Retreat from mandatory pension funds in countries of the Eastern and Central Europe in result of financial and fiscal crisis: Causes, effects and recommendations for fiscal rules

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Contents

List of Tables

List of Figures

Introduction

The aim of the project is to assess in various dimensions the causes and effects of the reduction of mandatory pension funds in selected countries of Central-Eastern Europe and to propose changes to existing fiscal rules so that they could respond to the challenge of population ageing impact on public finances[1].

The need for reforming public pension systems has been apparent both from the current stage of their development and the change in (demographic, economic and social) circumstances in which they operate. Maintaining a high level of (in relation to GDP) public spending on pensions in the light of ageing populations is not possible, hence one needs to seek solutions that would allow states to maintain their solvency to meet pension obligations.

The debate on the directions of the reform of public pension schemes was initiated by a seminal World Bank report of 1994 "Averting the Old Age Crisis" (World Bank, 1994), which pointed to the need for introduction of multipillar systems with significant participation of mandatory funded pension schemes, that would contribute to the diversification of the pension financing in the light of projected demographic change. The report triggered various reactions, including some critical opinions (Beattie, McGillivray, 1995; Singh, 1996). After a period of more emotional than scientific presentations on the benefits of the capitalization of pension contributions in the transition to multipillar systems, further discourse based on economics appeared in the literature (Orszag, Stiglitz 1999, Barr 1999).

The early experiences of (mainly) developing countries, mainly from Latin America and Europe and Central Asia that had replaced or supplemented their public systems as well as

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further research have significantly increased knowledge and insight regarding pension systems. These developments contributed to further conceptual underpinnings for the World Bank's thinking on pension systems and reforms and further reflection on the key design and implementation issues presented in (Holzmann, Hinz 2005). The great recession and worsening public finance situation in many of the countries that reformed their pensions in 1990s and at the beginning of the 21st century yet again lead to further considerations on political and economic sustainability of the pension reforms.

From the perspective of the objectives of pension systems specified in the Open Method of Co-ordination (OMC) of pension systems in the European Union, the pension system should have the following characteristics: to provide benefits, which amounted to prevent poverty (adequate), to be possible to be financed by taxpayers (affordable), to be capable of functioning in the long term (sustainable) and to be resistant to shocks generated by economic, demographic, and political factors (robust). Most of these characteristics have been concluded in the Green Paper (EC, 2010) and in the White Paper on Pensions (EC, 2012).

In the late 1990s the wave of pension reforms transformed the pension landscape in Central and Eastern Europe. The transition from centrally planned to market economies triggered societal changes and the significant restructuring of labour markets. Shifts in the structure of labour demand increased pressures for early retirement and raised concerns about pension system financing. Falling fertility levels and rising life expectancy accentuated population ageing. As a result, pension systems faced the challenge of short- and long-term sustainability. Many CEE countries introduced structural reforms, shifting towards multi-pillar systems with fully funded components.

These reforms were introduced during the 1998 – 2008 by eight countries (Hungary, Poland, Latvia, Estonia, Bulgaria, Lithuania, Slovakia and Romania) which become new EU member states from this region (in 2004 and 2007 enlargement rounds).

The introduction of funded components was perceived in many of the countries as a reform process that served several purposes. First, with population ageing it seemed that systems that relied on labour and financial markets provided better risk diversification (see Chłoń et al., 1999). Second, with relatively low level of savings and underdeveloped financial markets, the introduction of mandatory funding provided a stable instrument that would support the development of financial markets. The reformers also anticipated that pension reforms would

provide further incentives for structural changes intended to reduce excessive public spending.

The design of the CEE pension systems and the way they were changed was an outcome of a country-specific mix of economic, social and political criteria. National policymakers made the final decisions, but international institutions frequently influenced the design (Orenstein, 2008; Chłoń-Domińczak and Mora, 2003) by both providing an input to the pension debate through publications and reports, (i.e. World Bank, 1994) and, more directly, through financial aid and loans (Orenstein, 2008; Guardiancich, 2013).

Almost two decades after the pension reforms the EU accession initiated a new wave of socio-economic changes, characterised by an increasing role being played by European institutions. Experiences from the implementation of the reforms, including the performance of pension funds, reopened national discussions on pension systems and their design. The 2008 financial and economic crisis triggered the second wave of pension system changes. Many countries decided to diverge from their initial reform scenario, downscaling or fully reversing the development of their funded pension schemes.

Furthermore, some of the reform results did not meet initial expectations. As Barr and Diamond (2010, p.72) point out, the expected reform outcomes are contingent on beneficial effects on growth and on country-specific factors, including the institutional capacity: skills in allocating pension funds, skills in administering pension accounts and the capacity to regulate financial markets. Whether such reforms can be sustained depends also on a government's capacity to maintain the sound public finances necessary to meet long-term transition requirements.

In the years 2008–2011 all of eight CEE countries made changes in the functioning of mandatory pension funds by reducing the amount of contributions transferred to the funds or changing fund participation rules (Chłoń-Domińczak, 2010; Chłoń-Domińczak, Stańko, 2011). These actions were a part of the fiscal consolidation undertaken by the countries of region due to the need to remove the excessive deficit and reduce government debt growth (Bielawska, 2011a).

Action taken by the governments of CEE countries have significantly reduced – temporarily or permanently – the growth of funded pension schemes by reducing the mandatory contributions paid into pension funds. These changes have so far been reported mainly from

the standpoint of political economy of reform (Guardiancich 2010; Orenstein, 2011; Ghetu 2011) and the state of public finances, mainly through the disclosed amount of the public debt (Velculescu 2011, Jarrett 2011).

This report is one of the first attempts to determine the impact of these decisions on the public sector situation in each country, related to non-pension debt in the context of changed fiscal rules - most importantly, the revised in 2011 Stability and Growth Pact and signed in March 2012 fiscal compact. After the EU accession, countries with multi-pillar systems were allowed to treat a part of the pension funds' assets as public finance sector. They could deduct this part from the level of general government debt taken into account the Pact. These preferences were gradually withdrawn by 2009. As a result, the level of general government debt was higher due to the fact that in multi-pillar schemes part of the implicit pension liabilities was turned into the explicit public debt. This last issue has already been raised in the literature (Bukowski, Chłoń-Domińczak, Góra, 2009; Pater 2011). Also some proposals offering a measure of budget balance that takes into account the long-term nature of pension obligations have been presented (Soto, Clements, Eich 2011; Velculescu 2011), but have not been so far considered in the process of strengthening the fiscal governance within the EU. Our research compliments other research in the area, such as (Guardiancich, 2013; Borowski et al., 2013; Milos & Milos, 2013; Schwarz & Arias, 2014) and offers some modifications to revised in 2011 Stability and Growth Pact.

In the report we aim to review the changes in the multi-pillar pension systems CEE region: Hungary, Poland, Lithuania, Latvia, Estonia, Bulgaria, Slovakia and Romania. All of these countries in the course of late 1990s and early 2000s introduced multi-pillar pension systems that replaced traditional PAYG ones. All countries are also EU member states and are subject to the European policy with regards to the coordination of economic government including public finance situation. However, as analysis reveals they have different social and economic contexts, relevant from the pension systems' perspective.

The project makes a comprehensive assessment of consequences of limiting the role of funded pillar in societies' pension security of selected countries of Central and Eastern Europe from macro perspective (public finance) and micro perspective (pension levels of individuals), also combining the two approaches. This helped to determine the costs and benefits of current developments in the short and long term for various stakeholders.

In the project we applied various research methods such as: desk research of the existing literature and statistical data, qualitative methods, including country expert's information, discussion with representatives of the European Commission and the World Bank as well as quantitative methods (multivariate statistical analysis, micro simulation models, macroeconomic regression models, pension fund performance and risk evaluation methods).

Our main hypothesis was that the current fiscal rules in the EU do not take into account the long-term challenges caused by population aging.

Hypothesis 1: Rise of the public debt and fiscal deficit in the CEE countries was not primarily caused by the costs of financing transition to funded pension systems.

Hypothesis 2: The way the CEE countries' governments justified cuts in pension funds contributions can threaten the social trust to mandatory pension systems.

Hypothesis 3: Short-term effects of reduction of contributions to pension funds were positive for public finance and did not have a negative impact on pension systems, but may lead to increased volatility of financial markets.

Hypothesis 4: Future pension benefits will be lower due to reduction of contributions transferred to mandatory pension funds.

Hypothesis 5: Future stability of pension systems and public finance will worsen due to reduction of contributions to mandatory pension funds.

Hypothesis 6: A compromise between solving fiscal tensions and maintaining a significant role of mandatory funded pillars would have to involve considerable changes in the fiscal rules in the EU, the Eurostat classification methods of pension debt and countries' internal public finance laws.

The report comprises of seven chapters. The first chapter presents the design and changes in the multi-pillar pension systems in the CEE countries in the light of their public finance situation and broader socio-economic context[2]. Chapter 2 analyses how the pension fund markets functioned due to the pension changes introduced recently by the governments. Chapter 3 makes an assessment of the short-term effects of reduction of pension funds sectors on the public finance situation and the public pension system in each of the analysed countries. Chapter 4 analyses the impact of changes in pension system on the level of pension wealth of individuals. Chapter 5 provides an assessment of the long-term impact of changes in funded systems for the stability of public finances and pension systems. Chapter 6 presents the recommendations on how to strike the balance between fiscal tensions and the need to

[2] Broader demographic, labour market and pension system characteristics are presented in the Annex.

maintain the role of pension funds in developing sustainable and adequate pensions in the future. The last chapter summarises the findings of the project with regards to the formulated hypotheses.

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Chapter 1: Impact of transition costs related to introduction of pension funds in selected CEE countries on their fiscal situation in the years 2008 – 2011

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Starting from a descriptive analysis of the functioning of mandatory funded systems in each country and a short description of the developments in 2008-2011, we focus on the contribution of transition financing to the change in the general government deficit and debt. In the analysis we look at the factors that are seen as main reasons for pension reforms, such as demographic situation and pension systems' performance, including revenues and expenditures of the pension system and number of pensioners. We also look at the labour market situation which influences contribution revenue. Finally, we look into the public finance situation: general government expenditure and deficit level.

Research methods used in this task include:

- desk research (literature, collection of available data on public finance and pension systems situation),
- qualitative methods: interviews with country experts as well as discussions based on presentation of the preliminary results (World Bank seminar, FISS conference),
- descriptive analysis of data including public finance data, pension system financing and socio-economic background of the pension systems.

1.1. Pension systems' features and public finance in the 8 countries

Despite the common shift towards multi-pillar pension system design there are substantial differences between the pension systems of the analysed countries both in terms of their design and transition rules (Table 1.1). In parallel to the introduction of mandatory systems, the countries also reformed their publicly managed components, either downscaling the defined benefit (DB) schemes, introducing point systems or introducing a paradigmatic shift to non-financial defined contribution (NDC) schemes. All the countries also decided to increase their retirement age and five of them equalised the retirement ages for men and women.

Changes to the PAYG parts, including increases to the retirement age, were important measures towards reaching the long-term financial sustainability of pension systems and generating savings that could cover transition costs. Such costs occur when the prefunding is obtained by transferring part of the existing mandatory pension contribution to the PAYG scheme to the funded pillar. Only Estonia decided to prefund old-age pensions through a partial increase of the mandatory contribution paid by employees. Other countries in the region did not use this method due to the relatively high levels tax wedges. As a rule, pension reforms were designed to avoid distorting the labour market. To achieve this aim, most of the countries chose to reduce the PAYG pillar revenues to build the funded part of the mandatory pension system. These decisions had affected the financial situation of PAYG pillar what is described in more detail in the Chapter 3.

Table 1. 1 Main features of multi-pillar pension schemes in 8 CEE countries

	Public pension scheme (PAYG)	Retirement age	Mandatory Funded Scheme		
			Initial contributions	Enactment date	Who participates
Bulgaria	DB	60/55 to 63/60	2% to 5%	2002	Mandatory for all workers <42, no cohorts with choice option
Estonia	DB	60/55 to 63/63	6% (4% +2%)	2002	Mandatory for new entrants, voluntary for 19-60 in year of reform
Latvia	NDC	60/55 to 62/62	2% to 8%	2001	Mandatory for new and workers < 30, voluntary for 30-50
Lithuania	DB	60/55 to 62.5/60	2.5% to 5.5%	2004	Voluntary for current and new workers
Hungary	DB	60/55 to 62/62	6% to 8%	1998	Mandatory for new entrants, voluntary for all employed
Poland	NDC	65/60 (60/55) to 67/67	7.3%	1999	Mandatory for new and workers < 30, voluntary for 30-50
Romania	DB	62/57 to 65/60	2% to 3%	2008	Mandatory for new and workers < 35, voluntary for 36-45
Slovakia	Points	60/53-57 to 62/62	9%	2005	Mandatory for born after 1983, voluntary for all being in the social insurance before 2005

Source: Schwarz and Arias (2014) with authors' update.

The CEE states applied different transition strategies to the new system. In five countries, the part of old-age contribution transferred to the funded scheme was to be increased gradually, in three (Estonia, Poland and Slovakia) the contribution level was determined at the very beginning. There were also different approaches to the participants in the system. While

mandating participation for new entrants to the labour market was common (with the exception of Lithuania), some countries decided to cover also part of the current workforce (up to the age 42, depending on the country). All countries apart from Bulgaria made the system voluntary for some parts of the workforce, in several cases introducing an upper age limit (50 years in Latvia and Poland, 45 years in Romania).

The different strategies applied to the contribution level of the funded pillar, the switching rules (Table 1.1), and choices made by employees, influenced the level of transition costs.

Actual transition costs before the financial crisis ranged from 1.6% of GDP in Poland and Hungary (due to high contribution rates, high participation, the longest period from the introduction of the reform), through 1.3-1.1 % of GDP in Estonia, Latvia, Lithuania and Slovakia, to 0.8% of GDP in Bulgaria (due to relatively low contribution rates and the restriction of participation to specified cohorts) and 0.4% in Romania (due to the lowest contribution rates and the shortest period since reform implementation).

The fiscal effects of transition costs on overall general government deficit/surplus are shown in Table 1.2. Fiscal situation prior to financial and economic crisis differed between analysed countries. Countries with the highest transition costs (Hungary and Poland) entered pension reform having already high public deficits. Both countries did not manage to bring the public revenue and expenditures close to balance even in the periods of high economic growth. Transition costs were not predominant factor of fiscal imbalance. Fiscal stance of Slovak Republic was better, although before and after pension reform implementation the country run deficits balancing on the 3% GDP edge for EU member states.

Baltic States and Bulgaria, had more fiscal space to cover transition costs. Up to 2008 Bulgaria and Estonia noted surplus in general government sector, which covered at least partially contributions diverted to the mandatory pension funds. Latvia and Lithuania were in fiscal stance close to balance, so the transition costs did not significantly worsen this situation.

In 2009 fiscal position of CEE countries changed significantly. This was mostly due to the deep economic recession (except Poland). Public deficits exploded to 8-9% of GDP (with notable exception of Estonia) and most of the countries decided to permanently reverse or reduce the funded pillar of their pension systems as one of the instruments of fiscal consolidation. The scale of reduction significantly differed between countries: from

sequestration of assets of pension funds and/or total suspension of contribution to pension funds by permanent or temporary reduction of contribution to pension funds also accompanied by opt-out option. As a result fiscal effects differed between countries (Table 1.2), with an average of 50% cuts of transition costs within a period of 2008-2012.

The period of reform implementation allowed for assessment, whether the initial predictions occurred. The assessment of independent experts revealed that:

> *In many countries with multi-pillar systems (...) investments in privately funded pillars are not well diversified, although rates of return are high as a result of investments in government bonds. While these bonds offer high returns, they often compensate for macroeconomic and investment risk. In addition, privately funded systems remained open to political influence, just like PAYG plans, particularly in the times of economic crisis. (World Bank, 2006a, p. xxiv).*

While this assessment was made before the hit of the financial and economic crisis, developments after 2008 also led to the changes in pension systems. These changes were triggered not only by the developments within pension systems, but mainly by macroeconomic and fiscal circumstances, which are presented and discussed in further parts of the paper. These circumstances also diverted from initial projections, which assumed, among others, stable growth of labour market, both in terms of employment levels as well as wage growth. Under such assumptions, the transition costs were affordable from the perspective of the public finance situation in the reforming countries. The ex-post analysis reveals that in reality these expectations were not met.

In consequence of economic, public finance and pension system developments after 2008, which can be attributed to both external and internal factors, the wave of pension systems changes was initiated again, this time leading to reduction funded components or even reversals of multi-pillar schemes. Such changes were implemented in seven out of eight discussed countries, which is shown in Table 1.5.

Table 1.5. Reversals of funded parts of multi-pillar systems in 8 CEE countries

Country	Short description of the change to contributions and assets.
Bulgaria	**No change.**
Estonia	**Temporary reduction with off-set**. 6% contribution rate cut to 0% between June 2009 and January 2011 and shifted to PAYG. Gradual increase from 2011. Rate set at 3% in January 2011 and 6% in January 2012. In 2014-2017 at 8% to offset missed contributions
Latvia	**Partial reduction.** 8% contribution rate reduced to 2% in May 2009. Rates increased to 4% from 2013
Lithuania	**Partial reduction.** 5.5% contribution rate reduced to 2% in July 2009. Rates further lowered to 1.5% in January 2012 and 2.5% in 2013. Change to 3% (2%+ 1%) January 2014, voluntary participation. Additional contribution at 2% in 2016-2019.
Hungary	**Permanent reversal.** Contribution rate reduced to 0% in January 2011 assets transferred to the mandatory PAYG system.
Poland	**Permanent reduction and partial reversal.** Contribution rate reduced to 2.3% in May 2011. From February 2014 contribution at 2.92%, in February 2014 assets invested in government bonds transferred to PAYG scheme and redeemed. In 2014 system made opt-out and opt-in in specified time slots. Assets from FF transferred gradually to PAYG 10 years prior to retirement.
Romania	**Temporary reduction.** Reduction in planned growth path of contribution rate from 2% to 6%. Rate froze at 2%, started to increase from 2011 at annual rate of 0,5pp.
Slovakia	**Permanent reduction.** 9% contribution reduced to 4% in 2013with planned further increase to 6% in 2024. Funded scheme opt-out and opt-in system.

Source: Schwarz and Arias (2014) updated by authors.

As a result of these policy directions, the future growth of funded systems' assets will be smaller and in turn, financing of future pensions will rely mainly on PAYG pension schemes. In two countries, namely Hungary and Poland all or part of assets already accumulated were diverted back to the PAYG schemes.

