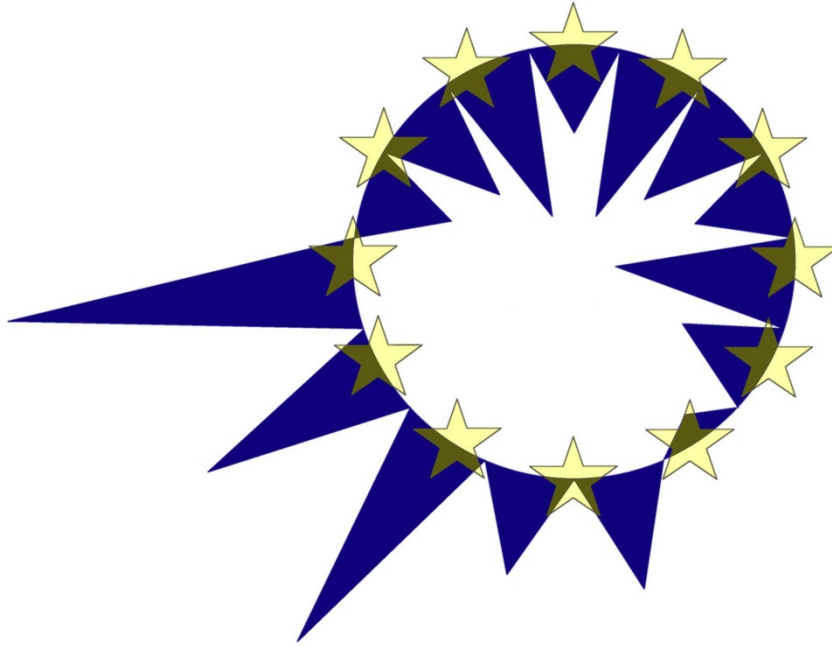


# EUROMOD

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**Between a risk society and a welfare state: social risk  
resilience and vulnerability to poverty in Lithuania**

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# **Between a risk society and a welfare state: social risk resilience and vulnerability to poverty in Lithuania<sup>1</sup>**

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## **Abstract**

This paper looks into the role the tax-benefit system plays in mitigating the effects of widespread socio-economic risks in the context of individualization, welfare state transformation and recent austerity. We analyse the drivers behind the changing role of the risk-mitigating social policies looking through the theoretical lenses of the risk society. The performance of the tax-benefit system in providing a safety net against income loss in cases of unemployment and childbirth is evaluated using the stress-testing approach suggested by Atkinson (2009). The analysis suggests that the role of the welfare state shifts towards promotion of individual responsibility for risk management. The welfare state policies can produce substantially different levels of vulnerability to poverty among population groups facing different risks. In the context of the recent economic crisis in Lithuania, the lack of the counter-cyclical protection provided by the welfare state is apparent, while the traditional mutual support among the household members still plays a major role in the risk management process.

**JEL Classification:** I32, I38, D31

**Keywords:** vulnerability, poverty, risk, welfare state, Lithuania

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## 1. Introduction

A good crisis should not be wasted. The Great Recession of the recent years bears numerous lessons to be learned. The damaging effect of the instability in the global financial markets brought better regulation and macro-economic stabilisation mechanisms onto the political and academic agendas. However, the crisis did more than just destabilize financial markets and national budgets. The impact on households and individuals, both short and long term, is more difficult to assess, but must not be overlooked. As admitted in the latest report by the European Commission (2014), growing social distress in employment and poverty are the result of both the crisis and the lack of resilience of the labour market and social institutions. In this paper we look into the performance of social institutions in mitigating socio-economic risks. In particular, we focus on the ability of the tax-benefit system to reduce individual vulnerability to acute income shocks.

The theoretical discussion in the first part of the paper builds on the idea that the latest economic crisis magnified the long-term challenges and transformations in the development of the welfare state. The emergence and expansion of the socio-economic risks is not accidental, but is driven by structural factors that in turn put social protection systems under strain. These include, among others, demographic, family and community transformation, global macro-economic, technological and ecological change. We utilise the ‘risk society’ thesis pioneered by Beck (1992) and Giddens (1991) and further discussions on the role that risks and institutions for managing them play in the transformation of the modern welfare state. The focus is on the links between the emergence and expansion of risks, individualisation and welfare state development.

Despite of the long-term transformations of the welfare state, it is the recent social policy changes that affect individuals at risk in a direct and immediate way. In the second part of the paper, we discuss the importance of changes in the tax benefit systems and ways of monitoring these changes. An empirical illustration of ‘stress-testing’ the current tax-benefit system in Lithuania is presented. The approach was suggested by Atkinson (2009) and is based on using microsimulation techniques to assess the likely performance of tax-benefit systems in providing an effective safety net and preventing large falls in the living standards of households in case of the income loss. The applications of the ‘stress-testing’ approach in the sphere of social protection were so far focused on the welfare compensation for unemployment (Figari et al. 2011; Fernandez Salgado et al. 2013). We expand it to include the risk of income loss in the event of child birth and to evaluate the resilience provided by the tax-benefit system across the whole population of individuals covered by the public insurance. The tax-benefit microsimulation model EUROMOD is used for calculations and the micro data is derived from the Lithuanian component of the EU Survey of Income and Living Conditions (EU-SILC). The analysed period of 2007-2012 covers the relatively generous pre-crisis tax-benefit rules, the economic crisis of 2009-2011 and the start of economic recovery in Lithuania since 2012.

We conclude with a discussion of additional insights into the development of the welfare state provided by the risk society thesis, as well as of limitations and the potential for extending the stress-testing methodology to cover more risks and to include a comparative angle.

