family type, %

Source: authors' calculations using EUROMOD v. G1.0

Note: Number of earners in brackets. Inactivity and unemployment traps estimated as in Table 2 for the transition to monthly minimum wage; low wage traps estimated for transition between half a minimum and a minimum monthly wage.

Figure 5 shows a different picture of dynamics of work incentives for the period of 2009-2013, although the role of benefits was again dominant. Cuts on benefits in conjunction with the growing minimum wage levels widened the gap between the two, resulting in decrease in inactivity, unemployment and low wage traps in most family types included into the analysis. Indeed, the minimum statutory wage level was further increased by 25% to around

<sup>25</sup> According to the resolutions of the Government of the Republic of Lithuania: „Dėl valstybės remiamų pajamų dydžio patvirtinimo“ Nr. 696 (Žin., 2005, Nr.80-2900), Nr. 1 (Žin.2006, Nr.3-25), Nr. 934 (Žin., 2006, Nr.104-3969), Nr. 1217 (Žin., 134-5087, Nr.), Nr. 824 (Žin., 2007, Nr.91-3633), Nr. 1328 (Žin., 2007, Nr. 135-5472), Nr. 538 (Žin., 2008, Nr. 67-2531).

290 EUR (1000 LTL) between 2009-2013<sup>26</sup>. At the same time, the adequacy of social cash benefits was reduced during the period, especially in scope of the temporary austerity measures effective since 2010<sup>27</sup> and social cash benefit reform in 2012<sup>28</sup> (for detail see e.g. Avram et al. 2012, Ivaškaitė-Tamošiūnė et al. 2014). Thus the positive effect on work incentives between 2009-2013 was achieved through decreased adequacy of benefits relative to minimum wages, rather than by an improved cash benefit design.

Last, but not least, Figure 5 reveals that lone parents and one earner couples were again affected most, which highlights high sensitivity of work incentives in these family types for changes in wage levels and levels of cash benefits. The volatility of benefit levels in respect to the minimum wage in Lithuania highlights *ad-hoc* nature of their changes due to the absence of indexation rules in Lithuania.

## 5. Conclusions

In this paper the impact of cash social benefits on work incentives at the bottom of the Lithuanian income distribution and among selected model family types was analysed. The analysis showed that while incentives to work more are relatively high at the middle and upper part of the Lithuanian income distribution, these are substantially lower for people in the lower income quintile. Such regressive profile of work incentives is due to a combination of strict withdrawal of cash social benefits with income or employment, a narrow gap between in-work income and cash benefit provisions and flat tax-rate system of personal income taxation. High disincentives to work at the bottom of the Lithuanian income distribution are dominated by the effect of cash social benefits, while effects of taxes and social insurance contributions on work incentives are limited.

A strong trade-off was noted between adequacy of cash social benefit provisions for the able-bodied working age adults and work incentives in Lithuania. The design of cash benefit system and its components result in negative effects on work incentives with increasing benefit levels and *vice versa*. This was the case during the period of expanding benefit generosity between 2005-2009 in Lithuania and cut on benefits caused by financial crisis thereafter. The positive effect on work incentives between 2009-2013 was achieved through decreased adequacy of benefits relative to minimum wages, rather than by improved cash benefit design. The challenge for policy design is thus to encourage and promote active labour market participation through ensuring sufficient work incentives for low earners without eroding the minimum income protection floor.

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<sup>26</sup> According to the resolution of the Government of the Republic of Lithuania: “Lietuvos Respublikos Vyriausybės nutarimas dėl minimaliojo darbo užmokesčio didinimo”. 2012 m. gruodžio 19 d. Nr. 1543. Žin., 2012-12-22, Nr. 152-7772

<sup>27</sup> According to the following law “Lietuvos Respublikos socialinių išmokų perskaičiavimo ir mokėjimo laikinasis įstatymas”. 2009.12.09 Nr. XI-537. Žin., 2009, Nr. 152-6820.

<sup>28</sup> According to the following law: “Lietuvos Respublikos piniginės socialinės paramos nepasiturinčioms šeimoms ir vieniems gyvenantiems asmenims įstatymo pakeitimo įstatymas”. 2011 m. gruodžio 1 d. Nr. XI-1772. Žin., 2011-12-20, Nr. 155-7353

Social assistance is a prime income-tested element of the system with strong negative effects on work incentives at the bottom of the income distribution. The total negative work incentives associated with receipt of social assistance amounted to around 90% of the extra gross earned income within the period of 2005-2013. *Naïve* one-to-one withdrawal of cash social assistance with additionally earned income not only undermines work incentives of its recipients. It also limits the possibilities to encourage labour market participation among social assistance recipients though other components of tax-benefit system (e.g. direct taxes), unless wider system of income disregards, in-work benefits, tax credits or other measures are introduced into the Lithuanian tax-benefit design. This and other interactions between the elements of tax-benefit system are important for the total levels of work incentives and should not be overlooked.

As far as distribution of work incentives among different family types are concerned, lone parents and sole earners with dependent family members are subject to highest inactivity, unemployment and low wage traps in Lithuania. This is especially true when earning capacity of the lone parent or sole earner in the family is below or around a minimum wage. Such families are also most sensitive to *ad-hoc* changes in cash social benefits levels relative to wages. Absence of indexation of cash benefits and minimum wages in Lithuania contributes to this volatility.