Table 1. 2. Transition costs (TC) versus general government deficit/surplus (%GDP)

		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bulgaria	**transition costs (TC)**					**0.6**	**0.5**	**0.6**	**0.7**	**0.8**	**1.1**	**1.1**	**1.1**	**1.0**	**1.1**	**1.1**
	GG deficit/surplus					-1.2	-0.4	1.8	1.0	1.8	1.1	1.6	-4.2	-3.2	-2.0	-0.5
	GG balance less TC					**-0.6**	**0.1**	**2.4**	**1.7**	**2.6**	**2.2**	**2.7**	**-3.1**	**-2.2**	**-0.9**	**0.6**
Estonia	**transition costs (TC)**					**0.0**	**0.4**	**0.6**	**0.7**	**0.7**	**0.8**	**0.5**	**1.1**	**0.1**	**0.4**	**0.9**
	GG deficit /surplus					-0.2	-0.1	0.3	1.7	1.6	2.4	-2.9	-2.0	0.2	1.1	-0.2
	GG balance less TC					**-0.2**	**0.3**	**0.9**	**2.4**	**2.3**	**3.2**	**-2.4**	**-0.9**	**0.3**	**1.5**	**0.7**
Latvia	**transition costs (TC)**				**0.1**	**0.2**	**0.4**	**0.4**	**0.6**	**0.7**	**1.0**	**1.1**	**0.1**	**0.1**	**0.1**	**0.1**
	GG deficit/surplus				-2	-2.2	-1.6	-1.0	-0.4	-0.6	-0.6	-4.0	-8.9	-8.2	-3.4	-0.8
	GG balance less TC				**-1.9**	**-2.0**	**-1.2**	**-0.6**	**0.2**	**0.1**	**0.4**	**-2.9**	**-8.8**	**-8.1**	**-3.3**	**-0.7**
Lithuania	**transition costs (TC)**							**0.3**	**0.4**	**0.6**	**0.9**	**1.1**	**0.6**	**0.3**	**0.4**	**0.4**
	GG deficit / surplus							-1.5	-0.5	-0.4	-1.0	-3.3	-9.3	-6.9	-9.0	-3.2
	GG balance less TC							**-1.2**	**-0.1**	**0.2**	**-0.1**	**-2.2**	**-8.7**	**-6.6**	**-8.6**	**-2.8**
Hungary	**transition costs (TC)**	**0.2**	**0.5**	**0.5**	**0.5**	**0.5**	**0.7**	**0.8**	**1.0**	**1.0**	**1.2**	**1.2**	**1.4**	**1.1**	**0.0**	**0.0**
	GG deficit / surplus	-7.5	-5.1	-3	-4.1	-8.9	-7.2	-6.4	-7.9	-9.4	-5.1	-3.7	-4.6	-4.5	-5.5	-2.3
	GG balance less TC	**-7.3**	**-4.6**	**-2.5**	**-3.6**	**-8.4**	**-6.5**	**-5.6**	**-6.9**	**-8.4**	**-3.9**	**-2.5**	**-3.2**	**-3.4**	**-5.5**	**-2.3**
Poland	**transition costs (TC)**		**0.3**	**1.0**	**1.1**	**1.2**	**1.2**	**1.1**	**1.3**	**1.4**	**1.4**	**1.6**	**1.6**	**1.6**	**1.0**	**0.5**
	GG deficit / surplus		-2.2	-3.0	-4.8	-4.8	-6.1	-5.2	-4.0	-3.6	-1.9	-3.6	-7.3	-7.6	-4.9	-3.7
	GG balance less TC		**-1.9**	**-2.0**	**-3.7**	**-3.6**	**-4.9**	**-4.1**	**-2.7**	**-2.2**	**-0.5**	**-2.0**	**-5.7**	**-6.0**	**-3.9**	**-3.2**
Slovakia	**transition costs (TC)**								**0.6**	**1.1**	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**	**1.1**
	GG deficit / surplus								-2.9	-3.6	-1.9	-2.4	-7.9	-7.5	-4.1	-4.2
	GG balance less TC								**-2.3**	**-2.5**	**-0.7**	**-1.2**	**-6.7**	**-6.3**	**-2.9**	**-3.1**

Note: Data for Romania is not available.

Source: data from country experts' questionnaires, author's review of Convergence Programmes of CEE countries and Eurostat for general government deficit/surplus.

1.2. Transition cost and their financing – expectations and outcomes

Between 2001 or the year when multi-pillar system was introduced, the total level of transition cost in relation to GDP (measured as a sum of the value of contributions transferred to the pension funds) ranged from 16% of GDP in Poland to 1,6% of GDP in Romania. This means that the fiscal effort necessary to meet the transition costs of introducing multi-pillar pension reforms differed significantly between countries.

Table 1. 3. Overall level of transition cost between 2001 (or reform start) and 2012, % of GDP

Country	Period	Total transition cost
Poland	2001-2012	16.0
Hungary	2001-2012	9.9
Slovakia	2005-2012	8.9
Bulgaria	2005-2012	8.0
Estonia	2003-2012	6.2
Lithuania	2004-2012	5.0
Latvia	2001-2012	4.9
Romania	2008-2012	1.6

Source: Data from country experts' questionnaires, author's review of Convergence Programmes of CEE countries.

The sources for covering transition costs were also differently mixed. In general, there are three such sources: financing from taxes and other budgetary revenues (a burden for working generation), financing from savings in the existing PAYG system (a burden for the retired generation), and an increase of the general government debt (a burden for future generations). Lindeman et al (2001) underline that placing the entire burden of transition on any single sources is likely to be sub-optimal, as it would unevenly burden one of generations. It is important to carefully consider the size and distribution of all benefits, costs and risks when deciding on the size and financing of the second pillar. As it can be seen from the Table 3, many countries in CEE region, decided on relatively smaller second pillars with smaller risks and smaller potential benefits. This applies mainly to countries that introduced their reforms later. The initial strategies for covering the transition costs differed between countries (Table 1.2).

Table 1. 4 Initial plans for covering transition cost in 8 CEE countries

Country	Increase of government sector revenues (taxes, social security contributions)	Savings in existing PAYG pillar	Privatisation revenues
Bulgaria	x	x	
Estonia	x	x	
Latvia	x	x	
Lithuania		x	x
Hungary		x	
Poland		x	x
Romania	x	x	
Slovakia	x	x	

Source: Authors' compilation based on Pension Reform in Central and Eastern Europe (E. Fultz, ed., 2002), ILO 2002 and Convergence Programmes of CEE countries.

Most of the countries of the CEE region assumed that the main source of financing the transitional deficit would be the rationalization of pension expenditures in existing PAYG public schemes, although the appropriate laws were not (in most cases) passed before the mandatory pension funds started (Fultz, 2012).

Reformers planned, that savings in the PAYG part of mandatory pension system would be achieved by introducing indexation of pension benefits closer to prices than wages, raising the retirement age, limiting early retirement and pension formula changes in the public scheme. Less generous indexation rules contributed to limiting public pension expenditure in Bulgaria, Estonia, Hungary and Poland. However, most of the pension expenditure rationalization tools, even if implemented, were expected to reduce pension spending in medium and long term (Bielawska, 2014).

In effect, the internal capacity of public pension systems to absorb the transition costs was reduced, what meant higher reliance on the general government subsidies.

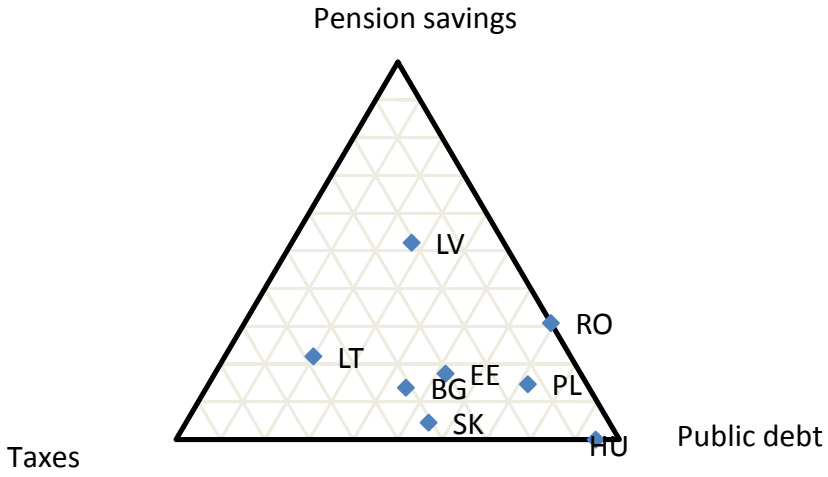
In order to assess the actual sources of financing the transition cost, we decomposed the transition cost of the contribution transfer to the mandatory funded component (as % of GDP) to three parts:

- Financing from savings in the old-age expenditure measured as annual decline in old-age pension expenditure, i.e. we assume that any reduction in expenditure on pensions finances transition (as planned in all of the analysed countries);
- Financing from current taxes measured as decrease in the level of general government debt, i.e. we assume that in the case of decline of the government debt any additional transition cost was financed from current revenue;

- Financing from general government debt as the remaining (residual) part of the transition cost not covered by the first two items.

Results of the decomposition show that the overall transition cost from the inception of the pension reform until 2011 in all of the CEE countries was financed to a large extent by the rise of the government debt. The debt financing was highest in Hungary (95% of all transition cost), Romania (84%) and Poland (74%) while the lowest in Lithuania (13% of transition cost) and Latvia (28% of transition cost). Contrary to the initial plans, financing from old-age savings did not contribute much to the financing of the transition cost. In Hungary there was no decline in pension expenditure. In Latvia the decline in pension expenditure financed more than half of the transition cost and in Lithuania it was around a quarter. In the remaining countries (Bulgaria, Estonia, Poland, Romania) it was below 20 per cent of total transition cost. Current revenue financing significantly contributed to financing of the transition in Lithuania, Bulgaria, Slovakia and Estonia.

Figure 1. 1 Share of old-age pension savings, taxes and debt in transition cost financing in the CEE countries from inception of the reform until 2011



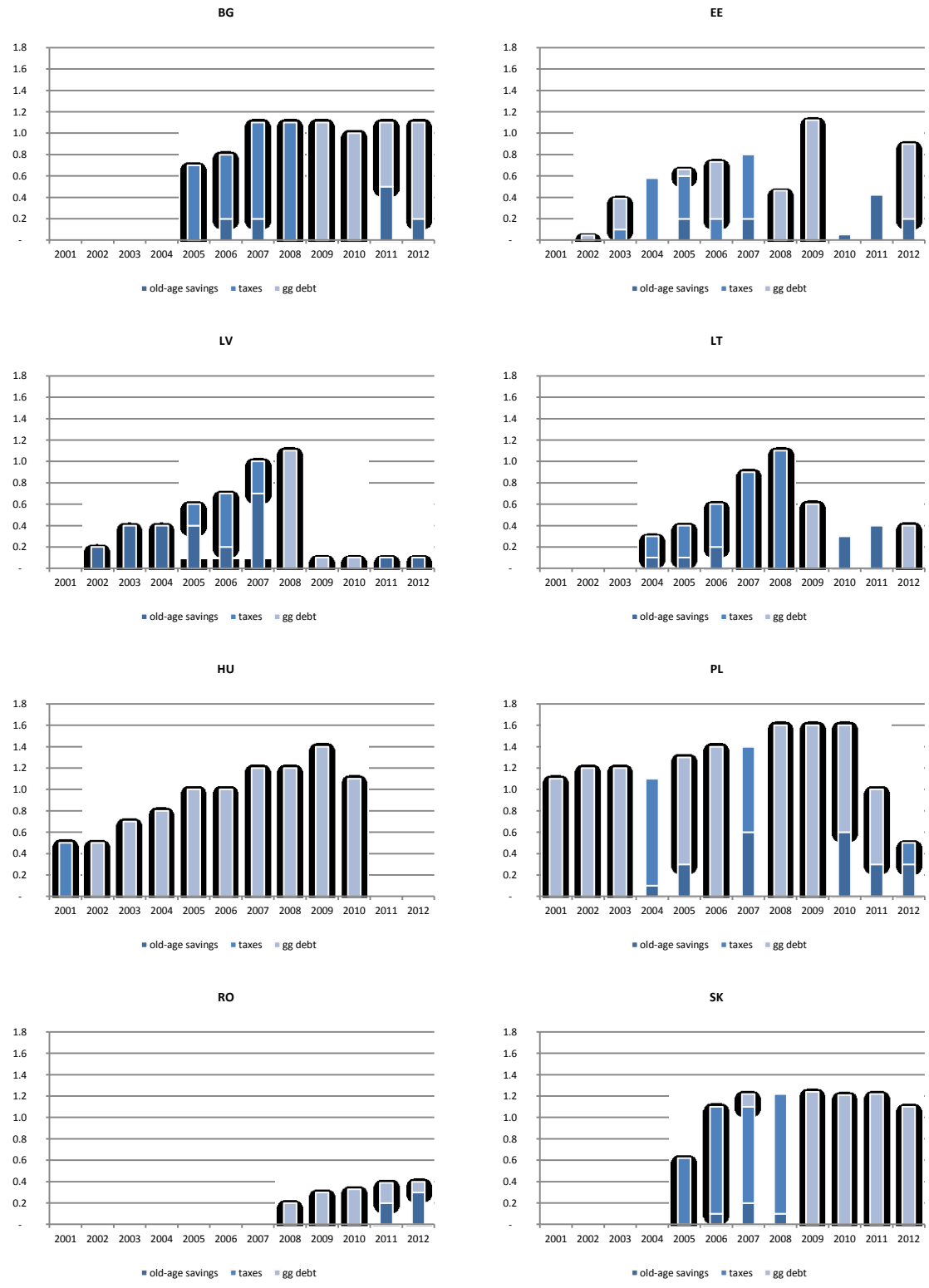
Source: Authors' analysis.

Furthermore, the need to finance transition from government debt in all of the CEE countries under consideration became visible especially in the Great Recession time. Debt financing replaced other means in Bulgaria, Estonia, Latvia, Lithuania and Slovakia, while it remained the main source of financing of pension reform in Hungary, Poland and Romania.

Decomposition of the sources of financing the transition cost clearly indicates that the crisis led to the abrupt shift towards debt financing. This combined with the overall decline in

public finance situation led to the retreat or suspension of pension reform efforts in the CEE countries.

Figure 1. 1. Annual decomposition of financing transition costs in the CEE countries



Source: Authors' analysis.

Chapter 2: Analysis of the functioning of funded parts of the pension system in selected CEE countries in the context of the implemented changes

Dariusz Stańko

In this chapter we investigate the changes in the functioning of funded pillars in selected CEE countries. Next, we analyse the question to what extent the performance of pension funds was not satisfactory and could induce the retrenchment of pension funds.

2.1. Development of funded pillars in selected CEE countries

Table 2.1 presents the summary of the development of funded schemes in the eight countries. The most important developments during the decade of implementation included a consolidation of the market in some of the countries (Hungary, Poland, and Estonia) and the establishment of new investment portfolios in others.

The consolidation process can be associated with high entry and compliance costs which put a pressure on pension managing companies with smaller number of clients to either sell their business or to merge with the other market players being in the same situation. The new investment portfolios that appeared in the pension markets of the CEE related to so-called multifunds, i.e. the life cycle portfolios that were developed to better suit the risk profile of pension fund members.

The number of participants increased in all countries, due to mandatory coverage of new entrants as well as voluntary switching[3]. By the end of 2012, mandatory pension funds' assets exceeded 5% of GDP in Bulgaria and Estonia, while in Poland where the system was introduced relatively early and the size of contribution was substantial, assets reached almost 17% of GDP. In Hungary and Latvia the size of pension funds was smaller, due to a reversal of the funded part in Hungary and the temporary suspension of pension contributions in Latvia.

[3] With exception of Hungary, the table presents status quo after the reversal of the funded part.

Table 2. 1 General information on mandatory funded scheme development in 8 CEE countries

Country	Year of implementation	Number of managing companies [number of portfolios managed]		Number of participants (million)		Contribution rate (% of wage) end of 2012	Assets (% GDP) end of 2012
		initially	end of 2012	initially	end of 2012		
Bulgaria (universal funds)	2002*	8 (2004)	9	1.61 (Dec 2003)	3.24	5%	6.55%
Estonia	07.2002	15	6 [23] (2014)	0.21	0.63 (Jul 2012)	4%+2% (extra by employee)	8% (Jan 2011)
Hungary	01.1998	38	10 [30]**	1.34	0.07	10%	0.73%
Latvia	01.2003***	5 [10]	8 [26]	0.30	1.20	2%****	0.68%
Lithuania	06.2004	10 [26]	9 [30]	0.44	1.05 (Oct 2013)	1.5%#	4.24%
Poland	04.1999##	21	14###	7.0 (12.1999)	15.94	2.3%####	16.89%
Romania	05.2008	14	9+	3.82	5.77	3.5%++	n/a
Slovakia	01.2005+++	6 [18]	6 [18]	n/a	n/a	9%	n/a

* universal funds, mandatory for most of workers; occupational funds for workers in hazardous conditions were created in 2000; ** in 2014 the number of companies dropped to 7, *** assets were managed by the state treasury until 1 January 2003 and invested in state securities and bank deposits (Kritzer, 2001-2002), **** 4% in 2014 to increase by 1% to 6% by 2016; # 2.0+1+1% in 2014 to increase 3.5+2+5% from 2020 (Šarūnas, 2012, p. 3); ## medium-aged cohorts could decide on whether to join the system until end-1999; ### 13 funds in 2014; #### since April 2014 membership in open pension funds (OFEs) is voluntary and contribution will amount 2.92%; + eight companies in 2014; ++ contribution in 2014 was 4.5%; +++ persons under 52 could decide to join the system until June 2006 (Milev and Nenovsky, 2012, p.76).

Sources: Bulgaria (http://www.fsc.bg/Statistics-en-216; Milev and Nenovsky, 2012, p. 74; Federacion International de Administradoras de Fondos de Pensiones (2012, p. 154), Estonia (https://www.fi.ee/index.php?id=1787; Volskis, 2012, pp. 10, 13), Hungary (Kritzer, 2001-2002; https://felugyelet.mnb.hu/data/cms2102295/timeseries_pensionfunds_Q3_2013.xls; Goldenbook 2012, https://felugyelet.mnb.hu/en/left_menu/pszafen_publication/golden_books.html; IFS GDP data; http://stats.oecd.org/wbos/fileview2.aspx?IDFile=cc87a230-9eaf-4386-9f94-c2f80b0a9dd3), Latvia (Jērāne, 2012; http://www.manapensija.lv/en/2nd-pension-pillar; OECD statistics), Lithuania (Volskis, 2012, pp. 15, 17; Šarūnas, 2012, p. 3); Poland (Polish Financial Supervisory Authority 2008, p. 10; www.knf.gov.pl); Romania (http://www.apapr.ro/statistics.html; http://www.aon.com/attachments/human-capital-consulting/Global%2520-Retirement%2520Update--January%25202014.pdf); Slovakia (Milev and Nenovsky, 2012, p. 76; National Bank of Slovakia).

2.2. Brief description of asset allocation policy

With regard to investment policy, most of pension funds in analysed countries followed a very conservative approach (Table 2.2). Until 2005 the percentage of public and private bonds in their portfolios was substantial ranging from 45-50% (Estonia in 2001 and Slovakia in 2001-2003) to 60-75% in other countries. Even in recent years (2012-2013) funds in Bulgaria, Poland, Romania and Slovakia allocated more than half of their assets in bonds with Estonia and Latvia having smaller fraction of money (20 and 33%, respectively) invested in this asset class.

Bond holdings were dominated by public Treasury bonds. One of possible explanations for that lies in the fact that corporate debt markets are dominated by bank-based lending and yet

need to develop in the region. Another factor can relate to the high state indebtedness which kept yields on public debt securities attractively high. In Bulgaria, the ratio of public securities in the total bond allocation was initially high (85%) with some decrease to 60-55% in 2005-2008 and increase to 60-70% afterword. Estonian holdings consisted of 50-60% at the beginning, whereas Latvia kept during 2011-2013 even more Treasury papers – increasing from 60 to 70% of all bond positions. The extreme case was represented by Hungary, Poland and Romania where their initial investments in bonds were basically the securities issued by the state – in Hungary its ratio was 90% whereas in Poland it kept around 95% until 2011 and dropped to some 80% in 2012-2013. The Romanian bond holdings constituted of 90% in Treasury papers. Slovak funds initially invested 70-80% of its bond portfolio in Treasuries with a drop to 40-50% in 2006-2007 and increase to 60-50% in recent years[4]. Overall, the public debt was a main part of the investment portfolios in all CEE countries with the exception of Estonia.

Other very safe asset class, cash and deposits, were all the time substantial in Bulgaria, Estonia, Latvia and Slovakia – even the recent holdings are still well above 15%. Poland, Hungary and Romania represent the other group where cash and deposits are kept mainly for liquidity purposes and do not exceed 10% of the total portfolio.

[4] Source: OECD Global Pension Statistics data.