## 2. The risk society, individualization and the welfare state

It is not uncommon to link the transformations of the welfare state to the changing nature and prevalence of risks (see e.g. Esping-Andersen 1999; Taylor-Gooby 2004). According to Esping-Andersen (1999 p. 32) the first step towards an understanding of the contemporary welfare state crisis must begin with a diagnosis of the changing distribution and intensity of social risks, as well as an examination of the role different agents play in managing them. The focus of this paper is on the latter. We start with discussing the theoretical links between risks and the changing role of the welfare state by looking through the lenses of the risk society perspective pioneered by Beck (1992) and Giddens (1991). According to Lupton (1999) this is one of the three main approaches to risk in modern sociology, standing next to the cultural/symbolic perspective on risk pioneered by Douglas and Wildavsky and Foucault's governmentality approach.

As Beck (1992) puts it, modern late-industrial societies are transitioning from an industrial society towards a risk society. In the latter the creation of social well-being is accompanied by the creation of risks. Beck does not say that the modern world is more dangerous compared to previous times. Rather the character of the threats that individuals face is changing. Nowadays we risk less in respect to natural hazards, but much more due to uncertainty created by our own social environment and the rapid development of science and technology. This idea is supported by Giddens (1991), who also points out that the feeling of insecurity is further magnified as both lay people and specialists think more or less all the time in risk categories.

Beck (2009) distinguishes between several types of risks: environmental risks, global financial risks, terrorist threats, biographical risks. Environmental risks and terrorist threats take an important part of Beck's writing. It is these risks that let him show the global scale and inescapability of risks, illustrated by his famous saying that "*poverty is hierarchical, smog is democratic*" (Beck 1992, p.36). Here we are mostly interested in biographical risks, which are closely related to the individual life courses and to social policy.

According to Beck, a distinguished feature of biographical risks is that they are inseparable from the dynamics of individualization (Beck 2009, p. 13). The process of individualisation means that individuals must produce their own biographies themselves, in the absence of fixed, obligatory and traditional norms and certainties and the emergence of new ways of life that are continually subject to change (Lupton 1999). Individuals are assumed to take on more responsibility for managing risks that are often outside of their control. Increasing responsibility is accompanied by a weakening of the traditional support structures, such as family, community or class:

"The opportunities, hazards and ambivalences of biography which once could be coped within the family unit, in the village community, and by the recourse to the social class or group, increasingly have to be grasped, interpreted and dealt with by the individual alone" (Beck 2009, p.75).

The latter idea is also supported by Giddens (1991), who states that in the context of late modernity social class is not determining the lifestyle, identity or subculture anymore, while most aspects of life, which were taken for granted in the past, are now turned into open questions.

While in the process of individualization, inequalities are to a lesser degree structured according to the traditional lines (such as social class), a division emerges between groups facing different degrees of risks. It is here that we find a link between the concepts of the risk society and the development of the welfare state. According to Beck (1992), as the modern 'class society' transforms into a 'risk society', the main concern of the contemporary welfare state is not redistribution of wealth, but rather redistribution and management of risks. In other words, the primary aim of the social protection system has shifted from the passive collection of taxes and administration of social payments to an active management of risks. This is very much in line with the recent innovations in the sphere of social protection: active labour market policies, in work benefits, tax credits, privatisation of social insurance – policies that encourage labour market participation, active involvement in decision making and risk taking. As Kemshall (2002) puts it, looking through the theoretical lenses of the risk society, the retrenchment of welfare provisions can be interpreted as a redrawing of the role of the state in providing social protection from wide-spread collective management of risks to individualisation and promotion of more active, flexible and adaptive engagement with risk and individual responsibility.

There are however concerns associated with the shifting focus of the welfare state away from the redistribution of resources and towards increasing reliance on the individuals' ability to make decisions on the complex matters that are often outside of their sphere of influence or expertise.

First, the individualization thesis and the idea of discontinuity between the class and risk society are subject to criticism. For example, Scott (2000) questions Beck's efforts to distinguish between traditional class and risk society by suggesting that insecurity or risk is just a function of scarcity. Thus risks and disadvantages coincide, while wealth is a still important tool of preventing and controlling risks. The argument can be further backed up empirically. Dolls (2012) finds that those at the bottom of the income distribution are more likely to experience income volatility due to increased risk exposure and lower availability of buffers. Abbot et al. (2006) based on the review of empirical studies from the UK and the US concluded that:

“[...] whilst research studies provide some support for the contention that the broader structuring factors characteristic of industrial society may have weakened somewhat in their influence in the contemporary era, particularly in the move towards individualization, it can be seen that they are still important” (Abbot et al. 2006, p.243)

The assumption of rationality and ability of individuals to take decisions on the matters beyond their control or competence is as well problematic. Increasing individual responsibility for managing risks enhances the sense of anxiety and requires more self-control and reflexivity. As it is well described by Scott (2000, p. 37): “we are forced to reflect where reflection was previously not required ('forced to be free')”. One of the most telling examples of such forced reflexivity in the sphere of social protection is the privatisation of pension systems. While experts in economics, demography, sociology and other sciences struggle to come up with ways to effectively address the challenge of population ageing, lay individuals need to make life-long decisions on participation in the funded pension schemes and management of their pension funds. The experience in Lithuania and other European countries where pension privatisation took place showed that the vast majority of individuals

do not fully understand and do not manage actively their pension savings (see e.g. Viceira 2010).

To sum up, looking through the theoretical lenses of the risk society, the transformation of the welfare state is driven by the rapidly changing nature and prevalence of socio-economic risks and a shifting role of the welfare state towards redistribution of risks rather than wealth, withdrawing from passive social protection towards promotion of individual responsibility for risk management and more active, flexible and adaptive engagement with risks. There are however concerns associated with that shift, especially when we look closer into a still valid relation between risks and wealth, weakening of the traditional support structures, such as family, community or class, and the complexity of issues individuals are supposed to take informed decisions on.