Finally, the analysis demonstrated an added value of using alternative measures of work incentives from different sources. OECD/EC model family indicators of work incentives provide important insights into functioning of the tax-benefit system. Nevertheless, the Lithuanian estimates for lone parents and unemployment traps should be treated with caution. EUROMOD based estimates are better in line with previous research on unemployment traps and situation of lone parents. Moreover, the model provides a lot of flexibility for analysis: a possibility to use both representative population sample and variety of model family types, to estimate work incentives at both extensive and intensive margins of labour supply, to disaggregate total work incentives by income components. In addition, changes to tax-benefit design can be modelled using EUROMOD, which would further contribute to research and proposals on improving work incentives though tax-benefit system in Lithuania.

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Annex 1. Distribution of the marginal effective tax rates by income quintile, %

	<i>Income quintile</i>					Total	<i>Income quintile</i>					Total
	1	2	3	4	5		1	2	3	4	5	
<b>Year:</b>	<b>2005</b>						<b>2006</b>					
mean	26	26	30	31	33	30	33	27	29	32	34	31
median	18	36	36	36	36	36	36	36	36	36	36	36
P25	3	3	32	36	36	31	3	7	33	36	36	33
P75	36	36	36	36	36	36	36	36	36	36	36	36
<b>Year:</b>	<b>2007</b>						<b>2008</b>					
mean	32	24	25	27	29	27	34	22	23	25	26	26
median	30	30	30	30	30	30	27	27	27	27	27	27
P25	3	3	30	30	30	30	3	25	27	27	27	27
P75	30	30	30	30	30	30	28	27	27	27	27	27
<b>Year:</b>	<b>2009</b>						<b>2010</b>					
mean	38	30	25	25	25	28	37	31	26	25	25	28
median	27	27	27	27	25	27	27	27	27	27	27	27
P25	9	24	24	24	24	24	9	24	24	24	24	24
P75	42	27	27	27	27	27	34	28	27	27	27	27
<b>Year:</b>	<b>2011</b>						<b>2012</b>					
mean	38	31	25	25	25	28	40	27	25	25	25	27
median	27	27	27	27	27	27	27	27	27	27	26	27
P25	9	24	24	24	24	24	10	24	25	24	24	24
P75	52	27	27	27	27	27	82	27	27	27	27	27
<b>Year:</b>	<b>2013</b>											
mean	41	27	25	25	25	27						
Median	27	27	27	27	24	27						
P25	10	24	25	24	24	24						
P75	82	27	27	27	27	27						

Source: authors' calculations using EUROMOD v. G1.0

Note: Income quintiles by equivalized household disposable income in the total population. P25 – 25<sup>th</sup> percentile, P75 - 75<sup>th</sup> percentile of the income distribution. Employer social insurance contributions not included. METR estimated among those in receipt of employment or self-employment income for a marginal increase in income by 3%.

Annex 2. Decomposition of METR by element of tax-benefit system and quintile, %

	<i>Income quintile</i>					Total	<i>Income quintile</i>					Total
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>		<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	
<b>Year:</b>	<b>2005</b>						<b>2006</b>					
Total	26.4	25.6	29.5	30.9	33.2	29.9	33.2	27	29.2	31.7	33.6	31.3
Benefits	10.6	0.3	0.1	0	0	1.5	15.5	0.4	0.1	0.1	0	2.2
Taxes	13	21.9	25.5	27.1	29.6	24.8	14.1	23.5	26.1	28.1	30	25.7
SIC	2.7	3.4	3.9	3.7	3.6	3.6	3.7	3.1	3.1	3.6	3.6	3.4
<b>Year:</b>	<b>2007</b>						<b>2008</b>					
Total	31.7	23.7	25.5	27.1	28.6	27.4	34	22.2	23.1	24.7	25.9	25.6
Benefits	15.8	0.4	0.2	0	0	2.2	18.3	0.6	0.2	0	0	2.7
Taxes	12.8	19	21.5	23.5	24.8	21.4	12.6	18.5	19.8	21.3	22.3	19.7
SIC	3.1	4.3	3.8	3.7	3.8	3.7	3	3.1	3.1	3.4	3.5	3.3
<b>Year:</b>	<b>2009</b>						<b>2010</b>					
Total	38.1	30.4	24.8	24.9	24.7	27.6	37.4	31.4	25.9	24.9	24.7	27.8
Benefits	19.3	7.4	0.4	0.6	0.1	4.2	18.8	9.1	1.7	0.3	0	4.5
Taxes	8.8	13.3	14.7	15.1	15.4	13.9	8.6	12.7	14.5	15.2	15.5	13.8
SIC	10	9.8	9.7	9.3	9.1	9.5	10	9.7	9.7	9.3	9.2	9.5
<b>Year:</b>	<b>2011</b>						<b>2012</b>					
Total	38.1	30.6	25.2	24.9	24.7	27.7	40.3	27	24.8	24.8	24.6	27.3
Benefits	19	7.8	0.8	0.1	0	4.1	21.3	3.6	0.1	0.2	0	3.6
Taxes	8.7	12.9	14.6	15.4	15.5	13.9	8.7	13.4	14.9	15.2	15.4	14
SIC	10.3	10	9.8	9.4	9.2	9.7	10.3	10	9.8	9.5	9.2	9.7
<b>Year:</b>	<b>2013</b>											
Total	40.7	27.1	25.2	24.9	24.5	27.4						
Benefits	21.5	3.3	0.5	0.1	0	3.6						
Taxes	8.8	13.8	14.9	15.4	15.3	14.1						
SIC	10.3	10.1	9.8	9.4	9.2	9.7						

Source: authors' calculations using EUROMOD v. G1.0

Note: Employer social insurance contributions not included. METR estimated among those in receipt of employment or self-employment income for a marginal increase in income by 3%. Income quintiles by equivalized household disposable income in the total population. SIC – social insurance contributions.