Table 2. 2. Asset allocation in shares, bonds and cash and deposits as a percentage of total investment portfolio

	Shares (% of total portfolio)												
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Bulgaria			2.8	2.9	6.4	15.8	21.5	10.4	11.3	14.8	11.7	11.0	12.8
Estonia	17.7	11.4	33.5	35.1	16.9	14.8	9.7	5.5	3.8	3.8	3.6	5.2	6.1
Latvia									0.8	0.9	0.5	0.3	0.5
Hungary		9.1	9.0	7.9	7.8	9.4	14.0	12.2	10.8	9.2	6.5	4.7	3.7
Poland	28.4	27.7	31.9	33.2	31.8	34.0	34.6	21.5	30.2	36.3	30.7	34.8	41.4
Romania										14.0			
Slovakia	0.9	1.1	10.7	6.3	8.6		8.9	2.7	0.2	1.4	1.2	0.2	1.1
	Bonds issued by private and public sector (% of total portfolio)												
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Bulgaria			74.0	74.8	70.3	51.9	45.6	54.8	45.2	44.1	51.8	57.6	54.1
Estonia	46.6	60.1	55.9	52.5	45.7	41.1	26.1	27.6	34.1	17.8	26.0	25.6	21.3
Latvia									35.0	24.1	27.8	29.1	33.6
Hungary		73.1	73.6	75.5	75.5	69.7	66.8	62.0	56.8	54.5	62.5	64.9	65.7
Poland	68.0	67.8	62.4	59.9	63.1	62.1	61.0	74.9	66.5	59.4	62.4	55.8	51.7
Romania										78.4			
Slovakia	48.1	51.4	53.5	11.2		44.3	49.0	66.3	68.4	68.4	67.9	68.5	66.3
	Cash and deposits (% of total portfolio)												
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Bulgaria			19.9	19.9	19.2	24.3	17.5	23.9	28.3	24.3	23.0	19.4	19.1
Estonia	32.7	14.9	8.2	4.4	6.0	6.0	12.7	14.1	15.3	9.4	16.4	16.4	17.4
Latvia									35.0	31.8	22.2	15.0	16.5
Hungary		4.4	1.6	1.4	1.4	2.5	1.2	3.0	2.5	1.6	4.1	3.9	4.6
Poland	3.5	4.2	4.8	5.8	4.1	2.8	3.4	2.5	2.3	3.5	5.7	8.3	6.0
Romania													7.2
Slovakia	28.7	34.4	31.4	81.9		43.1	34.1	24.4	29.2	26.5	28.1	22.7	20.5

Source: Excerpt from the OECD Global Pensions Statistics.

When analysing the aggressiveness of investment proxied by exposure to stock, the most conspicuous country was Poland that kept it at around 30% all the time, with a temporal decrease resulted as an aftermath of the financial crisis in 2008. Pension funds in other countries followed much more conservative policy.

2.3. Riskiness of portfolios

This section analyses some risk measures relating to investment results discussed so far. Table 2.3 presents volatility of returns. Column *SD(%)* shows the volatility of monthly nominal returns measured over the whole calculation period, next two columns - the length of the calculation period (i.e. from the moment system was initiated until end of 2012), next two columns – the monthly standard deviation (*monthly SD*) and annualised standard deviation (annual.SD). The last column presents the coefficient of variation, which is a crude proxy of the "efficiency" of yearly nominal rates of return[5] compared to annualised volatility. The lower the value of this coefficient was, the better was the trade-off between the risk taken and the return obtained.

[5] Arithmetic average rates of return.

Due to different investment horizons, diverged investment regulations and resulting actual asset allocation policies in each jurisdiction, it is quite difficult to compare directly the volatilities across the countries. However a few observations can be made. First, as it might have been expected, the volatility corresponds to the type of fund and its asset allocation and increases in line with exposure to more risky assets (mainly shares). The only exception here is Slovakia where conservative funds exhibited much higher volatility (6.3% in total) than the aggressive or balanced portfolios. The second observation is that the volatility of returns in Poland that followed more aggressive investment policy is much lower (2.33% in total and 0.18% as monthly) compared to the other countries. Finally, the most efficient risk-return trade-off could be observed in low-risk funds in Latvia, Lithuania (coefficients of variation being lower than 0.07) and in relatively aggressive funds of Poland (0.07) and Romania (0.04). The least effective in terms of risk efficiency were aggressive funds in Hungary (1.3) and quite surprisingly, conservative funds in Slovakia (1.58).

Table 2. 3. Volatility of nominal returns

		SD(%)	no. of years	months	monthly. SD	annual SD	coefficient of variation
Bulgaria	all funds	2.66%	9.33	112	0.25%	0.87%	0.24
Estonia	all funds	1.96%	10.50	126	0.17%	0.60%	0.14
	conservative	0.83%	3.00	36	0.14%	0.48%	0.16
	balanced	1.48%	3.00	36	0.25%	0.85%	0.26
	progressive	2.26%	3.00	36	0.38%	1.30%	0.26
	aggressive	2.90%	3.00	36	0.48%	1.67%	0.24
Latvia	conservative	0.44%	10.00	120	0.04%	0.14%	0.03
	balanced	0.72%	10.00	120	0.07%	0.23%	0.06
	active	1.24%	10.00	120	0.11%	0.39%	0.10
Lithuania	conservative	0.69%	9.38	112.5	0.06%	0.22%	0.07
	stable	1.28%	9.38	112.5	0.12%	0.42%	0.10
	balanced	2.40%	9.38	112.5	0.23%	0.78%	0.16
	aggressive	4.52%	9.38	112.5	0.43%	1.48%	0.21
Hungary*	classic	4.92%	7.25	87	n/a	1.83%	0.18
	conservative	5.22%	15	180	n/a	1.35%	0.21
	balanced	12.79%	15	180	n/a	3.30%	0.57
	growth	20.64%	15	180	n/a	5.33%	1.30
Poland	all funds	2.33%	13.33	160	0.18%	0.64%	0.07
Romania	all funds	0.93%	4.5	54	0.13%	0.44%	0.04
Slovakia	aggressive	3.02%	7.75	93	0.31%	1.09%	0.42
	balanced	3.04%	7.75	93	0.32%	1.09%	0.67
	conservative	6.30%	7.75	93	0.65%	2.26%	1.58
	index	1.58%	0.75	9	0.53%	1.82%	0.37

Note: Volatility of monthly nominal rates of return, market-weighted, for the whole calculation period until the end of 2012. * In case of Hungary annual returns were used.

Source: Author's analysis based on country sources.

2.4. Rates of returns

As it has been discussed already (c.f. Table 1.5 in Chapter 1) the contribution rates in many countries have been suspended, or temporarily or permanently lowered. One of the hypotheses explaining the reasons for the reduction of the role of funded pillars in the CEE region is the pension funds' unsatisfactory performance. Bad performance of pension funds, alongside with the high costs, was an argument often raised in public discussions in the CEE countries by politicians and some experts. To verify this statement about unsatisfactory performance, we analysed rates of return for the funded pillars in the eight countries from the moment of their introduction until the end of 2012.

We used unit values to compute market-weighted average rates of return[6], which in our opinion describe the effectiveness of investment for an average pension saver reasonably well[7]. Where life-cycle investment portfolios (so-called multi-funds) were offered, separate market indexes were created to account for the particular type of investment policy followed[8]. This refers to the Baltic States, Hungary and Slovakia. Although their investment limits vary, in most cases conservative funds practically have no exposure to equities and balanced funds are quite cautious in the Baltic region.

Investment rates of return are calculated on the basis of investment units, which means that the returns account for management fees but do not take into consideration any fees paid on incoming contributions (upfront fee) or out-going payments (exit fees), the discussion of fees being outside of the scope of this article[9]. Nevertheless, the results can be seen as an appropriate proxy of private managing companies' efficiency with investment money.

2.4.1. Performance in nominal terms

Negative nominal returns (Tables 2.4 and 2.5) were practically absent until the outbreak of the financial crisis in 2008 when pension funds incurred serious losses: Lithuanian aggressive

[6] The unit values for individual funds were retrieved from various websites or obtained directly from supervisory authorities. Further analysis used basic macroeconomic data describing inflation rates (CPI from IMF's International Financial Statistics).

[7] Market-share weighted return is representative of all savers that allocate their pension savings in line with the structure of the market. The only exclusion is Hungary where it was impossible to retrieve the earlier data on market shares – as a result, industry returns to 2004 (inclusive) are calculated as arithmetic averages, and from 2005 on as market share-weighted averages.

[8] This exercise was more difficult in the case of Lithuania where pension fund managers are allowed to offer as many portfolios as they wish and their investment policy is not constrained by investment limits. This creates problems for comparison for members (Castañeda and Rudolph, 2011, p. 7) and with proper investment style classification. We appreciate the kind help of Mr Audrius Šilgalis who provided us with classification information.

[9] The latest update on the fee levels and their impact on pension savings can be found in: Ionescu and Robles (2014).

funds lost almost 54%, Estonian progressive and Hungarian aggressive funds suffered almost 28% reductions. Funds in Latvia and Lithuania remained unaffected as they followed a conservative policy and Romanian pension funds that at that time were just entering the financial market had not invested substantially in equities.

The Hungarian case is particularly interesting as 2008 was the first year when life cycle funds became mandatory in the country. At the outset of the life-cycle system most of savers, relatively young and not taking fund-choice decisions, were automatically allocated to default portfolios. However, it turned out to be the worst time to enter them because default funds represented the most aggressive portfolios. Feher and Holzer (2012) estimate that this resulted in average 1% decrease in returns per annum for the whole of the approximately 13-years period the system was active (1998-2010).

2.4.2. Performance in real terms

Tables 2.6-2.7 present real returns in the analysed countries. The real effects of 2008 crisis were more profound. Excluding Romania (with positive 3%), all other countries suffered significant losses, irrespective of applied investment policy[10]. The level of accounted losses also depended on the type of investment strategy.

The data show that even the pre-crisis performance in real terms was not satisfactory in Latvia, and in the case of selected portfolio types in Estonia, Lithuania and Slovakia. The reasons for this are outside the scope of this paper; however one might attribute them to overly conservative investment policies resulting from imposed investment guarantees (for the case of Slovakia, see Kawiński et al., 2010, p. 593) or geographical investment limits that retain a majority of funded pension assets in the country (the case of Latvia, where short-term financial instruments were offering a low interest rate, see Volskis, 2012, p. 9).

[10] An extended discussion about the effects of the financial crisis on the CEE pension markets can be found in Stańko (2009, pp. 25-43).

Table 2. 4. Nominal rates of return (%) in Bulgaria, Estonia, Latvia and Lithuania; market-share weighted averages

	Bulgaria	**Estonia**					**Latvia**			**Lithuania**			
Type of funds	mandatory	all	conservative	balanced	progressive	aggressive	conservative	balanced	aggressive	conservative	stable	balanced	aggressive
Starting date of calculations	1.07.2004	2.07.2002	2.07.2002	2.07.2002	2.07.2002	1.01.2010	7.01.2003	7.01.2003	7.01.2003	15.06.2004	15.06.2004	15.06.2004	15.06.2004
2002		*1.31*	*2.77*	*1.24*	*0.41*	-							-
2003		7.59	2.81	6.33	9.26	-	4.21	1.99	5.02				-
2004	*7.02*	9.95	5.48	8.02	11.63	-	4.12	5.08	6.08	*2.23*	*4.74*	*6.13*	*34.27*
2005	6.83	13.11	2.67	9.32	16.18	-	3.68	5.07	9.56	2.02	7.60	15.16	21.83
2006	3.93	7.24	-0.48	4.31	9.11	-	0.45	-0.35	4.08	1.07	4.23	6.49	18.26
2007	16.10	6.16	1.80	4.48	7.06	-	2.90	3.49	3.00	0.72	2.55	4.21	0.08
2008	-21.19	-24.28	-2.03	-19.15	-27.36	-	1.94	-4.60	-13.52	2.12	-11.68	-28.13	-53.73
2009	8.56	12.67	7.96	7.94	14.18	-	9.48	11.03	12.34	8.89	13.57	21.04	23.13
2010	3.14	9.74	4.26	6.38	10.61	17.99	6.55	7.06	8.08	3.29	6.68	10.32	19.21
2011	-0.57	-4.55	1.29	-1.74	-5.61	-9.78	1.79	-1.25	-3.60	0.25	-0.40	-4.18	-11.10
2012	8.72	9.51	7.06	9.12	9.74	12.42	8.52	8.41	9.22	7.95	11.25	12.21	12.71

Italics represent the results for periods shorter than 12 months.

Source: Author's calculations.

Table 2. 5. Nominal rates of return (%) in Hungary*, Poland, Romania and Slovakia, market-share weighted averages

	Hungary				Poland	Romania	Slovakia			
Type of funds	classic	conservative	balanced	growth	mandatory	mandatory	conservative	balanced	aggressive	indexed
Starting date of calculations	1.01.1998	22.03.2005	22.03.2005	22.03.2005	1.09.1999	21.05.2008	22.03.2005	22.03.2005	22.03.2005	2.04.2012
1998	15.69	-	-	-	-	-	-	-	-	-
1999	17.11	-	-	-	*15.05*	-	-	-	-	-
2000	7.87	-	-	-	12.99	-	-	-	-	-
2001	7.98	-	-	-	7.31	-	-	-	-	-
2002	7.62	-	-	-	13.62	-	-	-	-	-
2003	2.77	-	-	-	10.92	-	-	-	-	-
2004	16.44	-	-	-	14.19	-	-	-	-	-
2005	12.49	-	-	-	15.04	-	*2.84*	*3.22*	*3.44*	-
2006	8.20	-	-	-	16.38	-	3.49	4.38	4.69	-
2007	5.82	-	-	-	6.24	-	4.11	3.71	3.63	-
2008	-	-0.64	-13.20	-27.66	-14.16	*6.96*	2.84	-5.38	-7.63	-
2009	-	11.44	17.48	25.66	13.75	17.70	1.79	1.07	1.07	-
2010	-	5.41	8.57	10.97	11.21	15.10	1.23	1.29	1.31	-
2011	-	4.13	-0.13	-3.70	-4.66	3.10	1.50	1.50	1.52	-
2012	-	11.67	16.47	15.16	16.35	10.50	2.78	3.28	3.39	*4.97*

* Hungary – until 2004 (inclusive) arithmetic rates of returns. *Italics* represent the results for periods shorter than 12 months.

Source: Author's calculations.

Table 2. 6. Real rates of return (%) in Bulgaria, Estonia, Latvia and Lithuania; market-share weighted averages

	Bulgaria	**Estonia**					**Latvia**			**Lithuania**			
Type of funds	mandatory	all	conservative	balanced	progressive	aggressive	conservative	balanced	aggressive	conservative	stable	balanced	aggressive
Starting date of calculations	1.07.2004	2.07.2002	2.07.2002	2.07.2002	2.07.2002	1.01.2010	7.01.2003	7.01.2003	7.01.2003	15.06.2004	15.06.2004	15.06.2004	15.06.2004
2002	-	*-0.45*	*0.98*	*-0.52*	*-1.33*	-	-	-	-	-	-	-	-
2003	-	6.17	1.45	4.93	7.82	-	1.22	1.13	2.01	-	-	-	-
2004	*3.78*	6.69	2.36	4.83	8.33	-	-1.95	-1.64	-0.10	*1.58*	*4.07*	*5.46*	*33.42*
2005	1.70	8.67	-1.37	5.03	11.61	-	-2.87	-0.80	2.64	-0.60	4.83	12.19	18.69
2006	-3.11	2.69	-4.70	-0.12	4.48	-	-5.71	-4.53	-2.31	-2.58	0.46	2.64	14.00
2007	7.10	-0.42	-4.50	-1.99	0.43	-	-6.54	-6.31	-6.45	-4.73	-3.00	-1.43	-5.35
2008	-29.85	-31.39	-11.23	-26.75	-34.19	-	-11.67	-18.01	-25.06	-7.94	-20.38	-35.21	-58.29
2009	5.65	12.77	8.06	8.03	14.28	-	5.75	5.89	8.51	4.26	8.75	15.90	17.90
2010	0.68	6.57	1.25	3.31	7.41	14.58	7.73	8.96	9.26	1.93	5.27	8.87	17.64
2011	-4.60	-9.07	-3.51	-6.40	-10.09	-14.06	-2.49	-5.19	-7.65	-3.73	-4.35	-7.98	-14.63
2012	5.60	5.37	3.00	4.99	5.59	8.16	6.13	7.01	6.81	4.72	7.92	8.86	9.34

Italics represent the results for periods shorter than 12 months.

Source: Author's calculations.

Table 2. 7. Real rates of return (%) in Hungary*, Poland, Romania and Slovakia, market-share weighted averages

	Hungary				Poland	Romania	Slovakia			
Type of funds	classic	conservative	balanced	growth	mandatory	mandatory	conservative	balanced	aggressive	indexed
Starting date of calculations	1.01.1998	22.03.2005	22.03.2005	22.03.2005	1.09.1999	21.05.2008	22.03.2005	22.03.2005	22.03.2005	2.04.2012
1998	1.33	-	-	-	-	-	-	-	-	-
1999	6.43	-	-	-	*10.44*	-	-	-	-	-
2000	-1.74	-	-	-	2.66	-	-	-	-	-
2001	-1.08	-	-	-	1.73	-	-	-	-	-
2002	2.24	-	-	-	11.51	-	-	-	-	-
2003	-1.80	-	-	-	10.05	-	-	-	-	-
2004	9.05	-	-	-	10.24	-	-	-	-	-
2005	8.63	-	-	-	12.66	-	*0.80*	*1.17*	*1.39*	-
2006	4.16	-	-	-	15.10	-	-0.95	-0.10	0.20	-
2007	-1.96	-	-	-	3.76	-	1.32	0.93	0.85	-
2008	-	-6.32	-18.16	-31.80	-17.73	*3.00*	-1.68	-9.54	-11.69	-
2009	-	6.94	12.74	20.58	9.55	11.47	0.17	-0.53	-0.54	-
2010	-	0.51	3.52	5.81	8.28	8.49	0.27	0.33	0.35	-
2011	-	0.17	-3.93	-7.36	-8.56	-2.54	-2.33	-2.33	-2.31	-
2012	-	5.64	10.19	8.94	12.35	6.93	-0.80	-0.31	-0.21	*1.31*

* Hungary – until 2004 (inclusive) arithmetic rates of returns. *Italics* represent the results for periods shorter than 12 months.

Source: Author's calculations.

2.4.3. Accumulated performance

Losses that occurred during the financial crisis might have spurred politicians to consider changes to the funded pension systems. Tables 2.8-2.9 provide information about the longer-term performance of pension markets (the accumulated real rate of return from the inception of a particular funded pillar until the end of the consecutive year).

As of the end of 2012 the funded pension systems in Bulgaria, Estonia, Latvia, Lithuania and Slovakia were losing invested contributions in real terms. It seems that due to various factors (related to investment policy, benchmarking, guarantees and local market capacity), pension funds in these countries were either unable to produce above-inflation results in the analysed longer-term or to recover from the losses incurred during the financial crisis. The accumulated real returns were positive in Romania, Hungary and Poland (Table 2.9).