### **3. Stress testing the welfare state to monitor individual vulnerability**

As discussed in the previous section, the changing role of the welfare state towards promoting individual responsibility for risk management goes hand in hand with a decline in income protection offered within the social protection schemes. Accompanied by the weakening of traditional support structures, such as the family or the community, this shift gives way to an increase in individual vulnerability to income shocks. These changes may remain unnoticed in times of economic boom or stability. The full extent of individual vulnerability is revealed and magnified as common economic shocks occur. The latest global economic crisis was an extreme example of a stress test of the welfare states. With a considerable time lag, as social statistics, survey data and research on the consequences of the crisis emerge, the extent of the damage on household and individuals becomes apparent. That is however a backwards looking analysis. Arguably, regular and forward looking analysis could help evaluate and monitor the development of welfare state policies in a more timely and systematic way. In this part of the paper, we discuss ways of measuring individual vulnerability in a timely way and with a focus on the functioning of the tax-benefit system.

According to Tandon and Hasan (2005), the problem of vulnerability to risks was analysed with increased frequency since it was brought into the spotlight by the 2000/1 World Development Report. A distinctive property of vulnerability analysis is its emphasis on the centrality of social protection and other risk-mitigating policies and their role in helping to avoid a constrained and difficult environment within which choices have to be made on important aspects of life (Tandon and Hasan 2005). While there is still no consensus on the definition or measurement of vulnerability (see e.g. Hoddinott and Quisumbing 2003), there is a general agreement on the importance of measuring vulnerability *ex-ante*, which distinguishes it from the typical backward-looking analysis (Calvo and Dercon 2007; Celidoni 2011). Hoddinott and Quisumbing (2003) distinguish between three principal approaches to the assessment of individual vulnerability: vulnerability as expected poverty (VEP), vulnerability as low expected utility (VEU) and vulnerability as uninsured exposure to risk (VER). The VER approach is an *ex-post* assessment of whether observed shocks generate welfare losses. Focusing on the forward-looking measures, VEP measures look into the expected poverty typically based on longitudinal income or consumption data (e.g. Pritchett et al. 2000; Kamanou and Morduch 2002; Calvo and Dercon 2005). The VEU focuses on the relative concept of vulnerability and refers to a relative change in income or welfare. Methodologically the latter approach is closely related to research on volatility of

income or consumption over the life-course (see e.g. Foster et al. 2010a; Ligon and Schechter 2003; Morduch 1994).

While the discussed approaches have a strong potential for the evaluation of individual vulnerability to income shocks, the required longitudinal data is limited, unavailable or comes with a considerable time lag in many countries. Also, the measures currently developed within the vulnerability approach are more suitable for analysing long-term trends in welfare state resilience and individual vulnerability, rather than regular monitoring of the most recent, current or planned risk-mitigating policy measures.

To avoid the above mentioned limitation of vulnerability analysis, we use a method of stress-testing the welfare state proposed recently by Atkinson (2009). The method is designed to help assess the likely performance of the welfare state in providing an effective safety net. The approach is borrowed from the financial sector and utilises tax benefit micro-simulation techniques to model hypothetical shocks to income. The shocks can be simulated on the household survey data representative of the country's population or, if available, administrative micro data. It enables the examination of the likely impact of income loss on living standards, taking into account interactions between individual and household characteristics, and the design of the tax-benefit policy instruments.

The approach was so far used to analyse the welfare compensation for unemployment, modelling the impact of the Great Recession (Figari et al. 2011; Fernandez Salgado et al. 2013). It however should not be restricted to modelling the actual shocks and their effects. To monitor the extent of protection provided by the tax-benefit system, a hypothetical income shock can be simulated for wide population groups, focusing on the most recent or even planned tax-benefit rules. Also, the approach is not restricted to modelling income loss in case of unemployment only. Income loss related to childbirth, family dissolution, involuntary reduction of working hours, disability, or retirement may potentially be analysed, assuming that information needed for modelling related tax-benefit instruments is available in the data.

Finally, the monitoring of the performance of welfare state policies in mitigating socio-economic risks requires defining the outcomes of interest. As it was mentioned before, individual vulnerability can be conceptualised in either relative or absolute terms: as the income volatility or expected exposure to poverty. Atkinson (2009) notes that both are legitimate concerns, however the latter requires closer attention. As already discussed in the previous section, the role of the contemporary welfare state is not to eradicate risks, i.e. reduce income volatility. Instead the shift is towards the promotion of individual responsibility for risk management and more active, flexible and adaptive engagement with risks. Therefore the level of vulnerability one would want to monitor is that, which could potentially have adverse effects on productive risk-taking or adverse long-term effects on individual outcomes. Indeed, empirical research shows that within highly risky environments individuals tend to employ sub-optimal strategies, such as expensive borrowing, less investment into education or high fertility among the poor as means of mitigating income generation risk (Tandon and Hasan 2005). While risk is widely believed to increase entrepreneurship, lack of protection against substantial income loss can have an opposite effect – pushing individuals to partake in more conservative economic activities that are also inherently associated with lower levels of return (Morduch 1994). A negative impact of economically risky environments and insufficient levels of social protection can also be observed on migration, institutional trust and inequality (Stankuniene 2012, Aidukaite 2013, Dolls 2012).

In the next section we implement the idea of using stress-testing to analyse individual vulnerability to severe income shocks caused by widely spread risks. The approach complements other types of vulnerability analysis, focusing on concrete socio-economic risks and on the functioning of the tax-benefit system in relation to them.

#### **4. Stress-testing the Lithuanian welfare state: application and results**

In this section we apply the stress-testing approach to analyse the role of the tax-benefit system in mitigating widespread socio-economic risks in Lithuania. The method is applied using the microsimulation model EUROMOD. We expand previous applications of the stress-testing methodology by analysing not only the risk of income loss due to unemployment, but also in the event of child birth. The aim is to evaluate the risk-mitigating effect provided by the tax-benefit system across the whole population of individuals covered by the public insurance schemes. As discussed in the previous sections, it is the income level people are left with rather than simply income volatility that has adverse effects on productive risk-taking, entrepreneurship or adverse long-term effects on individual outcomes. The analysis thus focuses on the ability of the tax-benefit system to mitigate severe income shocks that push individuals and households into poverty.