Table 2. 8. Accumulated real rates of return (%) in Bulgaria, Estonia, Latvia and Lithuania; market-share weighted averages

	Bulgaria	**Estonia**					**Latvia**			**Lithuania**			
Type of funds	mandatory	all	conservative	balanced	progressive	aggressive	conservative	balanced	aggressive	conservative	stable	balanced	aggressive
Starting date of calculations	1.07.2004	2.07.2002	2.07.2002	2.07.2002	2.07.2002	1.01.2010	7.01.2003	7.01.2003	7.01.2003	15.06.2004	15.06.2004	15.06.2004	15.06.2004
2002	-	*-0.45*	*0.98*	*-0.52*	*-1.33*	-	-	-	-	-	-	-	-
2003	-	5.69	2.45	4.38	6.38	-	1.22	1.13	2.01	-	-	-	-
2004	*3.78*	12.76	4.87	9.42	15.24	-	-0.75	-0.53	1.90	*1.58*	*4.07*	*5.46*	*33.42*
2005	*5.55*	22.54	3.43	14.92	28.63	-	-3.60	-1.33	4.59	0.97	9.10	18.31	58.36
2006	*2.27*	25.84	-1.43	14.79	34.39	-	-9.10	-5.80	2.18	-1.63	9.60	21.44	80.53
2007	*9.53*	25.32	-5.86	12.51	34.97	-	-15.05	-11.75	-4.41	-6.29	6.31	19.70	70.87
2008	*-23.17*	-14.03	-16.43	-17.59	-11.17	-	-24.96	-27.64	-28.37	-13.73	-15.35	-22.45	-28.72
2009	*-18.83*	-3.05	-9.70	-10.97	1.52	-	-20.65	-23.38	-22.27	-10.05	-7.95	-10.12	-15.96
2010	*-18.27*	3.32	-8.58	-8.03	9.04	12.87	-14.52	-16.51	-15.07	-8.31	-3.10	-2.15	-1.14
2011	*-22.03*	-6.05	-11.79	-13.91	-1.96	-3.00	-16.65	-20.84	-21.57	-11.73	-7.32	-9.96	-15.60
2012	*-17.67*	-1.01	-9.14	-9.62	3.52	4.92	-11.54	-15.29	-16.22	-7.56	0.03	-1.99	-7.72

Italics represent the results for periods shorter than 12 months.

Source: Author's calculations.

Table 2. 9. Accumulated real rates of return (%) in Hungary*, Poland, Romania and Slovakia, market-share weighted averages

	Hungary				Poland	Romania	Slovakia			
Type of funds	classic	conservative	balanced	growth	mandatory	mandatory	conservative	balanced	aggressive	indexed
Starting date of calculations	1.01.1998	22.03.2005	22.03.2005	22.03.2005	1.09.1999	21.05.2008	22.03.2005	22.03.2005	22.03.2005	2.04.2012
1998	1.33	-	-	-	-	-	-	-	-	-
1999	7.84	-	-	-	*10.44*	-	-	-	-	-
2000	5.97	-	-	-	13.38	-	-	-	-	-
2001	4.82	-	-	-	15.33	-	-	-	-	-
2002	7.17	-	-	-	28.61	-	-	-	-	-
2003	5.25	-	-	-	41.53	-	-	-	-	-
2004	14.77	-	-	-	56.03	-	-	-	-	-
2005	24.68	-	-	-	75.78	-	*0.80*	*1.17*	*1.39*	-
2006	29.87	-	-	-	102.32	-	-0.16	1.08	1.59	-
2007	27.32	-	-	-	109.93	-	1.15	2.01	2.45	-
2008	-	19.28	4.20	-13.17	72.70	*3.00*	-0.55	-7.72	-9.52	-
2009	-	27.56	17.46	4.71	89.20	14.81	-0.38	-8.21	-10.00	-
2010	-	28.20	21.60	10.79	104.86	24.55	-0.11	-7.91	-9.69	-
2011	-	28.42	16.83	2.63	87.33	21.38	-2.43	-10.05	-11.77	-
2012	-	35.66	28.73	11.81	110.48	29.80	-3.21	-10.33	-11.96	*1.31*

***** Hungary – until 2004 (inclusive) arithmetic rates of returns. *Italics* represent the results for periods shorter than 12 months.

Source: Author's calculations.

2.4.4. Average longer-term performance in real terms

Table 2.10 shows average annual real returns in a longer perspective, i.e. as of end-2012 since the inception of the system. The accumulated return of Hungarian pension funds, even though positive (12-38%) might not be satisfactory in this longer-term perspective as the average yearly premium over the inflation rate at the end of 2012 was merely 2 percentage points in the case of conservative funds, 1.7 pp for balanced funds) and only 0.75pp for growth funds)[11]. The highest returns are observed in Romania and Poland where the annual average real return was close to 6 pp.

Table 2. 10. Average annual real rates of return since the inception of the system, end of 2012

Country	Type of fund	Starting date of calculations	Average annual rate of return (%)
Bulgaria	mandatory	1.07.2004	-2.06
Estonia	all	2.07.2002	-0.10
	conservative		-0.91
	balanced		-0.96
	progressive		0.33
	aggressive	1.01.2010	1.61
Latvia	balanced	7.01.2003	-1.22
	aggressive		-1.65
	conservative		-1.75
Lithuania	conservative	15.06.2004	-0.84
	stable		0.00
	balanced		-0.21
	aggressive		-0.85
Hungary	classic	1.01.1998 until end of 2007	3.39
	conservative	22.03.2005	2.05
	balanced		1.70
	growth		0.75
Poland	mandatory	1.09.1999	5.74
Romania	mandatory	21.05.2008	5.97
Slovakia	conservative	22.03.2005	-0.42
	balanced		-1.40
	aggressive		-1.63
	indexed	2.04.2012	1.75

Source: Author's calculations.

[11] At the beginning of dismantling process in Hungary, i.e. as of the end of 2009, these results were, respectively, 2.05% (conservative), 1.35% (balanced), and 0.38% (aggressive), which definitely could not be seen as overly optimistic, especially bearing in mind that these do not account for upfront fees.

The above results show that even upon not the time horizon much shorter than accumulation phase of 30-40 years, Hungary and Poland did not have valid grounds for their decision to reverse or partially reverse their funded pension systems long-term investment results. Polish pension funds had the best real return performance, whereas the Hungarian system's performance could potentially have been improved by legal changes.

2.5. Investment performance vs economic performance

An interesting measure of efficiency of individual pension funds as well as the rationality test of introduction funded pillars in the region is the comparison of investment performance of pension funds with the country's economic development measured by its GDP. As majority of analysed CEE funded systems is of mandatory character, the comparison to GDP, therefore, to consumption can be somehow questioned. The obvious alternative benchmark would be the wage bill (fund) growth. However, due to difficulties with obtaining the data, this approach was not used. Moreover, bearing in mind that the countries in question could, instead of introducing the funded pillar, have changed their pay-as-you-go DB systems to the notional defined contribution (NDC) entirely this comparison still seems to be methodologically acceptable.

In 2008, in the result of financial crisis and dramatic erosion of stock market prices pension funds in all research countries had much lower real return performance than the GDP (Tables 2.11 and 2.12). This effect is linked to the lagged reaction of the GDP indicator – the first was the financial shock reflected in stock exchange prices which was later on channelled to the economy as a whole via labour and real markets. Similar effect was observed in 2011 – all countries in question revealed negative excess returns over GDP growth in real terms. However, what seems to be a subject of concern is the relative performance of funded pillars in other periods. Practically all countries but Poland (Table 2.11) recorded repeatedly lower real returns than the GDP in the pre-crisis period. Years 2009-2010 were in most of the countries a time of recovery; however in Slovakia all types of funds had almost 5% lower real performance than the GDP.

The analysis of accumulated excess real returns over GDP real growth (Tables 2.13-2.14) shows quite clearly that in the longer-, but still not long-, run the funded pension pillars performed better only in Hungary, Poland and Romania (Table 2.14). In other countries, the negative gap between increase of GDP in real terms and corresponding increase of real assets ranged from 0.3-0.4pp in Slovakia to 29-35 pp in Lithuania, 39 in Bulgaria, 35-45 in Estonia and 42-45 in Latvia.

Table 2. 11. Excess real return over GDP growth (Bulgaria, Estonia, Latvia, Lithuania)

	Bulgaria	**Estonia**					**Latvia**			**Lithuania**			
type	mandatory pfs	all funds	conservative	balanced	progressive	aggressive	conservative	balanced	aggressive	conservative	stable	balanced	aggressive
calculated since	1.07.2004	2.07.2002	2.07.2002	2.07.2002	2.07.2002	1.01.2010	7.01.2003	7.01.2003	7.01.2003	15.06.2004	15.06.2004	15.06.2004	15.06.2004
2002	-	*-4.42*	*-2.99*	*-4.49*	*-5.30*	-	-	-	-	-	-	-	-
2003	-	-1.39	-6.11	-2.63	0.26	-	-6.38	-6.47	-5.59	-	-	-	-
2004	*0.41*	-0.54	-4.87	-2.40	1.10	-	-10.81	-10.50	-8.96	*-2.41*	*0.08*	*1.47*	*29.43*
2005	-4.66	-0.76	-10.80	-4.40	2.18	-	-12.99	-10.92	-7.48	-8.39	-2.96	4.40	10.90
2006	-9.62	-7.40	-14.80	-10.21	-5.61	-	-17.33	-16.15	-13.93	-9.98	-6.94	-4.76	6.59
2007	0.65	-7.91	-11.99	-9.48	-7.06	-	-16.34	-16.11	-16.24	-15.82	-14.09	-12.52	-16.43
2008	-36.04	-27.72	-7.56	-23.08	-30.51	-	-8.49	-14.84	-21.89	-10.57	-23.01	-37.84	-60.92
2009	11.13	27.03	22.31	22.29	28.54	-	19.93	20.08	22.69	19.08	23.56	30.71	32.72
2010	0.29	4.30	-1.02	1.04	5.15	12.32	10.60	11.84	12.14	0.31	3.65	7.25	16.03
2011	-6.44	-18.61	-13.05	-15.93	-19.62	-23.59	-7.49	-10.18	-12.65	-9.84	-10.47	-14.10	-20.75
2012	5.01	0.72	-1.65	0.34	0.94	3.51	1.29	2.18	1.98	0.88	4.09	5.02	5.50

Italics represent the results for periods shorter than 12 months. In such case, the GDP real growth rates were adjusted to the period's length by scaling arithmetically.

Source: Author's calculations.

Table 2. 12. Excess real return over GDP growth (Hungary, Poland, Romania, Slovakia)

	Hungary				**Poland**	**Romania**	**Slovakia**			
type	classic	conservative	balanced	growth	mandatory pfs	mandatory pfs	conservative	balanced	aggressive	indexed
calculated since	1.01.1998	22.03.2005	22.03.2005	22.03.2005	1.09.1999	21.05.2008	22.03.2005	22.03.2005	22.03.2005	2.04.2012
1998	-2.75	-	-	-	-	-	-	-	-	-
1999	3.24	-	-	-	*8.93*	-	-	-	-	-
2000	-5.97	-	-	-	-1.60	-	-	-	-	-
2001	-4.79	-	-	-	0.52	-	-	-	-	-
2002	-2.26	-	-	-	10.06	-	-	-	-	-
2003	-5.65	-	-	-	6.18	-	-	-	-	-
2004	4.25	-	-	-	4.90	-	-	-	-	-
2005	4.67	-	-	-	9.05	-	*-4.20*	*-3.82*	*-3.61*	-
2006	0.20	-	-	-	8.87	-	-9.46	-8.60	-8.31	-
2007	-2.47	-	-	-	-3.02	-	-9.26	-9.65	-9.73	-
2008	-	*-6.98*	*-18.82*	*-32.46*	-22.86	*-0.68*	-7.85	-15.71	-17.86	-
2009	-	13.49	19.29	27.13	7.93	18.04	5.22	4.52	4.52	-
2010	-	-0.28	2.73	5.02	4.40	9.63	-4.55	-4.50	-4.47	-
2011	-	-1.64	-5.73	-9.17	-12.88	-4.87	-5.03	-5.03	-5.01	-
2012	-	7.12	11.66	10.42	10.22	6.38	-2.40	-1.92	-1.82	*0.11*

Italics represent the results for periods shorter than 12 months. In such case, the GDP real growth rates were adjusted to the period's length by scaling arithmetically.

Source: Author’s calculations.

Table 2. 13. Accumulated excess real return over GDP growth (Bulgaria, Latvia, Lithuania)

	Bulgaria	**Estonia**					**Latvia**			**Lithuania**			
type	mandatory pfs	all funds	conservative	balanced	progressive	aggressive	conservative	balanced	aggressive	conservative	stable	balanced	aggressive
calculated since	1.07.2004	2.07.2002	2.07.2002	2.07.2002	2.07.2002	1.01.2010	7.01.2003	7.01.2003	7.01.2003	15.06.2004	15.06.2004	15.06.2004	15.06.2004
2002	-	*-4.42*	*-2.99*	*-4.49*	*-5.30*	-	-	-	-	-	-	-	-
2003	-	-5.75	-8.92	-7.00	-5.06	-	-6.38	-6.47	-5.59	-	-	-	-
2004	*0.41*	-6.26	-13.35	-9.24	-4.01	-	-16.50	-16.29	-14.05	*-2.41*	*0.08*	*1.47*	*29.43*
2005	-4.27	-6.97	-22.70	-13.23	-1.92	-	-27.35	-25.43	-20.48	-10.60	-2.89	5.93	43.54
2006	-13.48	-13.86	-34.14	-22.10	-7.42	-	-39.94	-37.48	-31.56	-19.52	-9.63	0.89	53.00
2007	-12.91	-20.67	-42.04	-29.48	-13.96	-	-49.75	-47.55	-42.68	-32.26	-22.36	-11.75	27.86
2008	-44.30	-42.66	-46.42	-45.75	-40.21	-	-54.02	-55.33	-55.22	-39.42	-40.22	-45.14	-50.03
2009	-38.10	-27.16	-34.46	-33.66	-23.15	-	-44.85	-46.36	-45.06	-27.86	-26.14	-28.29	-33.68
2010	-37.93	-24.03	-35.13	-32.97	-19.19	12.32	-39.01	-40.01	-38.39	-27.63	-23.44	-23.09	-23.05
2011	-41.92	-38.17	-43.59	-43.65	-35.05	-14.18	-43.57	-46.12	-46.18	-34.76	-31.46	-33.94	-39.02
2012	-39.01	-37.72	-44.52	-43.46	-34.44	-11.17	-42.84	-44.95	-45.12	-34.18	-28.65	-30.62	-35.66

Italics represent the results for periods shorter than 12 months. In such case, the GDP real growth rates were adjusted to the period's length by scaling arithmetically.

Source: Author's calculations.

Table 2. 14. Accumulated excess real return over GDP growth (Hungary, Poland, Romania, Slovakia)

	Hungary				**Poland**	**Romania**	**Slovakia**			
type	classic	conservative	balanced	growth	mandatory pfs	mandatory pfs	conservative	balanced	aggressive	indexed
calculated since	1.01.1998	22.03.2005	22.03.2005	22.03.2005	1.09.1999	21.05.2008	22.03.2005	22.03.2005	22.03.2005	2.04.2012
1998	-2.75	-	-	-	-	-	-	-	-	-
1999	0.40	-	-	-	*0.09*	-	-	-	-	-
2000	-5.59	-	-	-	0.07	-	-	-	-	-
2001	-10.12	-	-	-	0.08	-	-	-	-	-
2002	-12.15	-	-	-	0.19	-	-	-	-	-
2003	-17.11	-	-	-	0.26	-	-	-	-	-
2004	-13.59	-	-	-	0.32	-	-	-	-	-
2005	-9.55	-	-	-	0.44	-	*-0.04*	*-0.04*	*-0.04*	-
2006	-9.37	-	-	-	0.57	-	-0.13	-0.12	-0.12	-
2007	-11.61	-	-	-	0.52	-	-0.21	-0.21	-0.20	-
2008		*0.82*	*0.72*	*0.60*	0.17	*-0.01*	-0.27	-0.33	-0.34	-
2009		0.93	0.86	0.76	0.27	0.17	-0.24	-0.30	-0.32	-
2010		0.93	0.88	0.80	0.32	0.29	-0.27	-0.33	-0.35	-
2011		0.92	0.83	0.72	0.15	0.22	-0.31	-0.37	-0.38	-
2012		0.98	0.93	0.80	0.27	0.30	-0.32	-0.38	-0.39	*0.00*

Italics represent the results for periods shorter than 12 months. In such case, the GDP real growth rates were adjusted to the period's length by scaling arithmetically.

Source: Author's calculations.

This result suggest that from the purely economic point of view, from the perspective of the individual pension fund member the existence of funded pillars in those countries in the current design and for this, yet still relatively short time horizon, is questionable – for the time being, much better "job" could have been done via organising the pension system as a purely PAYG one with the GDP-linked rate of return[12]. Or, alternatively, it could have been more efficient, if the design of the particular pension system in question followed the ones applied in Poland, Hungary or Romania. Nevertheless, the fully-fledged comparison of competing pension models that would have required much longer perspective such as the length of accumulation period (30-40 years).

Obviously, the discussion of what are the potential factors that contributed to this result so far is beyond the scope of the chapter. However it seems very likely that the most immediate 'culprits' are:

- investment limits – too conservative in most of the analysed countries, which prevented them from better use of equity premium (Table 2.15);
- fee structure – in most of the countries fees are quite high, particularly the ones charged on assets under management (Table 2.16) which determine the long-term cost of saving for retirement;
- timing – funded systems in Bulgaria, Baltic States, Romania and Slovak Republic were introduced much later than in Hungary and Poland. This might have resulted in some missed opportunities to gain on financial markets. Also, shorter history of systems does not yet allow for gaining full benefits from investment experience, decreasing costs due to increasing assets under management.

[12] Under the assumption that the wages are highly correlated with the GDP growth.

Table 2. 15. Investment limits in selected CEE funded systems in 2001, 2005 and 2012

2001	Equity	Real estate	Bonds	Retail investment funds	Private investment funds	Loans	Bank deposits
Hungary	50	0	50 (corporate)			0	no limit
Poland	40*	0**	no limit		not allowed	as equity	20

2005	Equity	Real estate	Bonds	Retail investment funds	Private investment funds	Loans	Bank deposits
Bulgaria	10		at least 50 (TB), 10 (municipal), 20 (corporate), 30 (mortgage)	not allowed	not allowed		25
Latvia	0 (conservative) up to 50 (most aggressive)	not allowed				not allowed	
Lithuania	40	not allowed		20	not allowed		
Hungary	non-listed 10 (both domestic and foreign)	5% directly, 10% together with real estate investment funds	no limit (TB), 10 (corporate and municipal), 25 (mortgage)	50	5 (hedge funds, private equity funds)	0	no limit
Poland	40*	0**	no limit (TB), 40 (municipal, corporate), 40 (mortgage, 15 if non-listed)	15 (open-ended), 10 (close-ended)	not allowed	as equity	20
Romania							
Slovakia	0 (conservative), 50 (balanced) 80 (aggressive)	not allowed	at least 100 (conservative), at least 50 (balanced), no limit (aggressive)	50	not allowed	not allowed	no limit

2012	Equity	Real estate	Bonds	Retail investment funds	Private investment funds	Loans	Bank deposits
Bulgaria			no limit				
Estonia	0 (conservative), 25 (balanced), 50 (progressive), 75 (aggressive)	40	no limit (listed), 10 (unlisted)	no limit	no limit	10	no limit
Latvia	0 (conservative) up to 50 (most aggressive)						
Lithuania							
Hungary	10 (conservative), 10-40 (balanced), 40 (growth)	0 (conservative), 10 (balanced), 20 (growth)	no limit (TB), 10 (corporate and municipal), 25 (mortgage)	50	0 (conservative), 3 (balanced), 5 (growth), 5 (derivatives, risk capital)	0	no limit
Poland	40*	0**	no limit (TB), 40 (municipal, corporate), 40 (mortgage, 15 if non-listed)	15 (open-ended), 10 (close-ended)	not allowed	as equity	20
Romania							
Slovakia	0 (conservative compulsory created with guarantees), 80 (equity without guarantees), other forms (any limit)		0 (conservative compulsory created with guarantees), 80 (equity without guarantees), other forms (any limit), 50 (mortgage bonds)	20	not allowed	not allowed	no limit (10 for single bank)

* on less liquid stock exchange market 10% (2001), 7.5% (2005 and 2012), * directly, possible indirect investment.