##### ***Stress-testing using EUROMOD***

EUROMOD is a static tax-benefit microsimulation model developed for the European Union (Sutherland and Figari 2013). EUROMOD models monetary social transfers, direct taxes and selected social insurance contributions according to the rules in place on the 30<sup>th</sup> 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).

Using microsimulation presents both advantages and limitations for analysing individual vulnerability. To name the advantages, the functioning of the tax-benefit system is evaluated taking into account all its simulated elements rather than individual tax-benefit components targeted at addressing particular risks. In our case these are not only the social insurance unemployment or maternity benefits, but also other instruments, such as tax concessions, social assistance or universal benefits. The income sources of other household members are also taken into account, allowing for an evaluation of income protection provided within households.

Secondly, the simulation of tax-benefit rules is not restricted to the year of data collection. This illustration is based on EUROMOD version G1.0 running on EU-SILC based data collected in 2008 and 2010 and referring to 2007 and 2009 incomes respectively. The simulations are carried out for a period of four years, covering the tax-benefit rules of 2007-2012. Thus the latest available data in EUROMOD is updated and used for vulnerability analysis up to three years forward. For countries where the policy rules are announced in advance, the planned tax-benefit policies can potentially be modelled even beyond the current year.

It should however be noted, that within the static microsimulation framework the demographic structure of the population is assumed to be fixed as recorded in the underlying



micro data. This assumption should not be problematic in most cases, as major demographic shifts are unlikely to occur within a short time frame. Larger discrepancies may arise when considering the longer term or in times of rapid demographic change, e.g. fertility booms or high migration flows. Methodological changes in the survey may also be an issue. For example, the population census that took place in Lithuania in 2011 revealed important changes to the population structure. This was reflected when constructing the weights for the later waves of the EU-SILC data, but is not taken into account in this analysis. We however adjust for the changes in the labour market by modelling the relative net changes in employment levels as indicated in the latest aggregate statistics based on the Labour Force Survey (see Navicke et al. 2013).

EUROMOD is used in this exercise to model shocks arising from a temporary loss of employment and/or self-employment income in cases of unemployment or childbirth. Income shocks are modelled among all the potentially vulnerable individuals who are insured against the analysed risks by means of social insurance<sup>2</sup>. Thus the functioning of both the contributory and non-contributory social transfers can be analysed. Those vulnerable to the risk of unemployment are insured individuals who are not currently unemployed, on maternity/paternity leave or in education and of the working age up to 57 years for men and 55 years for women (in accordance with eligibility for the early retirement pensions). Those vulnerable to the risk of temporary income loss due to the childbirth are insured women who are not in education and not currently on the maternity leave in the working age range up to 40 years (only about 2.5 percent of babies were born to women above age 40 in Lithuania during the period analysed). In both cases full benefit take-up and compliance with tax rules is assumed.

Vulnerability is conceptualized as expected poverty in the event of an income shock. An advantage of conceptualising vulnerability as expected poverty is that regular techniques of estimating and decomposing poverty risk indicators can be applied. In poverty analysis, the FGT family of poverty indexes includes the headcount ratio if  $\alpha = 0$ , the poverty gap ratio if  $\alpha = 1$ , and the poverty severity if  $\alpha = 2$  (Foster *et al.* 1984):

(1)

$$P_\alpha = \frac{1}{N} \sum_{h=1}^Q \left[ \frac{(z - y_h)}{z} \right]^\alpha$$

In expression (1)  $Q$  represents the number of households whose income  $y_h$  is below the chosen poverty line  $z$  and  $N$  is the size of the population. The poverty gap may be estimated either taking the whole population  $N$  into account or among the poor. In the latter case the overall population  $N$  in (1) is replaced with a population of the poor  $Q$ .

Similar to other vulnerability analysis (Foster et al. 2010b, Celidoni 2011), we replace the actual household incomes with the possible income values for the household,  $y_s^h = (y_1^h, y_2^h, \dots, y_n^h)$ , where  $s$  is the number of *possible states* that the household  $h$  could face.

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<sup>2</sup> Individuals who are not protected by means of social insurance are not included into the exercise, as presumably high levels of vulnerability among them would reflect the functioning of only one – non-contributory – part of the Lithuanian social protection system. The self-employed are among such potentially more vulnerable groups, as currently fall outside the social insurance for unemployment.

We make an assumption that an income shock is experienced by one household member at a time. However, in cases when there is more than one household member who might be subject to income shock, all the possible combinations, i.e. possible states, within the household are analysed by recalculating household income  $y_s^h$  each time. Thus the vulnerability measures  $V$  may be expressed as:

(2)

$$V_\alpha = \frac{1}{N} \sum_{h=1}^{Q_s} \frac{1}{S_h} \left[ \frac{(z - y_s^h)}{z} \right]^\alpha$$

In expression (2)  $S_h$  is the number of possible states the household can face when modelling income shock;  $y_s^h$  is the recalculated income of the household if below the poverty line  $z$  in state  $s$ ; and  $Q_s$  is the number of households whose income is below the chosen poverty line  $z$  in at least one of the states. We keep the poverty line  $z$  at 60% of the household equivalised disposable income and fixing it before simulating shocks to income. In case of childbirth, the equivalised household size is re-calculated taking the new-born child into account. The expected poverty gap ( $\alpha = 1$ ) and poverty severity ( $\alpha = 2$ ) are estimated in the population of the expectedly poor, replacing  $N$  with  $Q_s$  in (2). The results are then decomposed by income quintiles fixed before the income shock and by source of income.

Vulnerability is estimated within one year after the shock occurs. As maternity (paternity) benefits cover a period of up to two years in Lithuania, we also include the second year after childbirth into the analysis. For the second year after childbirth we simulate partial recovery of lost income to capture the recent change in the benefit rules allowing receipt of labour market income together with maternity (paternity) leave benefit. In case of unemployment and for the first year after childbirth the full loss of labour market income is assumed.

### *Lithuanian context*

When analysing the changes in vulnerability to poverty, it is important to take account of the national socio-economic conditions as well as of recent changes to taxes and benefits. The Lithuanian example is interesting in its own right. Dolls (2012) finds that there is little stabilization of disposable income provided by the state in Eastern and Southern European countries, especially for the low-income groups. Lithuania is also among the countries with above-average poverty risk rates both compared to the rest of the EU member states and among the 12 new member states. The welfare state in Lithuania possesses many traits of the conservative welfare state regimes, but is arguably shifting towards a more liberal model (Aidukaitė et al. 2012). The issues of individual vulnerability to income shocks and poverty risk in the Lithuanian context are thus highly relevant.

The onset of the analysed period in 2007-2008 in Lithuania can be characterised as a period of rapid economic growth with relatively generous levels of social transfers compared to the previous years. Hit by the global economic crisis in 2009, the economy contracted and the unemployment rates in Lithuania more than doubled compared to the previous year, and stayed at above 10% ever since. Similar to the numerous countries in the EU, the tax-benefit system in Lithuania experienced a period of austerity with most of the measures implemented

between 2009 and 2011 (Avram et al. 2013). However, the economy started to recover since 2012.

Within the same period there were important changes to major social cash benefits: growth of pensions before 2009, temporary cuts to social benefits and pensions in 2010-2011 and a partial restoration of the latter in 2012. Unemployment, child and family benefits were subject to cuts within the period. With the adoption of the Temporary Law on the Recalculation and Payment of Social Benefits, starting from the 1<sup>st</sup> January 2010 the monthly unemployment insurance benefit was capped at around EUR190 per month for the entire period of benefit payment. According to the same law ceilings were reduced by 20 percent for all the three types of contributory benefits associated with childbirth: the one-off maternity and paternity payments, as well as the longer term maternity (paternity) benefit provided for childcare up to two years. Since 2008, the maternity (paternity) benefit was made more generous with replacement rates of 100 percent during the first year and 85 percent for the second year of receipt. The replacement rates of maternity benefits were gradually reduced thereafter and the duration of receipt became variable since 2012, i.e. one or two years with lower replacement rates if a longer duration period was chosen. Child benefits became means tested since the 1<sup>st</sup> March 2009; the eligibility criteria for this benefit were further tightened in 2010 and 2012. The impact of these changes on individual vulnerability to poverty will be analysed below, with more details on the implemented reforms provided when discussing the results.

The risk-of-poverty rate within the analysed period in the total Lithuanian population was relatively stable at around 19-20 percent, with lower levels among the prime age population aged 25-54, except for 2010 (see Table 1). The poverty risk estimates in the population of people subject to the modelled income shocks is lower compared to both the total and the prime age population, with an increasing trend over 2007-2012.

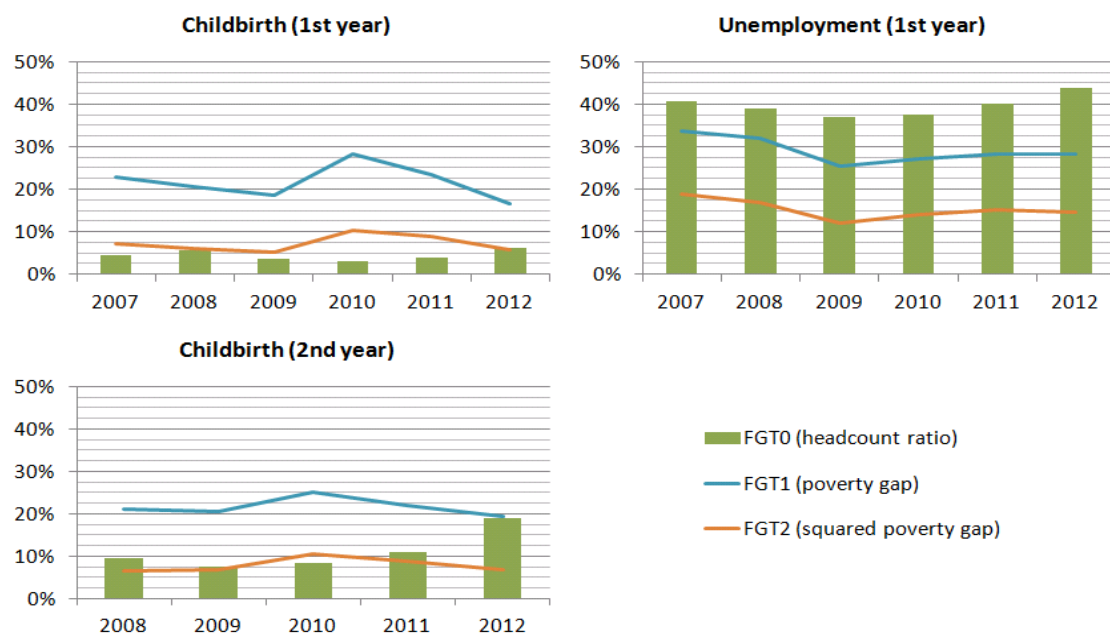
**Table 1** Poverty risk rate at 60 percent of median equivalised income after social transfers, %

	2007	2008	2009	2010	2011	2012
Total population	19.1	20.0	20.6	20.2	19.2	18.6
<b><i>At-risk-of-poverty rate in prime-age population (25-54)</i></b>						
Total	14.8	15.3	17.5	21.3	19.1	16.8
males	14.6	14.3	18.0	21.9	19.1	16.5
females	15.0	16.2	17.1	20.6	19.2	17.0
<b><i>At-risk-of-poverty rate in the population vulnerable to modelled risks</i></b>						
Total	12.8	14.0	14.7	16.2	16.4	17.2
males	12.4	13.7	13.3	14.7	15.2	16.0
females	13.3	14.2	15.9	17.6	17.5	18.4

Source: Eurostat, SILC: ilc\_li02 (extracted on 20.12.13); own calculation for vulnerable population

## **Results**

Figure 1 shows vulnerability to poverty estimates due to an income shock caused by a temporary loss of employment and self employment income due to unemployment or childbirth. As it was described above, the vulnerability measures reflect the expected poverty risk, gap and severity had the income shock occurred to any one of the household members.