Source: OECD, Annual survey of investment regulations, information from IOPS (www.iopsweb.org), Jeko and Nenovsky (2012) and author's own elaboration based on personal contacts.

Table 2. 16. Fees in the CEE funded second pillars (in %) – market weighted averages

Country	Date	Average fee charged on	
		contributions	assets
Bulgaria	2012	4.97	1.0
Latvia	2012		2.0
Lithuania*	2013	1.86 (max cap)	0.65 (max cap for conservative funds) 0.99 (max cap for other type of funds)
Poland	2011	3.5	0.46
Romania	2012	2.5	0.6
Slovakia*	2012	2.27 (max cap)	2.0 (max cap)

* The values presented are not market-weighted averages but the legal maximum values that can be charged for a particular type of fee.

Source: Excerpt from Ionescu and Robles (2014, pp. 9-10).

2.6. Conclusions

This chapter analysed the development of funded pension pillars in selected CEE with a focus on their performance. The markets saw an introduction of life cycle portfolios in Baltic States, Hungary and Slovakia and consolidation with decreasing number of pension fund operators in force. Most of the countries followed rather conservative investment policy which became only slightly and less restricted in recent years. The highest exposure to equities was observed in Poland. The riskiness of funds depended on the type of portfolio – its actual investment risk exposure.

In general, the investment performance was not satisfactory, at least over the medium-term horizon of less than 15 years which suggests that a follow-up study in the future to re-examine the performance of CEE funded systems would be worthwhile. Only funds in Poland, Romania and to some extent Hungary increased the value of paid in contributions in real terms. The same conclusion can be drawn when analysing accumulated excess real returns over the GDP growth. These results suggest that pension fund members in Bulgaria, Baltic States, and – to less extent - Slovak Republic could be better off with participating in the NDC-like unfunded pension system or in the funded pillars but with designs resembling more Poland, Romania or Hungary. The above conclusion comes with the caveat that the convincing conclusions with regard to whether funded pillars in CEE were better or worse than alternative systems (DB PAYG or NDC) would require much longer assessment horizon, at least comparable to the standard length of saving for retirement, that is 30-40 years.

What is interesting in this aspect is the very probable conclusion that recent reversal in funded pillars which affected Hungary and Poland were not motivated by their poor investment performance.

The sample data is not long enough to arrive in decisive conclusions with regard to the long-term performance of analysed CEE funded pension systems. The history of long-term investment in various countries (with a famous US example used by Siegel, 2008) suggests that in the long-run the probability of achieving negative accumulated rates of returns from investment is getting extremely small. At the same time, the probability of occurring negative *interim* returns increases over the time horizon (Trainor, 2005, p. 332).

In the long run, the funded pillar is better for future pensioners than the PAYG system when the real rate of return exceeds the growth of wage funds (the Aarons' condition, Aaron, 1996). According to D. Blake (2009, p. 4) this condition is met not only because pension funds can invest abroad in countries with higher economic growth rates. The condition is met also on the grounds of the so-called dynamic efficiency of economy. The dynamic efficiency (Abel et al., 1989) is present in the economy when at constant share of wages in the GDP the rate of return in investment in financial assets exceeds the rate of growth of wages, which – in the long – is the GDP growth rate (c.f. Blake, 2009, p. 4). To verify the above statement for the CEE pension systems much longer time horizon would have been required.

Chapter 3: Short-term effects of downsizing pension funds sector in selected CEE countries on their public finance situation, and the public pension system

Kamila Bielawska, Agnieszka Chłoń-Domińczak

In this chapter we analyse the data on public finance and transition cost in the CEE countries. We seek to identify factors essential to the development of mandatory funded pension schemes while maintaining fiscal sustainability.

We use multivariate statistical analysis with variables related to the situation of public finance, pension system and macroeconomic situation. By applying this method, we seek to identify factors that are essential to the development prospects of mandatory funded pension schemes while maintaining fiscal sustainability. Then we use the regression model to identify which of the selected variables are statistically significant in explaining the level of general government deficit.

3.1. Fiscal position of CEE countries after the crisis

When the crisis hit economies of CEE countries, their fiscal position had worsen. Estonia was the only country not being subject to excessive deficit procedure (EDP) in years 2009-2010. But this fact did not stop the Estonian government to conduct fiscal consolidation, which resulted in a surplus or close to balance situation until the end of 2012. The same mechanism worked in Bulgaria, the second country (after Estonia) with very tight national fiscal rules, which pursue fiscal policy in line with budgetary medium-term objective. In other countries general government deficit exploded to 7-9% of GDP during 2009-2010.

All countries of the CEE being member states of EU must conduct fiscal consolidation process in case of exceeding the reference value of general government deficit to GDP (3%). Gross general government debt should be kept below 60% GDP (fiscal rules in the EU are described in the details in the chapter 6). The scope of an minimum annual fiscal effort for a specified period is usually urged in the Council Recommendation. Requirements defined by the Council in terms to eliminate the EDP for the specified countries are shown in Table 3.1.

Table 3. 1. Decisions of Council on existing and abrogating excessive deficit procedure in 2009 – 2015 for CEE countries

Country	Date of the Decision on existing excessive deficit	Minimum average annual fiscal effort required in structural terms	Deadline for correction	Abrogating of EDP
Bulgaria	13 July 2010	1,25% GDP	2011	22 June 2012
Estonia	Not applicable	Not applicable	Not applicable	Not applicable
Latvia	7 July 2009	2,25% GDP	2012	21 June 2013
Lithuania	16 February 2010	2.25% GDP	2012	21 June 2013
Hungary	5 July 2004	0.5% GDP for 2012 - 2013	Initial 2008, prolonged to 2009 and further to 2011 and 2012	21 June 2013
Poland	7 July 2009	1.25% GDP	Initial 2012, prolonged by 2014	12 May 2015
Romania	7 July 2009	1.75% GDP	Initial 2011 prolonged by 2012	21 June 2013
Slovakia	2 December 2009	1.0% GDP	2013	17 June 2014

Source: Council Decisions and Recommendation on existence and (where appropriate) the abrogation of excessive deficit procedure, http://ec.europa.eu/economy_finance/economic_governance/sgp/corrective_arm/index_en.htm

The strategies of fiscal consolidation were different as the sources of crises differed between countries. Table 3.2 shows the main instruments of fiscal consolidation outside the pension system on revenue and expenditure side of general government accounts.

Table 3. 2. Instruments of fiscal consolidation outside the pension systems during 2009 – 2012

Country	Revenue side				Expenditure side		
	Increase of VAT rates (permanent or temporal)	Increase of excise duty	Increase of property tax	Increase of dividends from state owned companies	Reduction of public sector salaries	Freeze of public sector salaries	Rationalization of social benefits except pensions
Bulgaria		x				x	x
Estonia				x			x
Latvia	x	x	x	x		x	x
Lithuania						x	x
Hungary						x	x
Poland	x	x				x	x
Romania	x				x		x
Slovakia	x	x	x			x	

Source: Authors' resume on the base of Convergence or Stability Programmes of each country for years 2009 – 2012.

Fiscal consolidation with regards to revenue side comprised not only the increase (permanent or temporal) of tax rates, but also assumed widening the tax base and increase of efficiency of tax collection. The countries which used revenue side instruments of fiscal consolidation were Latvia, Poland, Slovakia and to some extent Bulgaria and Romania. More popular were expenditure side instruments, including overall non-interest public spending freeze or growth

limits (usually below the growth of potential GDP), especially the wage bill freeze or decrease (as in Romania) and social transfer reduction and rationalisation.

Taking into account the instruments of fiscal consolidation connected with mandatory pension system, 7 out of the 8 analysed countries (with exception of Bulgaria), decided on temporal or partial reduction of contribution to funded pillar and/or partial or permanent reversal from prefunding of pension, as described earlier. Other instruments of fiscal consolidation within the pension systems were: freeze of pensions or reduction of pensions' indexation (except Estonia and Poland), increase in retirement age or acceleration of increase in retirement age and other parametric changes to pension system aiming to reduce public pension expenditures (i.e. phase-out of early retirement). This shows that the austerity measures adopted by the governments in the area of pensions affected both the funded and PAYG pillars. These cuts may have been greater because of the existence of the multi-pillar system and necessity to meet the transition cost.

The measures taken on changes in funded pillar played a significant role in fiscal consolidation process amongst the CEE countries with most radical scope during analysed period in the case of Hungary. The sequestration[13] of pension assets in Hungary improved fiscal balance approximately of 10% GDP. In Baltic States, temporary reduction or partial reduction of contribution diverted to funded pillar during 2009-2011 improved fiscal position by 1.4% GDP in Lithuania, 2.3% GDP in Estonia and 3.2% in Latvia. In Poland permanent reduction of contribution to funded part of pension system since May of 2011, brought a fiscal effect of 0.6% GDP in 2011. The changes implemented in Poland in 2013 (effective in 2014) - acquisition of 51.5% of assets of OPF's, changing the character of pension funds from mandatory to voluntary and final constitution of contribution to the funded pillar at 2.92% of wage further improved current fiscal position. The one-off measure: sequestration of T-bonds held by pension funds accounted for 5 pp drop in public debt to GDP ratio in 2014 and changes in contribution level diverted to OPFs complemented with voluntary character of participation accounted for further reduction of transition cost to 0.3 – 0.4% of GDP/

[13] This expression has been used by B.H. Casey (2014).

Table 3. 3. Fiscal position of CEE countries in 2007 - 2014

Country	General Government net lending (+) / net borrowing (-) (% GDP)							
	2007	2008	2009	2010	2011	2012	2013	2014
Bulgaria	1.2	1.7	-4.3	-3.1	-2.0	-0.5	-1.2	-2.8
Estonia	2.4	-2.9	-2.0	0.2	1.0	-0.3	-0.2	0.6
Latvia	-0.4	-4.2	-9.7	-8.1	-3.4	-0.8	-0.7	-1.4
Lithuania	-1.0	-3.3	-9.4	-7.2	-9.0	-3.2	-2.6	-0.7
Hungary	-5.1	-3.7	-4.6	-4.4	-5.5	-2.3	-2.5	-2.6
Poland	-1.9	-3.7	-7.5	-7.9	-5.0	-3.7	-4.0	-3.2
Romania	-2.9	-5.7	-9.0	-6.8	-5.6	-3.0	-2.1	-1.5
Slovakia	-1.8	-2.1	-8.0	-7.7	-5.1	-4.5	-2.6	-2.9
Country	Government consolidated gross debt (%GDP)							
	2007	2008	2009	2010	2011	2012	2013	2014
Bulgaria	17.2	13.7	14.6	16.2	16.3	18.5	18.3	27.6
Estonia	3.7	4.5	7.1	6.7	6.1	9.8	10.1	10.6
Latvia	9.0	19.8	36.9	44.4	41.9	40.6	38.2	40.0
Lithuania	16.8	15.5	29.3	37.8	38.3	40.5	38.8	40.8
Hungary	67.0	73.0	79.8	82.2	82.1	79.8	77.3	76.9
Poland	45.0	47.1	50.9	54.9	56.2	55.6	55.7	50.1
Romania	12.8	13.4	23.6	30.5	34.7	37.9	39.0	39.8
Slovakia	29.6	27.9	35.6	41.0	43.4	52.4	54.6	53.6

Source: Eurostat.

As Table 3.1 shows, all the fiscal effort undertaken by the CEE countries led to abrogating of excessive deficit procedure as the general government deficit had fallen below 3% of GDP and eventual excess (as in the case of Poland) was explained by costs of structural reforms.

3.2. Financial situation of the PAYG schemes in the CEE countries

Financial situation of mandatory PAYG schemes in the CEE countries prior and after the pension reforms differed (see Table 3.4.). Hungary, Poland, Slovakia, Bulgaria and Latvia already had a deficit in the PAYG scheme prior to the reform implementation.

The situation in Baltic States was more favourable before the implementation of pension reforms and let to keep the surplus in public PAYG schemes even after the outflow of the part of the old-age contribution to mandatory pension funds.

After the reform implementation, Bulgaria, Hungary, Poland and Slovakia still note the deficit in their pension systems, without the transition cost. This is an outcome of implemented policies – for example the reduction of general social security contribution in Bulgaria (measure to reduce the wage cost) or maintaining low retirement age and pension benefits indexation close to wage growth in Poland.

Table 3. 4. Current year deficit/surplus of the PAYG schemes as % of GDP before any financial transfers to the system from general government and the deficit/surplus of the PAYG schemes less transition costs (in brackets)

Country (reform year)	T-3	T-2	T-1	Reform year(T)	T+1	T+2	T+3	T+4	T+5	T+6	T+7
Bulgaria (2002)	..	-0.4	-0.9	-2.0 (-1.4)	-2.0 (-1.5)	-3.1 (-2.5)	-2.6 (-1.9)	-2.4 (-1.6)	-2.3 (-1.2)	-3.6 (-2.5)	..
Estonia (2002)	-0.9	-0.2	0.5	0.6 (0.6)	0.2 (0.6)	-0.1 (0.6)	-0.2 (0.5)	-0.2 (0.6)	..	..	..
Hungary (1998)	..	..	..	-0.5 (-0.3)	-0.7 (-0.2)	-0.7 (-0.2)	-1.0 (-0.5)	-1.8 (-1.3)	-1.6 (-1.1)	-2.0 (-1.2)	-2.3 (-1.3)
Latvia (2001)	-0.3	-0.9	-0.6	-0.1 (0.0)	0.0 (0.2)	0.1 (0.5)	0.7 (1.1)	0.9 (1.5)	1.3 (2.0)	..	..
Lithuania (2004)	-0.1	0.0	0.3	0.2 (0.5)	0.1 (0.5)	0.4 (1.0)	..	..	..	..	..
Poland (1999)	-0.9	-1.3	-1.3	-2.0 (-1.7)	-2.3 (-1.3)	-2.9 (-1.8)	-3.4 (-2.2)	-3.4 (-2.2)	-3.3 (-2.2)	-3.0 (-1.7)	-3.3 (-2.0)
Slovakia (2005)	-0.4	-0.4	-1.1	-2.2 (-1.6)	-2.7 (-1.6)	..	..	..	..	..	..

Note: The reform year (T) takes into account the first effects of the reform. It must be noted that in Estonia, Latvia and Lithuania the mandatory pension funds started mid-year (from July) and in Poland in April. In other countries the reform was introduced from January of the respective year. No specific data for Romania.

Source: Transition Costs of Reformed Pension Systems, Center for Policy Studies PRAXIS, Tallinn 2008, p. 15, supplemented with authors' calculations of current deficit/surplus less transition costs.

Diverting a part of old-age contribution to mandatory pension funds seriously deepened the deficit of PAYG schemes in Hungary, Poland and Slovakia. As mentioned before in Chapter 1, expected reduction of pensions' expenditures did not support the coverage of transition costs. Moreover, governments of some of analysed countries decided to introduce changes into the PAYG schemes that had worsen their financial situation. In Poland for example, these decisions included: postponing of early-retirement phase-out, sustaining the privileges for miners, changing indexation rules. In Bulgaria, despite of the deficit of PAYG scheme, the government decided to gradually reduce the contribution rate to the scheme from 27% (in 2002) to 11% (in 2010) and then increased it to 12.80% in 2011.

The results of such decisions are visible in the Table 3.4 in numbers in brackets which represents the deficit/surplus of PAYG schemes before the transfer of part of social security contribution to funded scheme. In Poland such deficit accounted for 2% of GDP, and slightly lower in Bulgaria, Slovak Republic and Hungary.

Higher deficit of pension systems after the crisis was thus one of the factors influencing decisions to increase pension contribution revenue by reduction of the funded component contribution.

3.3. Quantitative assessment of drivers of after-crisis pension system changes.

To assess the impact of analysed factors on the general government deficit, as one of the key indicators of the current fiscal position of the economies, we tested the importance of these factors in explaining the level of general government deficit. First, we performed an analysis of variance for the pooled data for all countries in calendar years 2000-2011 (Table 3.5).

In the analysis the variables that were significant (p<5%) included: general government spending and social spending[14] as well as country variables for Estonia and Slovakia. Other analysed variables: transition costs (measuring the contribution outflow to the funded pillar), calendar year, employment rate and dummy variables for individual countries were not significant.

Table 3. 5. Results of ANOVA – explanatory variable: general government deficit

	Sum of squares	df	Mean square	S	P-value
Annual transition cost	18,113	64	,283	1,533	0,115
year	835,468	64	13,054	1,451	0,147
general government spending* **	2295,199	64	35,862	3,411	0,000
social spending* **	23138,693	64	361,542	2,152	0,016
employment rate	20145,778	64	314,778	,873	0,678
BG	5,212	64	,081	1,694	0,069
EE* **	8,668	64	,135	2,012	0,025
LV	7,334	64	,115	,966	0,560
LT	5,751	64	,090	,501	0,987
HU	6,918	64	,108	,803	0,764
RO	7,168	64	,112	,896	0,648
SK* **	8,751	64	,137	2,133	0,017

Source: Authors' analysis.

Results of the regression model explaining general government deficit based on the pooled annual data for all of the countries are shown in Table 3.6. The model shows that transition cost and general government spending in the regression have statistically significant coefficients as well as dummies for Latvia, Lithuania and Hungary.

[14] For the entire database the correlation between general government spending and social spending is 10%, which means that we can use both of the variables in the regression analysis.

Table 3. 6. Results of OLS analysis. Dependent variable: general government deficit

	Coefficient	Std. Err.	P>t
transition cost**	1.447	0.710	0.045
post-crisis year	0.311	0.518	0.550
general government spending***	0.702	0.089	0.000
social spending	-0.214	0.232	0.358
employment rate	-0.202	0.111	0.072
Bulgaria	0.096	1.282	0.941
Estonia	1.243	1.638	0.450
Latvia***	3.822	1.499	0.013
Lithuania***	4.116	1.496	0.007
Hungary***	-3.980	1.248	0.002
Romania	-5.519	5.613	0.329
Slovakia	14.272	11.270	0.209
Constant	-13.798	7.388	0.066
R-squared	0.7462		

Note: Poland is the reference country, *** p<0.01; ** p<0.05, * p<0.1

Source: Authors' analysis.

The results of the regression indicate that higher transition cost and overall level of general government spending lead to higher general government deficit.

Overall, the results of the quantitative analyses indicate that the level of general government spending is one of the main drivers of the general government deficit. In the regression model we also see the statistically significant impact of transition cost on this level.

Chapter 4: Impact of changes in pension system in selected CEE countries on the level of pensions and pension wealth[15]

Agnieszka Chłoń-Domińczak

The impact of the implemented changes will affect cohorts to a different extent, depending on their age and time left to retirement age. It is associated with announced changes in contribution level over time, as well as with time left to retirement. Currently used micro simulations (for example OECD) do not take into account cohort difference, as they focus on the new entrants to the pension system. Our approach allows to appropriately assess the impact of the implemented changes for various participants of pension systems in the countries covered by the project.

In this chapter, we analyse the microeconomic consequence of pension system changes in the CEE countries. We formulate three hypotheses. First: the net change of the entire pension wealth depends both on the change in the fully funded part and on the change of pension accumulation in the pay-as-you-go part of the system, in order to fully assess the impact of the change on pension wealth it is important to analyse the net outcome. Some authors, for instance (Price & Rudolph, 2013) take into account only the reduction of the fully-funded part of the pension. Second: the impact of the change is higher in the case of countries where the reduction in fully funded contribution level was permanent. Third: the impact of the change is higher in the case of younger workers, whose pension rights are accumulated for longer time after the change was introduced.

This hypothesis is associated with changes in contribution level over time as well as with time left to retirement. Pension level projections published by the OECD (DG Employment & Social Protection Committee, 2012; OECD, 2011b) do not take into account cohort difference, as they focus on the new entrants to the pension system. Our approach allows us to assess the expected impact of the implemented changes for various participants of pension systems in the countries covered by the project.