**Fig 1** Vulnerability to poverty in the event of childbirth or unemployment measured using FGT class poverty measures

*Note: poverty line at 60% of the median is fixed at the level before simulation of the income loss*

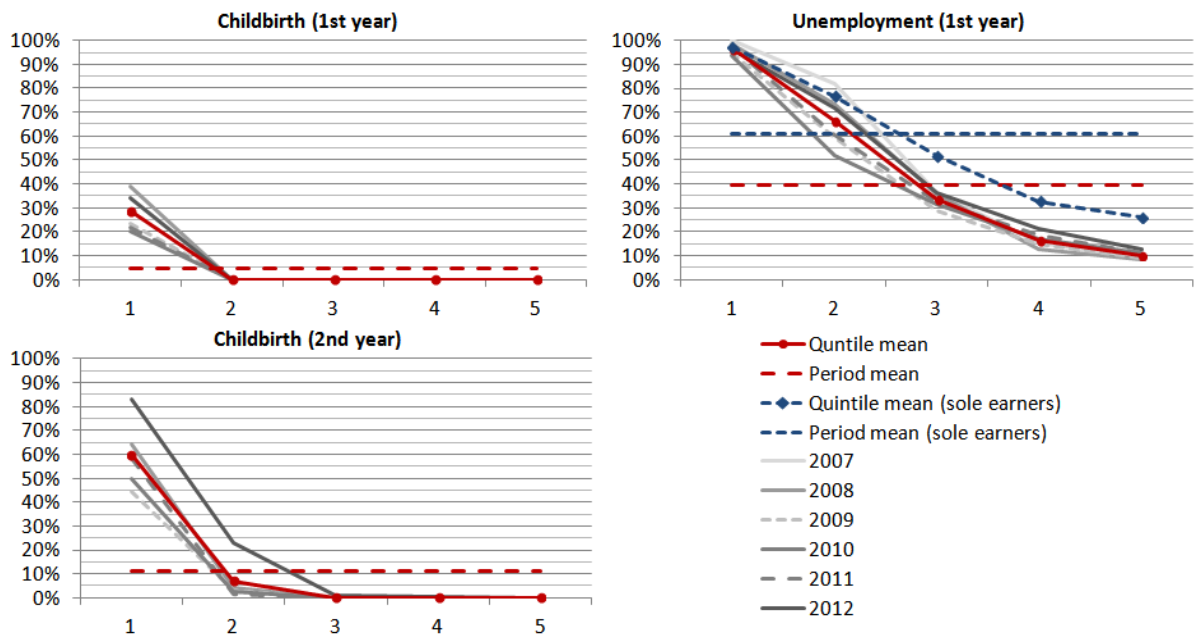
*Source: own calculations*

Figure 1 reveals differences in vulnerability to poverty in the event of unemployment versus childbirth among the insured population and their household members. Vulnerability to poverty is significantly higher for those faced with unemployment. The dynamics of vulnerability to poverty trace closely the changes in the social transfer system. In the case of unemployment, the changes in vulnerability coincide with the changes to the basic part of the unemployment insurance benefit (the state supported income level gradually increased until 2009 and was fixed at around 100 EUR thereafter) as well as the decrease of the benefit's ceiling since 2010. Another factor of the gradual increase in vulnerability to poverty in case of unemployment in 2011-2012 is the effect of the fiscal drag on unemployment benefits caused by fixing both the basic amount and the ceilings in nominal terms in 2010. The severity of poverty, measured as poverty gap and squared poverty gap, follows a similar trend and can mostly be attributed to the same factors.

Lower vulnerability to poverty is estimated among those insured who temporarily lose income due to childbirth. The levels of the expected poverty risk in this group is also considerably lower compared to the average poverty risk observed in the total or prime age populations within the analysed period (see Table 1). Low vulnerability can be attributed to the receipt of contributory, but also non-contributory child and family benefits. The income of the partner may also play a role in mitigating the effect of the temporary income loss and will be discussed later. Vulnerability increases somewhat in 2011-2012 when the replacement rate of the maternity (paternity) leave benefit was reduced. Looking at the severity of vulnerability to poverty within this group, we observe an increase in 2010, which levels out again in 2012 at the higher level.

Looking at the second year after the childbirth, vulnerability to poverty was around or below 10 percent in 2007-2011, while in 2012 we observe a significant increase of vulnerability within this group reaching a level similar to the average within the prime-age population. Again, the dynamics are expected looking at the changes to maternity (paternity) leave benefit rules for the second year of receipt: its replacement rate was reduced to 75 percent during the second part of 2010 and to a maximum of 40 percent in 2012.

Above we have outlined some of the main changes in the average vulnerability levels in case of unemployment or childbirth. Further decomposition by income groups and by contribution of the income components into the reduction of vulnerability provide a more detailed view and additional insights into the factors behind the vulnerability dynamics. Lastly, to support our claims, we analyse the dynamics in the gross replacement rates of the social insurance unemployment and maternity (paternity) leave benefits.



**Fig 2** Vulnerability to poverty in the event of childbirth or unemployment by income quintiles

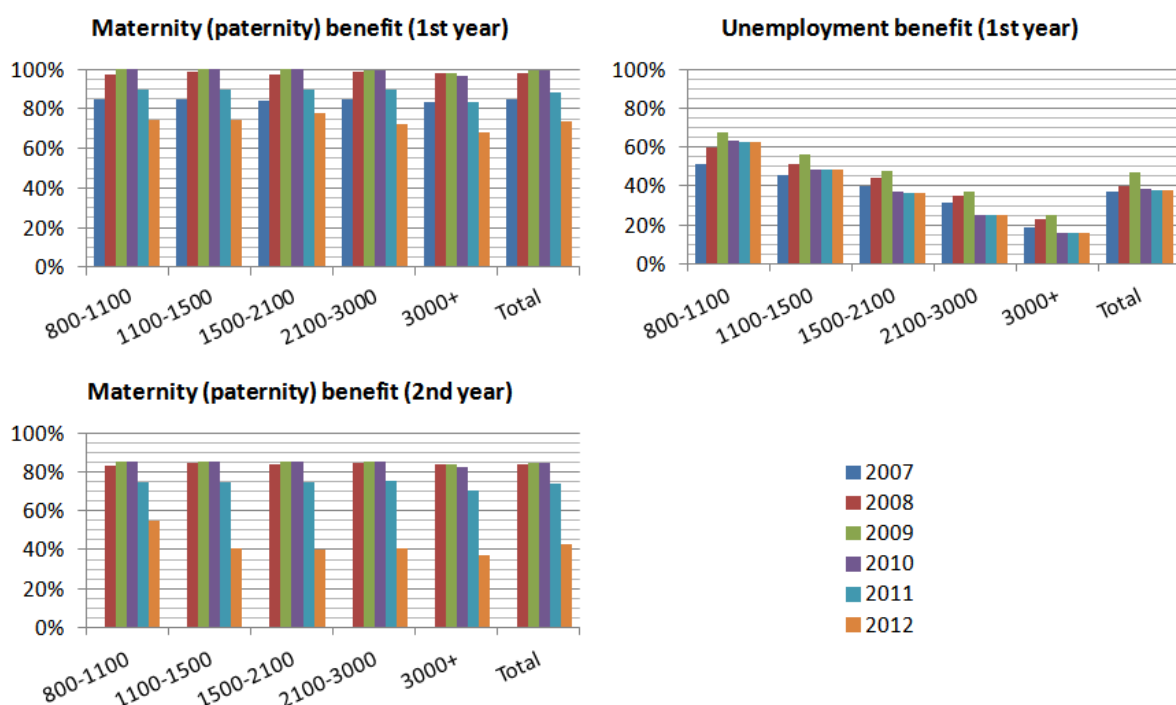
Notes: equivalent income, quintiles fixed before the income shock, threshold of 60% median equivalised HDI

Source: own calculations

When analysing Figure 2 it should be noted that as the average poverty risk level in the population was around 20 percent in every year included in the analysis (see Table 1), the majority of those in the 1<sup>st</sup> quintile were below the poverty line before simulating income loss. We however see that in case of childbirth, the generous social insurance benefits together with the non-contributory child and family transfers help lift a fraction of those at poverty risk above the poverty line. This is true especially for the first year after childbirth. It can be seen that those insured who were above the poverty line before the childbirth are fully protected during the first year after childbirth. The worrying change however is the increase in the vulnerability to poverty in the second quintile in 2012 during the second year after childbirth. This reflects the reduction in the maternity (paternity) leave benefit replacement rates since 2012.

A different picture emerges looking at the distribution of vulnerability to poverty in the event of unemployment. The population across the entire distribution is vulnerable to poverty when faced with unemployment of one of the household members, especially in households with a sole earner. Vulnerability to poverty is above the average in the population for the sole earner families irrespective of quintile. It is above the population average in the bottom three quintiles when there is more than one earner in the household.

In order to better understand the reasons for these different vulnerability profiles, we look into the benefit replacement rates, estimated using simulated data. The gross benefit replacement rate reflects the extent of income compensation in relation to the insured lost income. The most common way of estimating replacement rates is using hypothetical data, when estimates are produced for certain household types, duration of benefit receipt (typically one year period) and for several income levels. For example, the World Health Organization typically estimates the gross unemployment benefit replacement rates for two earnings levels, three family types and three durations of unemployment. While this type of estimates is useful especially for comparative analysis, it does not reflect the socio-economic structure of the population. By using microsimulation we estimate benefit replacement rates taking into account both the demography and socio-economic structure of the population. Gross benefit replacement rates in all cases are estimated assuming an income loss duration of one year.



**Fig 3** Gross annual benefit replacement rate by income group and total

*Notes: amounts of replaced income in national currency per month; income groups approximately correspond to the quintile distribution of employment income within the population of insured.*

*Source: own calculations*

Figure 3 illustrates replacement rate levels and dynamics of the social insurance unemployment and maternity (paternity) leave benefits within the period of 2007-2012, and

the profiles across the income groups. We see that replacement rates for maternity (paternity) leave benefits are proportional while in the case of unemployment insurance benefit they decrease rapidly with income. The figure also shows increasing generosity in both types of benefits until 2009, and a drop in replacement rates for unemployment benefits starting from 2010. We observe a drop in maternity (paternity) leave benefits since 2011 as the changes to tax-benefit rules are implemented as of 30th June in EUROMOD.

The differences in the replacement rates of maternity (paternity) leave versus unemployment insurance benefit are significant, especially for those receiving above average income. The low replacement rates in case of unemployment also reflect the shorter duration of benefit receipt compared to the maternity (paternity) leave benefit. The rapid reduction in the replacement rates of the unemployment benefits is thus the driving factor of the substantial vulnerability to poverty across the income distribution, especially within the sole earners' households (see Figure 2).

Aiming to single out the effect of the benefits on the reduction in vulnerability, we decompose our measures by income components, aiming to reveal their absolute and relative contribution to the reduction of expected poverty (Shorrocks, 2013). We concentrate on four components of the disposable income: original income, taxes and social insurance contributions, benefits targeted at mitigating the income loss due to unemployment or childbirth and other benefits.