For the verification of the abovementioned hypotheses, a microsimulation model is developed, in which we calculate the value of pension wealth for two scenarios: before and after the pension system change. We take into account both the value of the pension wealth

[15] This is a short summary of the article that has been accepted for publication in the Journal of Pension Economics and Finance entitled: *Impact of changes in multi-pillar pension systems in CEE countries on individual pension wealth*, doi:10.1017/S1474747216000238.

loss in the funded part, as well as pension wealth gain in the pay-as-you-go part, leading to the assessment of the net pension wealth change. In this analysis we take into account those participants of the pension system who were already working when the change was introduced, taking different ages (from age 30 to 50) as well as different wage levels (from 50 percent to 150 percent of average wage).

The microsimulation model covers 5 countries that changed the proportion of contributions transferred to funded pillar for a set of "representatives" of pension fund members. We limit our analysis to the following countries: Poland, Latvia, Lithuania, Estonia, Romania and Slovakia. We did not take into account Bulgaria, as there was no change in the fully funded contribution rate. Due to the applied method, we also don't perform our analysis for Hungary[16].

The chapter consists of the following sections. First, we present the change in the level of pension replacement rates in three countries that are members of the OECD: Hungary, Poland and Slovak Republic, based on the pension projections published in the OECD's series Pensions at a Glance. Second, we outline the time path of the contribution levels to the fully funded part in the analysed countries, as the timing of the change and its temporal or permanent character affect the level of change in expected pension level.

4.1. Changes in expected pensions before and after the crisis in the CEE OECD countries

Future level of pensions is assessed, among others, by the OECD. The OECD applies the microsimulation APEX model to project the future level of pensions relative to wages in the OECD countries. Results of such simulations, based on standardised assumptions, are published bi-annually in the report „Pensions at a Glance".

Table 4.1 presents results of the gross pension level relative to average wage in four consecutive reports: from 2007 to 2013 (OECD, 2007, 2009, 2011, 2013), i.e. the time from before crisis until recent available simulations, which take into account changes in the pension systems. As one can see, the reversal of pension reform in Hungary leads to a slight reduction in the replacement rate, which still remains higher than average. Pension system changes lead in the reduction of the gross replacement rate in Poland, particularly between 2011 and 2013, i.e. after the reduction of the fully funded contribution rate to 1.92% of wage.

[16] Hungary is not covered by the analysis, due to the applied methodology, which is discussed later in the chapter.

Finally, pension system changes in Slovakia lead to the increase of the pension promise to the new labour market entrants.

Table 4. 1. Gross relative pension level of average wage earner of new entrant to the labour market in a given year (% of average wage)

	2007	2009	2011	2013
Hungary	76.9	76.9	75.8	73.6
Poland	61.2	61.2	59.0	48.8
Slovakia	56.7	56.4	57.5	65.9

Source: (OECD, 2007, 2009, 2011a, 2013).

4.2. The time path of contribution changes in fully funded schemes

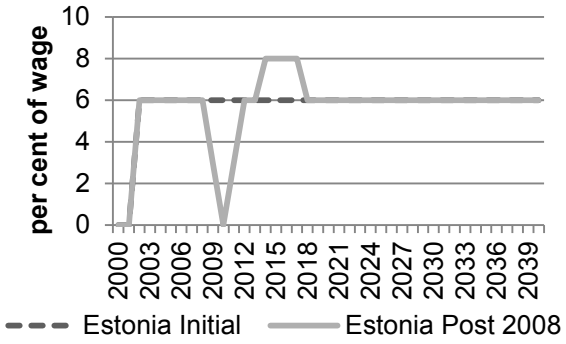
The timing and scale of adjustments of pension contributions in the analysed countries differ, following individual decisions made by the countries (Bielawska, Chłoń-Domińczak, & Stańko, 2015; Price & Rudolph, 2013; Schwarz & Arias, 2014). The rates of pension contribution to the fully funded component between 2000 and 2040 are presented in Figure 4.1. In the case of Estonia, Lithuania and Romania the change was temporal and after the period of adjustment, the contribution rate came back to the initial level. In Estonia, the initial reduction between 2009 and 2011 will be compensated by higher contribution rates between 2014 and 2017. In Romania, the initial path of contribution rate increases was postponed by one year, which means that there is a difference of 0.5 percent of wage in contribution between initial and post-2008 scenarios between 2009 and 2016.

An interesting solution was chosen by Lithuania. The contribution rate for fully funded part since 2014 was 2 percent from mandatory pension contribution plus 1 percent coming additionally from participants' income and another 1% average wage financed from the state budget. Individuals could choose whether they want to remain in fully funded system and pay additional contribution, which is matched by the state budget payment from general taxes. Since 2016 the contribution mix becomes six percent (i.e. 2+2+2) and since 2020 3.5 percent of contribution rate is paid from social insurance plus 2 percent participant wage plus 2 percent of average wage state budget. While this change increased contribution income to the social insurance system, the state budget co-payment means that the level of contributions financed from social insurance and other taxes will go back to the initial level. However, there is an additional contribution deducted from wage. The participant income part (1 percent between 2014 and 2019 and 2 percent afterwards) is not included in comparison of

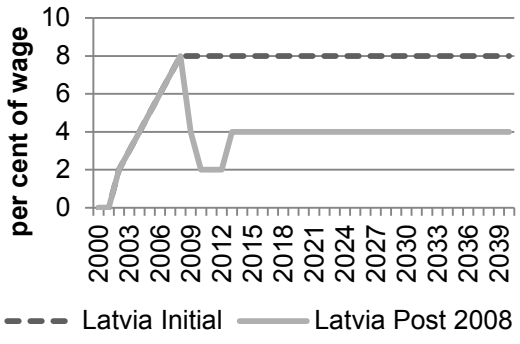
pension rights change but it actually increases the level of future pension for individuals, increasing the role of fully funded pension income in the old-age.

Figure 4. 1. Initial and post-2008 fully funded contribution rates in the CEE countries (% of wage)

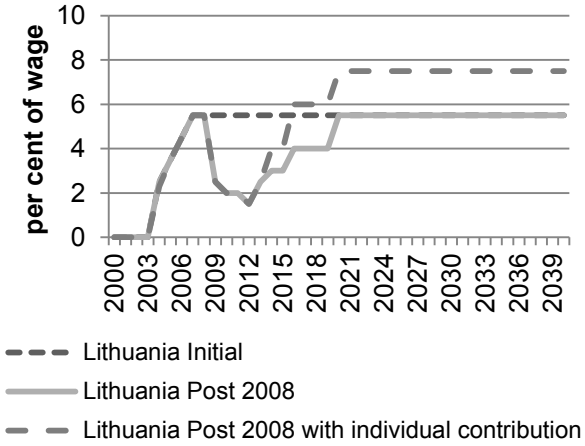
a. Estonia



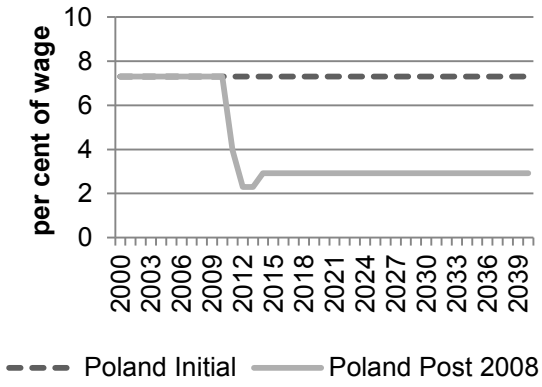
b. Latvia



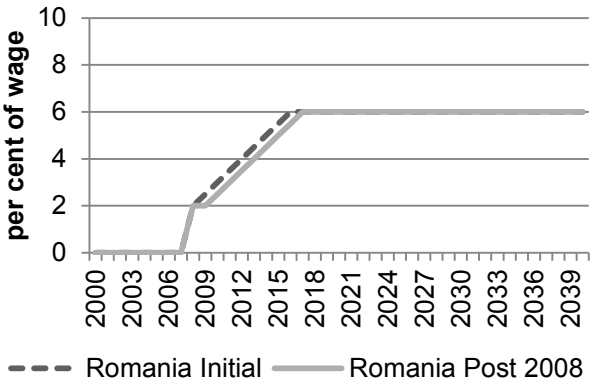
c. Lithuania



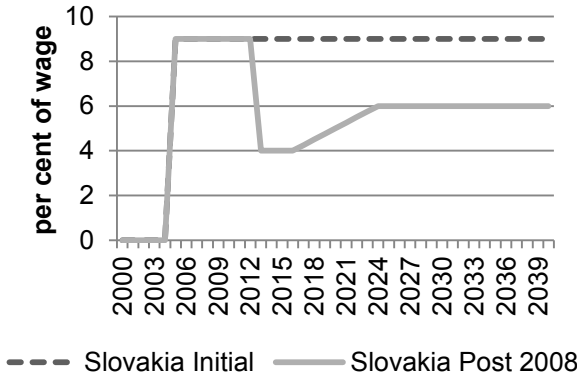
d. Poland



e. Romania



f. Slovakia



Source: Author's analysis based on country sources.

Three countries: Latvia, Poland and Slovakia reduced their fully funded contribution rates permanently. The long-term decrease is by 4 percentage points in Latvia (from 8 percent to 4 percent) 4.38 percentage points in Poland (from 7.3 percent to 2.92 percent) and by 5 to 3 percentage points in Slovakia (from 9 percent to 4 percent and back to 6 percent).

4.3. Method and assumptions for calculation of net change in pension wealth

In order to calculate the impact of the change on net pension wealth, we construct a microsimulation model for each of the analysed countries. We calculate the net change in pension wealth by measuring the difference in pension rights in fully funded systems due to the contribution decline (reduction of pension wealth) and difference in pension rights in pay-as-you-go systems due to the increase of the contribution (increase of pension wealth).

The calculation depends on the type of the pay-as-you-go system and pension rights accumulation in a given country, as described in Table 4.2. The resulting change is measured as a share of average wage.

Table 4. 2. Calculation of additional PAYG pension rights in analysed countries

Country	Additional PAYG pension rights
Estonia	There are no additional rights granted in the pay-as-you-go system. As the contribution rate was initially decreased and increased afterwards to compensate for the change, pension rights in the pay-as-you-go system remain unchanged.
Latvia	Reduced contributions are transferred to the general NDC account of an individual. This account is indexed according to wage fund growth. In the simulation, the level of indexation is equal to average productivity growth between 2010 and 2060.
Lithuania	The pay-as-you-go system is a defined benefit scheme. In the case of funded system participants, the benefit part that is related to individual earnings is reduced proportionally to the contribution rate. It is done by applying a coefficient equal to contribution rate for funded part in numerator and full contribution rate for social insurance old-age supplemental part in denominator (9.3%). The accrual rate is equal to 0.5% of wage. For the calculation of pension right, the difference in correction coefficients is calculated and translated into compounded accrual rate for a pension. This value is multiplied by life expectancy at the age of 65 in a calendar year where individual reaches the age of 65. For the reasons of comparability, the life expectancy is an average of male and female values. The comparison of accrued pension rights does not take into account additional contributions that are deducted from wage, as it was not a part of the initial pension system.
Poland	Reduced contributions are transferred to the NDC-2 account in the PAYG system. The gain in pension rights is calculated as the accumulated value of contributions paid to the NDC-2 account indexed to the 5-year averaged GDP growth. NDC-2 account was established in the Polish system after the reduction of initial contribution rates, it has a different indexation factor (NDC account is indexed to covered wage bill growth). NDC-2 account balance is inherited and paid out in cash in the case of death of pension system participant before claiming retirement.
Romania	Romania has a point system, in which an average earner accumulates one pension point in the case of average working career. For the purpose of the simulation, the length of the average career is set at the level of 30 years. The change in the pay-as-you-go pension rights is calculated by applying a coefficient equal to fully funded contribution level divided by the total social insurance contribution (31.3% of wage). The additional pension point values accumulated are equal to the difference in correction coefficient between initial and post-2008 contribution rates multiplied by 1/30 (reflecting and accrual of proportion of pension point). The value of

Country	Additional PAYG pension rights
	pension point in 2013 was 762.10 lei and is indexed by 50% of average wage growth. The accumulated value of pension points between 2009 and age of 65 is multiplied by life expectancy at the age of 65 forecasted for a year when individual reaches the age of 65. For the reasons of comparability the life expectancy is averaged between men and women (unisex).
Slovakia	Slovakia has a point system, in which an average earner accumulates one pension point for each year of contribution payments. There are solidarity adjustments in the case of people earning below and above average wage. The change in the pay-as-you-go pension rights is calculated by applying a coefficient equal to fully funded contribution level divided by the total social insurance contribution (18% of wage). The additional pension point values accumulated are equal to the difference in correction coefficient between initial and post-2008 contribution rates. The value of pension point in 2013 was 10.098 EUR and is indexed by average wage growth. The value of pension points is reduced for earnings above 125% of average wage (reduction factor is 60%) and the value of pension points for earnings below 100% of average wage are increased by 22%. The accumulated value of pension points between 2009 and age of 65 is multiplied by life expectancy at the age of 65 forecasted for a year when individual reaches the age of 65. For the reasons of comparability the life expectancy is averaged between men and women (unisex).

Source: Author's analysis based on information obtained from country experts and (OECD, 2013).

Assumptions used in the microsimulation are based on the ones used in the 2015 Ageing Working Group report (European Commission DG ECFIN, 2015), which are summarised in Table 4.3. The wage growth is assumed at the level of average labour productivity growth in the period 2010-2060 and the GDP growth as an average GDP growth for the same period. The rate of return in the fully funded schemes is set at the level of 3.0% annually. Furthermore, we assume that contributions paid to the fully funded scheme have an up-front fee equal to 5% of the contribution paid and asset management fee of 0.2% of assets annually. Life expectancy assumptions used in the simulation follow Eurostat EUROPOP projection from 2013.

Table 4. 3. Assumptions on GDP, labour productivity growth, financial market rate of return and life expectancy at age 65 in the analysed countries

	GDP growth	Labour productivity growth	Financial market rate of return	Life expectancy at 65 (in years)		
				2025	2035	2045
Estonia	1.5	2.0	3.0	19.00	20.25	21.40
Latvia	1.6	2.4		17.75	19.15	20.45
Lithuania	1.2	2.3		18.30	19.65	20.90
Poland	1.6	2.2		19.05	20.25	21.45
Romania	1.6	2.3		17.75	19.05	20.35
Slovakia	1.5	2.2		18.15	19.45	20.70

Source: (European Commission DG Economic and Financial Affairs, 2014).

The assumptions on the financial market rate of return show that the return on the funded part will be in all of the countries higher than the wage growth. As shown in Chapter 2, this was not the case in the period 2001-2012, mainly due to the negative returns in the time of the

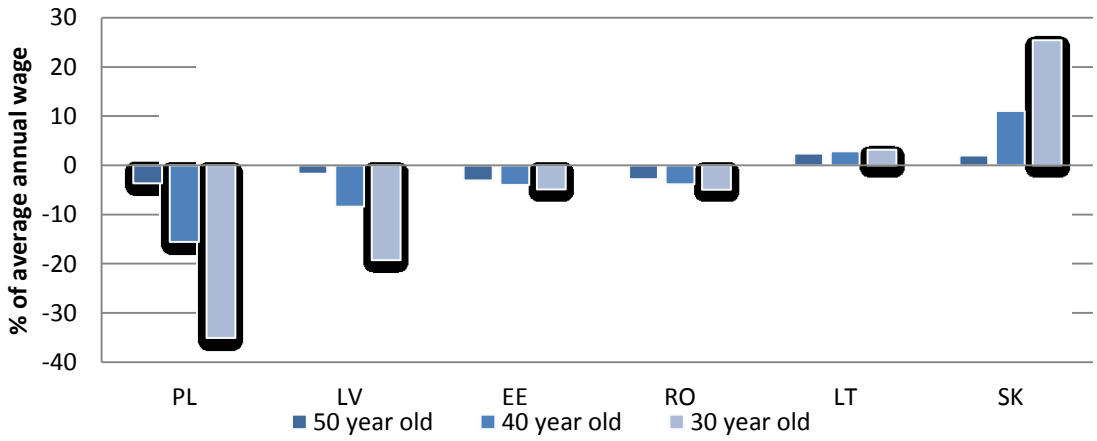
Great Recession. Despite this short-term evidence, in the long run the proposed assumptions can still be applied. Second, the AWG assumptions assume the same level of efficiency of financial market institutions. In our analysis we include the base scenario, which follows the same assumption on the financial market rate of return. We also test sensitivity of results to the assumption on the fully funded rate of return.

4.4. Simulation results

The results of the simulation indicate that the individual pension rights change resulting from the post-2008 pension system changes differ between Central and Eastern European countries.

The simulations show that in the case of average wage earner in the base scenario in three out of six analysed countries, there is almost no difference in pension wealth level. These are countries with temporary change of pension contributions: Estonia, Lithuania and Romania. This means that a few years' small diversion from the original path does not influence the long-term outcome of pension wealth accumulation during the entire working career.

Figure 4. 2. Change in the pension wealth due to the post-2008 modification of fully funded contribution rates for average wage earners



Source: Author's calculations.

The impact of the change leads to more significant alterations in pension wealth in countries with permanent modifications: Poland, Latvia and Slovakia. In Poland, the reduced contributions are diverted into NDC-2 account, indexed by average GDP growth. As assumed rate of return in fully funded component is higher than NDC-2 rate of return, there is a loss of

pension wealth, resulting from difference in accumulated return. The same is seen in Latvia, where the financial market rate of return is higher than the wage growth (2.4 %).

The loss is higher for the younger people, who have longer expected time of pension wealth accumulation after the change. By the same token, the loss measured by pension wealth changes with the wage level.

In the case of Slovakia, the calculation of pension points with target accrual rate of around 1.25% indicates that the pay-as-you-go part of the pension system offers currently higher pension rights for the contribution paid compared to the fully funded component. As a result, there is an observed gain in pension wealth due to the reduction of contribution paid to the fully funded component. The impact of the change for lower income earners is almost similar to those who earn average wage, which shows the impact of the redistribution included in the pay-as-you-go formula. Those who earn half of average wage can expect their pension wealth increased (compared to their individual wage) level around two times higher than average wage earners. The pension wealth increase for those high earners is the smallest. The result for Slovakia indicates potential imbalances in the pay-as-you-go part in the future.

If the rates of return in fully funded scheme are higher, the change would lead to pension wealth losses (with exception of Slovakia), while with the lower efficiency of pension funds, there is a potential gain in 4 countries with (minor) losses in Estonia and Romania.

4.5. Conclusions

The multi-pillar systems changes in Central and Eastern Europe, according to our assessment, will have relatively small impact on the value of future old-age pensions, in particular in countries that decided to make the contribution change temporary. The permanent change leads to observable change in the pension wealth level, which direction depends on the design of the PAYG system. .

Our findings should be seen only as one of the outcomes of the recent wave of pension systems changes. One should not forget that the change in the proportion of contributions affects the risk diversification of financing future pensions.

The changes also resulted in a loss of society's trust towards state-organised pension system and reliability of accumulated pension savings. Recent modifications in funded systems increased the reliance of future pension income on wage-based financing, which will be more

difficult to achieve given projected labour supply shortages due to the population ageing in the future.

Chapter 5: Long-term impact of changes in mandatory funded systems in selected CEE countries on the stability of public finances and pension systems

Kamila Bielawska, Agnieszka Chłoń-Domińczak

In this chapter we analyse the results of long-term projections of pension expenditure, including the impact of various factors such as: changes in demographic structure (population ageing), changes in retirement age, changes in benefit levels and sources of financing (division between pay-as-you-go and funded parts of the system). We also look at the sustainability measures of public finances related to the population ageing.