**Table 2** Decomposition of poverty risk (FGT0) by income components using the Shapley value, %

<i>Contribution by source:</i>	Absolute contribution						Relative contribution					
	2007	2008	2009	2010	2011	2012	2007	2008	2009	2010	2011	2012
<b>Unemployment (1st year)</b>												
Original income	-48.9	-48.8	-42.6	-43.2	-43.3	-43.7	82.6	80.0	67.5	69.3	72.4	77.8
Unemployment b.	-6.2	-6.1	-7.5	-6.9	-6.2	-5.5	10.5	10.0	11.9	11.0	10.4	9.9
Other benefits	-8.7	-10.3	-16.2	-15.9	-14.1	-10.4	14.6	16.9	25.7	25.5	23.5	18.6
Tax & SIC	4.6	4.2	3.2	3.6	3.7	3.5	-7.7	-7.0	-5.0	-5.8	-6.3	-6.2
<i>Total reduction</i>	-59.2	-61.0	-63.1	-62.4	-59.9	-56.2	100.0	100.0	100.0	100.0	100.0	100.0
<i>Total FGT0</i>	40.8	39.0	36.9	37.6	40.1	43.8						
<b>Childbirth (1st year)</b>												
Original income	-77.0	-71.2	-62.1	-63.2	-66.4	-70.3	80.6	75.3	64.5	65.2	69.1	74.8
Child / family b.	-25.4	-29.5	-34.7	-32.8	-29.7	-25.8	26.5	31.2	36.0	33.8	31.0	27.5
Other benefits	-3.3	-3.9	-6.6	-8.0	-7.1	-5.8	3.4	4.1	6.9	8.3	7.4	6.2
Tax & SIC	10.1	10.0	7.1	7.1	7.2	8.1	-10.5	-10.6	-7.4	-7.3	-7.5	-8.6
<i>Total reduction</i>	-95.6	-94.5	-96.3	-96.9	-96.0	-93.9	100.0	100.0	100.0	100.0	100.0	100.0
<i>Total FGT0</i>	4.4	5.5	3.7	3.1	4.0	6.1						
<b>Childbirth (2nd year)</b>												
Original income	:	-68.2	-58.2	-58.5	-62.0	-66.5	:	75.4	63.0	63.9	69.6	82.1
Child / family b.	:	-26.1	-31.2	-29.3	-24.5	-10.8	:	28.9	33.8	31.9	27.5	13.4
Other benefits	:	-4.8	-8.9	-10.4	-9.2	-7.7	:	5.3	9.6	11.4	10.3	9.5
Tax & SIC	:	8.6	5.9	6.6	6.5	4.0	:	-9.6	-6.4	-7.2	-7.3	-5.0
<i>Total reduction</i>	:	-90.4	-92.4	-91.7	-89.1	-81.0	:	100.0	100.0	100.0	100.0	100.0
<i>Total FGT0</i>	:	9.6	7.6	8.3	10.9	19.0	:					

*Note: Category child/family benefits include all contributory maternity and paternity benefits, child benefit, birth grant; unemployment benefit includes unemployment social insurance benefit.*

*Source: own calculations using DASP module in Stata*

Table 2 shows the total reduction of vulnerability to poverty and its decomposition by income components. We see that in absolute terms original income plays a dominating role in mitigating income loss, especially in case of childbirth. This is mainly the original income of the partner or other household members of the insured and inter-household transfers. The difference in the importance of family support may be partly explained by the fact that in the case of childbirth the partners in our simulation are males, while the partners can be both male and female in the case of unemployment. The absolute contribution of the benefits aimed specifically at reducing the unemployment and child-birth related risks is consistently lower in the case of unemployment, ranging between 5.5 to 7.5 percent compared to a reduction of around 25.5 to 34.7 percent in the case of childbirth. In all three cases we see a reduction in the role of the benefits specifically targeted at mitigating income loss due to unemployment or childbirth during the period of 2010-2012. A significant drop in the absolute contribution of targeted benefits is observed in 2012 for the second year after childbirth. The relative contributions of these income components to the reduction of vulnerability to poverty display a similar trend.

## 5. Conclusions

In this paper we discuss links between risk, vulnerability and the welfare state using the insights that the risk society theory brings to understanding the development of the welfare state. Looking through the lenses of the risk society thesis, the transformation of the welfare state is driven by the rapidly changing nature and prevalence of socio-economic risks, a shifting role of the welfare state towards redistribution of risks rather than wealth and promotion of individual responsibility for risk management. There are however concerns associated with that shift, especially when taking into account a still strong relation between risks and wealth, a weakening of traditional support mechanisms such as family, community or class, as well as the ability of individuals to make decisions on complex matters outside of their sphere of expertise.

The analysis of the role played by the welfare state in mitigating wide-spread socio-economic risks requires measures capturing the changes in social protection policies in a timely manner. The stress-testing method proposed by Atkinson (2009) has a strong potential for assessing the likely performance of the most recent or planned tax-benefit policies in mitigating income shocks. The application of stress testing to measure vulnerability in cases of income loss due to unemployment and childbirth in Lithuania revealed considerable differences in the average levels and profiles of vulnerability across the Lithuanian income distribution. Within the 2007-2012 period, those facing the risk of unemployment in Lithuania appear to be much less protected compared to those experiencing income loss due to childbirth. We argue that both levels and profiles of vulnerability are closely related to the design of benefits directly and indirectly targeted towards mitigating the analysed risks. Thus, welfare state policies are capable of substantially altering the vulnerability of population groups facing different risks, producing substantially different profiles of vulnerability among them.

Moreover, in the context of the recent economic crisis, the Lithuanian tax-benefit mechanisms failed to maintain income protection at pre-crisis levels. Faced with high pressures and with no counter-cyclical planning in place, cuts on social transfers were implemented. The resulting increase in vulnerability to poverty in cases of both unemployment and childbirth in Lithuania, was however counterbalanced by an important



role traditional support structures still play in the risk management process. Contrary to previous literature which notes a wakening of the traditional support structures, we find that income security provided within the household still plays a major role compared to monetary social transfers in reducing individual vulnerability to poverty in Lithuania.

Further improvements to using stress testing for the analysis of individual vulnerability to poverty could include the introduction of more elaborate probability terms in the calculation of vulnerability measures, taking individual risk probabilities into account. The scope of the analysed risks can potentially be expanded, given enough information is available in the underlying micro data for modelling them and the related policy measures. Finally, there is a lot of scope for the application of the stress testing methodology for comparative vulnerability analysis using EUROMOD model which covers 27 EU member states.

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