Research methods used:

- desk research and collection of results of pension projections in the analysed countries, including results published in the Ageing Reports published by the Ageing Working Group in 2009, 2012 and 2015;
- secondary quantitative analysis of the collected data, as well as analysis of the consistency of the projection results obtained from various sources.

5.1. Ageing and fiscal sustainability on the European Union agenda

The issue of long-term sustainability of public finances in the EU became more important when the decision about creation of the monetary union was taken. Focusing on the long-term assessment of the functioning of social security systems was reflected in the establishment of the Ageing Working Group of the Economic Policy Committee (AWG/EPC) in 1999. First demographic projections and their impact on public spending associated with an ageing population (ageing-related public expenditures) were published by the AWG in 2001. The EU summit in Stockholm in 2001 adopted a strategy to strengthen the long-term sustainability of public finances due to the ageing population, based on three measures (Oksanen 2009, p. 12):

a) the rapid reduction of public debt,
b) an increase in employment and labour productivity,
c) review, and where necessary, reforming public pension systems, health and long-term care.

From that moment analysis of the impact of public expenditure related to demographic change on the sustainability of public finance has become a permanent action taken at the EU level.

Every three years since 2006, a set of reports covering the issue of impact of ageing on public finances has been published. As the first one arrives the Joint Report prepared by the European Commission (DG ECFIN) and the Economic Policy Committee (AWG) on Underlying Assumptions and Projection Methodologies for the exercise of age-related expenditure projections. It covers demographic and economic assumptions which are crucial to evaluate public programs connected with ageing. This methodological report is followed by the Ageing Report: Economic and budgetary projections for the EU Member States, which covers the long-term projections of age-related public spending in the area of pensions, health care, long-term care, education and unemployment benefits (further called Ageing Report). On the basis of this report the Fiscal Sustainability Report is presented, which assess the medium and long-term fiscal stability of EU Member States in light of ageing populations.

The long-term stability of public finances became a part of MSs' stability or convergence programs (SCPs's) presented annually to the European Commission and ECOFIN Council to assess the compliance of national fiscal policies with the EU regulations. Every implemented structural reform needs to be assessed in terms of medium and long-term stability of public finances and presented in SCPs.

In fact, for many years these forward-looking projections had no practical influence on current evaluation of fiscal stance. According to the Maastricht Treaty member states were expected to avoid excessive deficits (ex post nominal deficit of general government sector less than 3% of GDP) and keep the gross public debt below 60% of GDP or reduce it gradually.

The situation changed when Sweden and several Central and Eastern European countries introduced structural pension reforms implementing multi-pillar systems that include a mandatory, fully funded pillar. This type of structural pension reform makes public finance sustainable in long run, but causes a pressure on fiscal balance in short and medium term. According to the Eurostat Decision on Classification of funded pension schemes and impact on government finance (Eurostat, 2004), neither contributions diverted from the PAYG pillar to mandatory pension funds, nor assets of pension funds invested in T-bonds, could be taken into account when calculating the public deficit and debt. To smooth the difference in

government accounts between reformers and non-reformers, the Stability and Growth Pact reform of 2005 allowed transition costs to be taken into account on a linear regressive basis for a transitory period of five years if the general government deficit remained close to the value of 3% of GDP (Council Regulation (EC) No 1056/2005). Transitory period ended when economic crisis hit the economies of European countries. In 2010 reformers renewed a request to the European Commission to redefine GGS deficit and debt excluding public spending related to creation of funded component of pension systems (Égert, 2013). However, the request was accommodated by the regulation during the second reform of Stability and Growth Pact in 2011, effective in 2012 evaluation round of SCPs, when most of the analysed countries had already decided on changes to the funded pillar of pension systems.

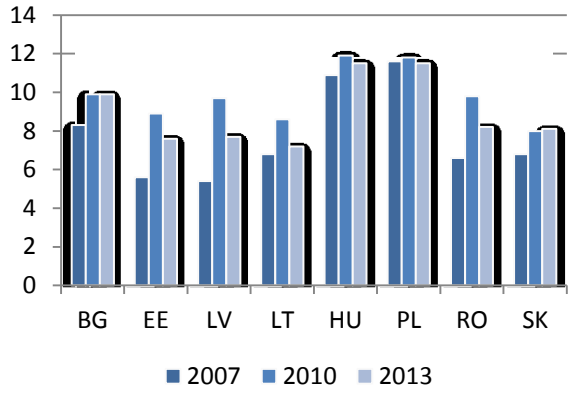
5.2. Projections of pension expenditures based on Ageing Reports

In this section we analyse projections of pension expenditure in three consecutive ageing reports: from 2009, 2012 and 2015. In that way we compare, how the projections evolved given the change of pension systems as well as underlying assumptions that took place between 2007 and 2013.

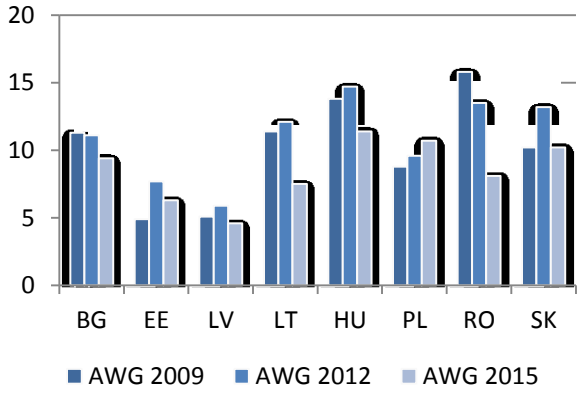
AWG projections show heterogeneity in the level and changes in pension expenditure in the CEE countries. As discussed in Chapter 1 and in Figure 5.1A, the level of pension expenditure in the CEE countries increased between 2007 and 2010, while between 2010 and 2013 it declined (except Bulgaria and Slovakia). Pension projections for year 2060 Ageing Reports (Figure 5.1 B and C) show that many countries implemented measures that aim to reduce the future pension expenditure. In 2009 and 2012 Ageing Reports (European Commission DG ECFIN, 2009, 2012) the pension expenditure projections indicate the rise in expenditure level by 2060 in five countries: Bulgaria, Lithuania, Hungary, Romania and Slovakia. However, already in 2012 the projected increase was smaller in Bulgaria, Lithuania and Romania. According to the last Ageing Report (European Commission DG ECFIN, 2015) in all countries (except Slovakia) pension expenditure will decline by 2060. The decrease in pension expenditure was projected already from 2009 in Estonia, Latvia and Poland – in the two latter countries this was the result of the shift to the NDC system in the public pay-as-you-go component. In Latvia and Poland the decline in pension expenditure in 2015 Ageing Report is smaller compared to the 2012 Ageing Report.

Figure 5. 1. Actual pension expenditure and projected level of pension expenditure in Ageing Reports

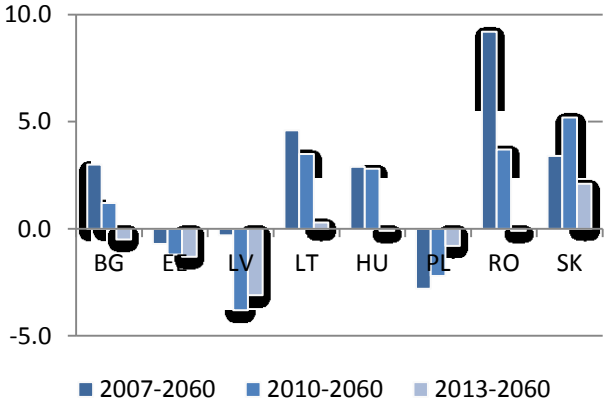
A. Actual pension expenditure in base year (% GDP)



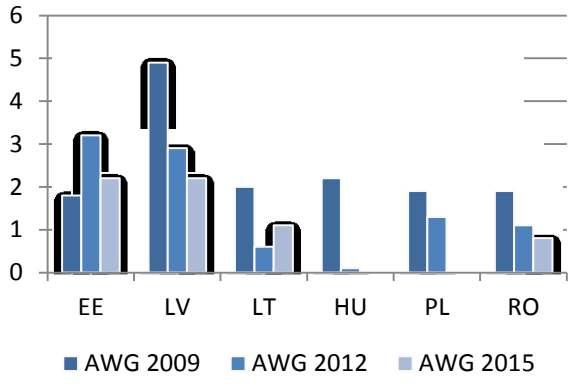
B. Projected pension expenditure in 2060 (% GDP)



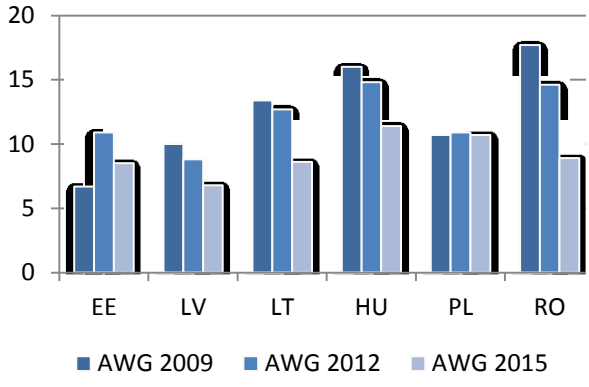
C. Change in pension expenditure between base year and 2060



D. Private pension expenditure in 2060 (% GDP)



E. Public and private expenditure in 2060 (% GDP)



Source: European Commission DG ECFIN (2009, 2012, 2015).

Pension system changes and reduction of the size of funded components also leads to the changes in the projected levels of private pension expenditure (Figure 5.1 D). Ageing Reports present these projections for six countries (with exception of Bulgaria and Slovakia). The

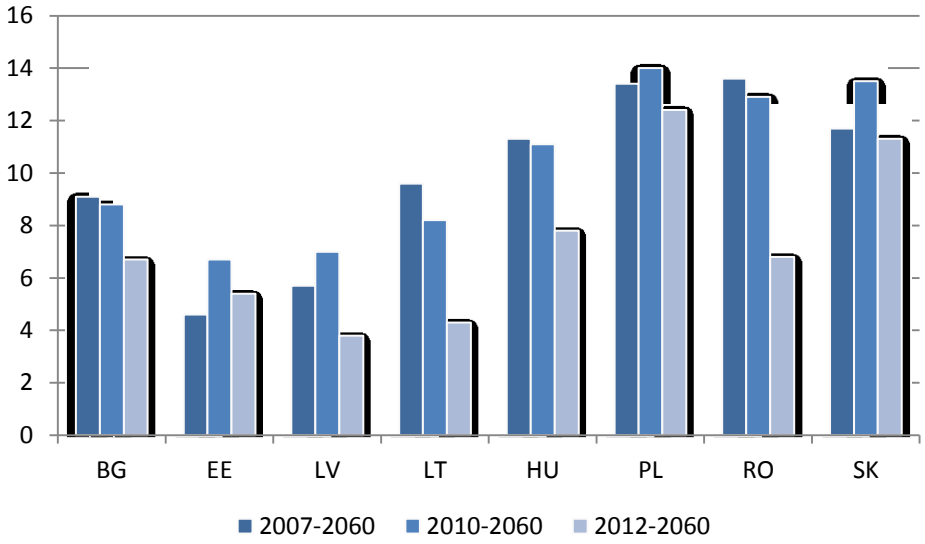
private pension expenditure in the 2015 Ageing Report will be smaller, compared to the 2009 Ageing Report in all countries, with exception of Estonia. Due to the reversal of funded systems, in Poland and Hungary there will be no private pension expenditure projected in 2060. If we add both public and private pension expenditure (Figure 5.1 E), we can see that the total pension expenditure will increase in Estonia (i.e. the private pension expenditure will be higher than the decline projected in public spending), while the decline will be smaller in Latvia, Lithuania, Poland and Romania. It is also worth to note that in the case of Poland, the combined public and private pension spending is relatively constant at the level of 10% of GDP. This indicates that the increase in projected level of public expenditure in consecutive Ageing Reports is due to the reduction of the role of the funded component in the mandatory pension system.

The decomposition of change in pension expenditure included in the Ageing Reports allows identifying what the contribution of demographic and pension system changes is to the overall evolution in pension expenditure. This includes, in particular:

- dependency ratio contribution, which indicates what would be the increase of pension expenditure caused by the change in population age structure;
- coverage ratio contribution, which measures the ratio of pensioners to the population 65+; this means that it presents the effects of changes in pensionable age;
- benefit ratio contribution; which shows the effect of benefit level changes (relative to average wage) to the change of overall pension expenditure.

As discussed in Chapter 1, population ageing is the main long-term reason that triggered reforms of pension systems in the CEE countries. The demographic developments leading to changes in the age structure continue for the past two decades. Thus, the dependency ratio contribution to potential increase of pension expenditure is significant in the CEE countries (Figure 5.2).

Figure 5. 2. Contribution of the dependency ratio effect to the change in public pension expenditure (in p.p. of GDP)



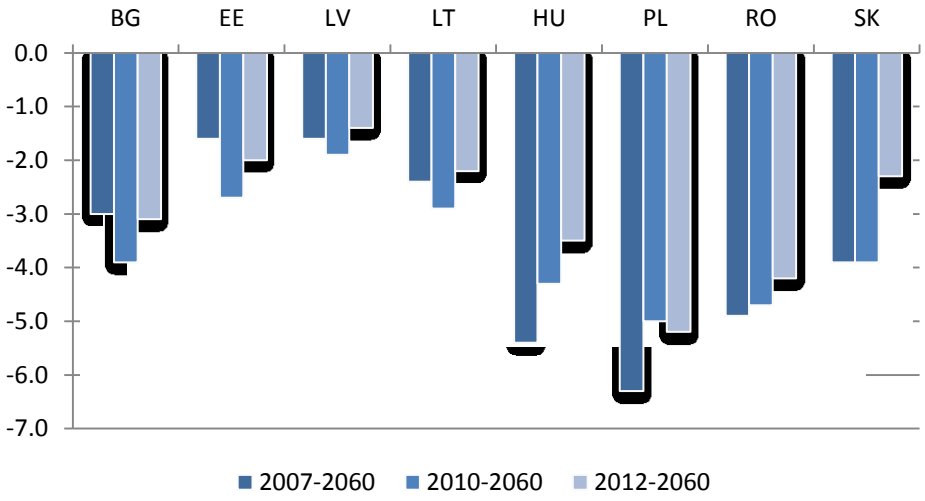
Source: European Commission DG ECFIN (2009, 2012, 2015).

The dependency ratio contribution to the change of pension expenditure is the highest in Poland and Slovakia, while the lowest in Latvia, Lithuania, Estonia and Bulgaria. As presented in Chapter 1, these four countries maintain relatively higher level of fertility, which contributes to the size of the working age population as projected in 2060. This indicates that there is a significant contribution of the current demographic developments to the ageing expenditure pressure in the next decades.

The other two analysed factors contributing to the change in pension expenditure are related to the changes of pension systems, which aim to reduce the increase of spending caused by the population ageing. The first one is the coverage ratio change, which shows how the change in retirement age contributes to the decline of pension expenditure by 2060.

According to the 2015 Ageing Report, the coverage ratio contributes to the decline of pension spending from 1.4% of GDP in Latvia to 5.2% of GDP in Poland (Figure 5.3). This contribution depends on the level of change of pensionable age as well as the initial level of pension expenditure. In Latvia, the retirement age of men and women is 62 and according to the 2015 Ageing Report it will increase to 65, with early retirement possible from age 63. In Poland, retirement age will increase from 65.3 for men and 60.3 for women to 67.

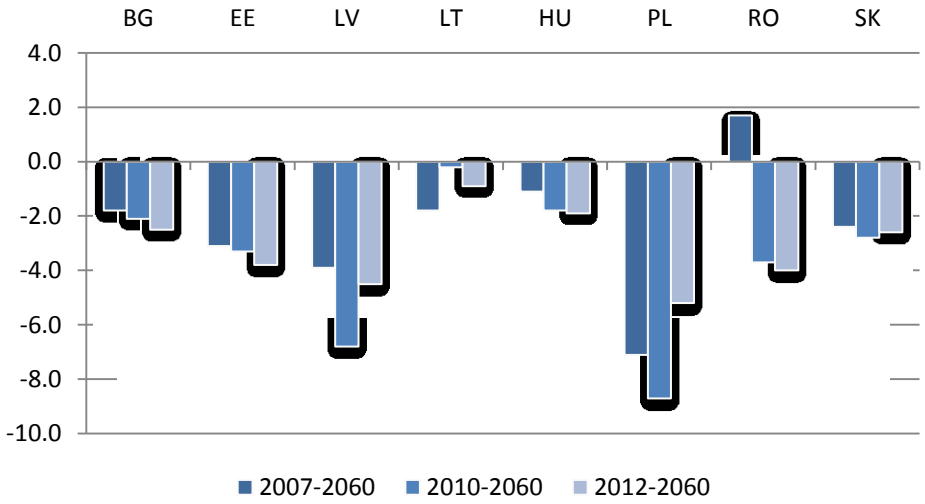
Figure 5. 3. Contribution of the coverage ratio effect to the change in public pension expenditure (in p.p. of GDP)



Source: European Commission DG ECFIN (2009, 2012, 2015).

The contribution of the benefit ratio effect to the mitigation of pension expenditure increase is the highest in Poland and Latvia (Figure 5.4); consistently in the all analysed Ageing Reports. This can be linked to the NDC formula in the pay-as-you-go pension system. The 2015 report assessment indicates that benefit ratio contributes to the reduction of pension expenditure until 2060 by 5.2 p.p. of GDP in Poland and 4.7 p.p. of GDP in Latvia. In the remaining countries this effect ranges from almost 1 p.p. of GDP in Lithuania to 3.8 pp. of GDP in Estonia. In half of the CEE countries the benefit ratio effect is higher than the EU average (3.0 p.p. of GDP).

Figure 5. 4. Contribution of the benefit ratio effect to the change in public pension expenditure (in p.p. of GDP)



Source: European Commission DG ECFIN (2009, 2012, 2015).

In conclusion, the introduction of multi-pillar pension system is not a necessary condition for the stabilisation of pension expenditure in the long run. The effect of changes in retirement age as well as in public pension levels is also important. These changes, together with the shift of part of pension system liabilities to funded systems, contribute to the projected decline in pension expenditure in the analysed seven countries by 2060.

5.3. Assessment of fiscal sustainability

The analysis of fiscal sustainability in the EU takes into account the capacity of public authorities to provide servicing the public debt in the long term. In other words, it is assumed that fiscal policy is not sustainable, if it leads to an excessive public debt and ever-increasing debt service. Ensuring the sustainability of public finances means avoiding excessive growth of public debt, which is a burden for future generations. This should be achieved upon the condition that the State is able to provide citizens with access to public and social services, even in adverse economic conditions and that the challenges associated with an ageing populations were taken into account. Measures of sustainability of public finances used in the Fiscal Stability Reports are called S1 and S2 indicators. In a recent report (of 2012) they were complemented with S0 indicator that shows the risk of fiscal pressure in the short term. In this research the authors focus on indicators S1 and S2. The meaning and interpretation of indicators is presented in Table 5.1, components of indicators - in Table 5.2.

S1 and S2 indicators are calculated on the basis of unchanged policies over time, which means that any structural change acting on the balance and debt of public sector debt entails changes in their value.

In the current Fiscal Sustainability Report of 2012, the input data for the assessment of long-term public finances of Member States come from the autumn economic forecasts of the European Commission. Therefore they are burdened with larger, than usual, level of forecasting risk. Difficulties arise, among others, from the uncertainty of formation of potential GDP and the output gap. In particular, attention should be paid to the fact that the primary structural balance (cyclically adjusted balance less of debt servicing expenses) was adjusted in recent years at a much greater rate than the average in the decade that preceded the occurrence of the fiscal crisis. The path of fiscal consolidation carried out by EU countries in 2009-2013 seems questionable to continue in future periods.

Table 5. 1. **General characteristic of S1 and S2 indicators**

Indicator	Meaning	Interpretation of values
S1 – Medium-term sustainability indicator (up to 2030)	Shows the upfront adjustment effort required, in terms of steady improvement in the structural primary balance to be introduced until 2020, and then sustained for a decade, to bring debt ratios back to 60% of GDP in 2030, including financing for any additional expenditure until the target date, arising from an ageing population	S1 < 0 – low risk 0 < S1 < 3 – medium risk S1 > 3 – high risk
S2 – Long-term sustainability indicator (indefinite horizon)	Shows the adjustment to the current structural primary balance required to fulfil the infinite horizon inter-temporal budget constraint, including paying for any additional expenditure arising from an ageing population.	S2 < 2 – low risk 2 < S2 < 6 – medium risk S2 > 6 – high risk

Source: Authors' analysis based on Fiscal Sustainability Report (2012).

Table 5. 2. Components of S1 and S2 indicators

Indicator / components	Required adjustment given the initial budgetary position (IBP)		Required adjustment to reach debt to GDP ratio of 60% in 2030 (DR)		Required adjustment due to cost of ageing (CoA)
S1 =	Gap to debt-stabilizing primary balance in 2020 through a steady gradual adjustment	+	Additional adjustment required to reach a debt target of 60% of GDP in 2030	+	Additional adjustment required to finance the increase in public expenditure due to ageing population up to 2030
S2 =	Gap to debt-stabilizing primary balance	+	0	+	Additional adjustment required to finance the increase in public expenditure due to ageing population over an infinite horizon

Source: Fiscal Sustainability Report (2012, p. 19).

Among analysed countries, three were characterized by a medium risk of sustainability of public finances in 2030 (Lithuania, Poland and Slovakia). The main reason for greater fiscal effort necessary to improve the stability was predicted up to 2030 due to an increase in age-related public expenditures. In the case of Poland and Slovakia, S1 indicator does not include the permanent reduction of mandatory funded pillar, which should, within the forecast horizon, contribute to a decline in the value of S1 (Table 5.3).

Table 5. 3. S1 values and its components for the CEE countries

Country	Risk	S1	IBP	DR	CoA
Bulgaria	low	**-1.5**	-0.1	-2.3	0.8
Estonia	low	**-3.4**	-0.4	-3.0	0.2
Latvia	low	**-2.0**	-0.3	-0.9	-0.8
Lithuania	medium	**0.3**	0.8	-1.1	0.7
Hungary	low	**-0.4**	-0.2	0.9	-1.3
Poland	medium	**0.1**	-0.3	-0.2	0.6
Romania	low	**-1.4**	-0.4	-1.4	0.4
Slovakia	medium	**2.2**	1.1	-0.2	1.3
EU 27	**x**	**1.8**	-0.4	1.7	0.4

Where:

IBP – initial budgetary position

DR - required adjustment to reach debt to GDP ratio of 60% in 2030

Co - required adjustment due to cost of ageing

Source: Authors' analysis based on Fiscal Sustainability Report (2012).

For other countries, the value of S1 indicates a low level of risk of fiscal stability up to 2030, although the situation in individual countries varies. For example, in Bulgaria the expected increase in age-related expenditures in 2030 was eliminated by low level of public debt, and thus left more "fiscal space" to finance the increased spending. Generally, low debt levels in relation to GDP of analysed CEE countries compared to the EU average means that in the medium term a significant fiscal adjustment is not required (except Slovakia).

The long-term fiscal sustainability of CEE countries showed greater variation (Table 5.4). Only one of the analysed countries, that is Slovakia, was qualified to the group of countries with a high risk of loss of fiscal stability, which resulted from the expected increase in expenditure on pensions (the highest among the surveyed countries and more than three times the average for the EU-27). The S2 indicator for Slovakia did not account for the reduction of contributions to pension funds and changes in rules of participation in the funded pillar of pension system, as well as other changes to the PAYG part of the system (such as linking the retirement age with an average duration of life, and reduction of the indexation of benefits). Additional factor was the highest fiscal effort associated with the stabilization of the public debt (the largest in the group of countries surveyed and more than three times higher than the average in the EU-27).

Table 5. 4. The risk of loss of fiscal stability in the infinite horizon in the countries of Central and Eastern Europe

Country	Risk	S2	IBP (initial budgetary position)	LTC (long-term cost of ageing):	of which
					change in pension expenditures
Bulgaria	medium	**2.8**	0.5	2.3	1.6
Estonia	low	**1.2**	0.5	0.7	-0.1
Latvia	low	**-0.7**	0.7	-1.5	-1.4
Lithuania	medium	**4.7**	0.9	3.8	3.0
Hungary	low	**0.5**	0.1	0.3	-0.2
Poland	low	**1.5**	0.4	1.1	-0.6
Romania	medium	**3.7**	0.1	3.6	2.4
Slovakia	high	**6.9**	1.8	5.1	3.5
EU27	x	**2.6**	0.5	2.2	1.1

Source: Authors' analysis based on Fiscal Sustainability Report (2012).

Table 5. 5. Fiscal stability of CEE countries according to the preliminary forecasts of the 2014

Country	Medium-term risk	S1	Long-term risk	S2
Bulgaria	Low	-1.2	Medium	3.4
Estonia	Low	-2.8	Low	0.1
Latvia	Low	-2.4	Low	-0.1
Lithuania	Medium -> low	-1.0	Medium	3.1
Hungary	Low	-0.8	Low	0.6
Poland	medium -> low	0.2	Low	-0.8
Romania	Low	-0.5	Medium	4.4
Slovakia	medium -> low	-0.1	High ->medium	4.3

Source: Identifying fiscal sustainability challenges in the areas of pension, health care and long-term care policies, European Economy, Occasional Papers 201, October 2014.

Three out of eight CEE countries studied were classified as medium risk of long-term fiscal stability (Bulgaria, Lithuania and Romania). The main reason for this was the expected increase in pension expenditure. Bulgaria, still maintaining the funded pillar, in 2012, introduced a number of changes that will reduce fiscal pressure in the long term: acceleration of the increase in retirement age for men and women since 2012 instead of 2021, less generous indexation of pensions and extending the period of entitlement to pensions for uniformed services.

In 2014, the European Commission has prepared a preliminary assessment of medium- and long-term sustainability of public finances, taking into account most of changes in mandatory pension systems, including the rate of contribution and participation in funded pillar. The results of preliminary estimates are shown in Table 5.5.

Changes to the funded pillar of pension systems helped improve the fiscal stability measured by S1 and S2 indicators in analysed countries, both in the medium and long term. However, it should be noted that in most of the CEE countries, the effect of the increase in public pension expenditures related to the acquisition of all or a part of the contributions from the second pillar will emerge in the years beyond the forecast horizon (after 2060). The 2015 Ageing Report supports the European Commission preliminary assessment of S1 and S2 indicators as of 2014. The forthcoming Fiscal Sustainability Report (2015) should reflect positive changes in public finances stability at least over 2060 horizon.

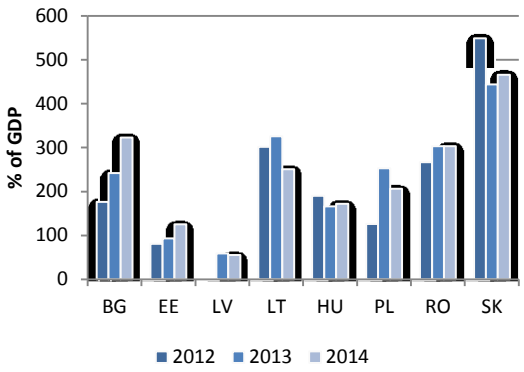
5.3. Long-term sustainability gap

Another way to measure the long-term public debt burden in the analysed economies is the development of the Sustainability Gap. This indicator presents the actual level of the past, present and future debts, measured as a sum of the existing general government debt, the government deficit and the implicit debt. The Sustainability Gap is regularly assessed by Raffelhuschen and Mogg (2014 and earlier).

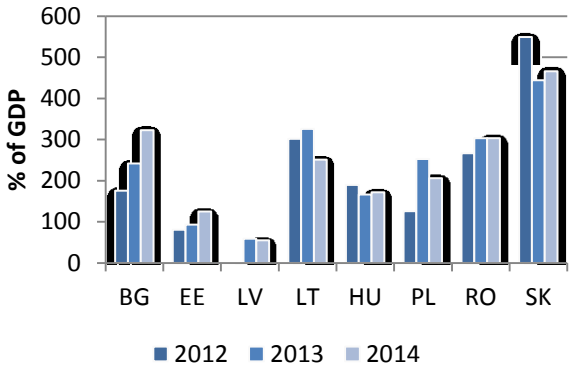
As shown in Figure 5.5 (panel B) the level of the Sustainability Gap between 2012 and 2015 increased in Bulgaria, Estonia, Poland and Romania. This increase was mainly driven by the rise of the implicit debt (panel A). When looking at the level of the Sustainability Gap, we see that countries that introduced permanent reductions of their funded pension system components belong to the group with higher level of this indicator (Slovakia, Poland, and Hungary).

Figure 5. 5. Level of public liabilities

A. Implicit Debt



B. Sustainability Gap



Note: the assessment does not take into account changes in pension systems that were reported and projected in the 2015 AWG Report

Source: Raffelhuschen and Mogg (2014 and earlier).

Chapter 6: Recommendations for new fiscal rules: how to balance fiscal considerations with the social policy needs?

Kamila Bielawska, Agnieszka Chłoń-Domińczak

As shown in previous chapters, the introduction of multi-pillar schemes was not the main cause of the worsening situation of public finances in the Central and Eastern European countries. The reduction of the role of funded pillars was seen as a way to piggy-bank from assets accumulated in the funded pillar, despite the positive long-term and medium-term effects which were associated with the multi-pillar reforms (Casey, 2014)

In this chapter we present a theoretical proposal to modify existing fiscal rules applied in the EU. Our goal is to propose changes that correspond to the challenges to the sustainability of public finances in the long term caused by demographic changes and economic development. Research methods used in this task include:

- synthesis of research results and critical analysis of fiscal rules proposed so far;
- interviews with experts of public finance and pension systems;
- testing of formulated proposal of fiscal rules in the selected countries from the perspective of their adequacy to ensuring long-term sustainability of public finances.

6. 1. The nature of the fiscal policy rules

The fiscal policy rule can be defined as permanent limitation imposed of the fiscal policy by introducing the simple numerical limit for a given fiscal aggregate (Kopits, Symansky, 1998, p. 2).

The role of fiscal aggregates can be performed by the following economic indicators: the balance of the general government sector (e.g. nominal, structural, and primary)[17], debt (gross, net), public spending (total, current, and primary), public revenues (total, taxes).

Limits on fiscal aggregates can be specified for example by setting the nominal or real value of the aggregate, the dynamics of its changes (increase/decrease in nominal or real terms) in relation to another variable, e.g. GDP. Selection of the aggregate and its quantitative determination depends on the objectives of fiscal policy (Table 6. 1).

[17] Nominal (overall) balance– accounting difference between revenues and expenditures of GG sector, or on memorial basis net lending/net borrowing of GG sector. Structural balance – hypothetical balance that would occur in the situation of economic equilibrium (nominal balance plus/minus results of business cycle); it reflects the discretionary fiscal policy. Primary balance - the balance minus actual public debt servicing costs.

Table 6. 1. Properties of different types of fiscal rules against key objectives

Type of fiscal rule	Fiscal policy objectives*		
	Debt sustainability	Economic stabilization	Government size
Overall balance	++	-	0
Primary balance	+	-	0
Cyclically adjusted balance	++	++	0
Balanced budget over the cycle	++	+++	0
Public debt-to-GDP ratio	+++	-	-
Expenditure	+	++	++
Revenue			
Revenue ceilings	-	-	++
Revenue floors	+	+	-
Limits on revenue windfalls	+	++	++

*Positive signs (+) indicate stronger property, negative signs (-) indicate weaker property, zeros (0) indicate neutral property with regard to objective.

Source: Kumar et al. (2009).

Initially, fiscal rules were applied to ensure macroeconomic stability and limit the expansion of the public sector. To realize that objective rules, imposing limits on the size of the revenue or public spending in relation to GDP is appropriate.

Nowadays, greater importance is attached to pursuing a sustainable fiscal policy, which is an essential element supporting economic growth in the long term. Therefore, frequently used rules are the ones that regard to GG balances and public debt.

The basic prerequisites of fiscal policy conduct through fiscal rules should include reducing the tendency of governments to excessive deficit (deficit bias) and the pro-cyclical budgetary policies[18].

The efficiency of fiscal policy conducted with the use of fiscal rules depends not only on their design (selection of fiscal aggregate and its limitations), but also the issues associated with applying rules. Transparency of the entire public finance sector plays also an important role, thanks to which it is not possible i.e. to use “creative accounting" in order to circumvent the rules.

[18] More on this subject can be found in: Alesina and Perotti (1994) and von Hagen (2005).

The most frequently qualities that should characterize good fiscal rules mentioned in the literature are the following[19]:

i. precise fiscal aggregate, on which limits are set,
ii. flexibility – responding to changes in the economy,
iii. simplicity –construction of the rule is understandable for the public,
iv. compliance with the objectives of fiscal and broader economic policy in at least the medium term,
v. appropriate legal framework for the fiscal rule to insure durability,
vi. precise rules for monitoring compliance with fiscal rules (preferably by independent institutions / entities)
vii. precise determination of penalties for failure to comply with fiscal rules and their severity (cost of breaking a rule higher than benefits) and their inevitability (automaticity of sanctions)

The lack of any of the above mentioned features my result in the inefficiency of fiscal rule in question.

6. 2. Fiscal rules in the EU

6.2.1 The Treaty on the Functioning of the European Union

The Treaty on the Functioning of the EU (TFEU) stipulates that actions of the Member States' should include the coordination of economic policies. Thus, the basic point of reference for assessing the degree of coordination of national budgetary policies has become a quantitative verification of budgetary criteria, which includes two indicators:. the public sector deficit (general government - GG) according to the EDP (excessive deficit procedure) methodology in relation to GDP, and accumulated (explicit) debt (general government gross debt) in relation to GDP.

These solutions disciplining budgetary policies of the Member States were included in the Treaty on European Union (Maastricht Treaty) signed in 1992 and in the accompanying "Protocol on the excessive deficit procedure". According to the provisions of the Treaty, Member States should avoid excessive deficits and the European Commission should monitor the development of the budgetary situation and the amount of public debt in the Member States in order to detect errors.

[19] Extensive studies in this area are present for example in Kopits and Symansky (1998), Kumar et al. (2009), Anderson and Minarik (2006), Kopits (2001), or von Hagen (2002).

Article 126 of the Treaty on the Functioning of the European Union (formerly Article 104 TEC, 1992), in conjunction with Protocol No. 12 to the TEC, defines the excessive deficit procedure. It adopts the principle of avoiding excessive deficits and emphasizes competence in overseeing development of the budgetary situation and the amount of debt allocated to the European Commission. The Commission evaluates compliance with budgetary discipline by the EU member states using two assessment criteria:

1. Whether the ratio of planned or actual public deficit to gross domestic product (GDP) exceeds a reference value, unless:

   a. The ratio has declined substantially and continuously and has reached a level that comes close to the reference value, or

   b. Exceeding the reference value is only exceptional and temporary and the ratio remains close to the reference value.

2. Whether the ratio of public debt to gross domestic product exceeds a reference value, unless the ratio is sufficiently diminishing and approaching the reference value at a satisfactory pace.

The excessive deficit procedure is set forth in details in Protocol No. 12 [OJ EU C 83, 30.03.2010]. Article 1 of the Protocol adopts two benchmarks:

1. 3% for the ratio of the planned or actual budget deficit to GDP at market prices and,
2. 60% for the ratio of government debt to gross domestic product at market prices.

The way of determining whether the rules meet the criteria of a good fiscal rule apply in terms of: the method of determining the rules, clarifying the conditions justifying excess the reference values and the lack of automatism in applying sanctions (which was exemplified by Germany and France in 2003-2005).

6.2.2 Stability and Growth Pact (SGP)

The Stability and Growth Pact (SGP) was adopted in 1997 to strengthen the fiscal position of the Member States. The Pact from a formal point of view consists of a declaration and two regulations. The first of Regulations - No 1466/97 - referred to as preventive arm of the Pact, the second - No 1467/97 as part of the corrective arm of the Pact (and clarifies the Excessive Debt Procedure, EDP).

The Stability and Growth Pact establishes a framework for coordinating fiscal policies in the member states. The European Council, the Council of the European Union, and the European

Commission oblige the EU member states to implement the principles of the SGP in a direct and timely manner. The Pact specifies elements of prevention (preventive arm) and dissuasion (remedial, corrective arm), while accepting the need to respect the medium-term objective (MTO). As part of the preventive arm, member states are obliged to submit annual stability or convergence programs and take corrective actions to achieve the objectives set out in these programs. European Commission has two policy instruments hindering the occurrence of excessive deficits (Dziemianowicz and Kargol-Wasiluk, 2015):

1. Warning to the EU Council, on a proposal from the European Commission
2. Recommendation of the European Commission addressed to the member states to respect their obligations under the Stability and Growth Pact.

The preventive arm of the Pact imposed, for all EU's countries, an additional fiscal rule which refers to the medium-term budgetary policy and its medium term objective - MTO. MTO should be close to balance or in surplus in the medium term. Respecting this rule would allow the operation of automatic stabilizers and provide an adequate safety margin in case of deterioration of economic situation. The long-term sustainability of public finances was not taken into account in assessing the fiscal situation in the original version of the Pact.

During the first reform of SGP in March 2005 changes in both arms: preventive and corrective were implemented. It was decided (Council Regulation (EC) No 1055/2005), that MTO should be different for each country, depending on the initial level of public debt and potential GDP; (the measure which fit MTO is cyclically adjusted balance of the GG sector (CAB) less the one-off and temporary measures).

MTO's established in 2005, ranged from -1% of GDP for countries with low public debt and high growth potential and to balance or surplus of 1% of GDP for countries with high debt and low growth potential. Minimum annual step towards achieving the MTO was specified as 0.5 percentage point of GDP, but without the sanction for the conduct of fiscal policy contrary to the MTO.

The requirement was introduced to present a long-term public finance situation by informing at the Stabilisation/Convergence Programmes (SCP's) of expenditure related to age (age-related public expenditure) in the long term based on forecasts of AWG.

In 2009 the change in the calculation of MTO was instituted so as to take into account the changes in implicit liabilities stemming from an aging population (Marchewka-Bartkowiak 2012). The MTO design is presented in Frame 6.1.

In corrective arm, while assessing the balance of general government sector, among others, effects of structural reforms involving the capitalization of part of the compulsory pension contributions were taken into account. To smooth the difference in government accounts for reformers and non-reformers, the net transition costs can be taken into account on a linear regressive basis for a transitory period of 5 years and only where the deficit remains close to the reference value of 3% GDP (Council Regulation (EC) No 1056/2005) In practice the excess of reference value may be not higher than 0.5% GDP. A question of relation by explicit and implicit public debt was not addressed.

Frame 6.1. Calculating MTO

The country-specific MTOs should take into account three components:

i) the debt-stabilizing balance for a debt ratio equal to the (60% of GDP) reference value (dependent on long-term potential growth), implying room for budgetary manoeuvre for Member States with relatively low debt;
ii) a supplementary debt-reduction effort for Member States with a debt ratio in excess of the (60% of GDP) reference value, implying rapid progress towards it; and
iii) a fraction of the adjustment needed to cover the present value of future increase in age-related government expenditure.

according to the formula:

$$MTO = \max(MTO^{ILD}, MTO^{MB}, MTO^{Euro/ERM2})$$

where the components MTO^{MB} and $MTO^{Euro/ERM2}$ refer to the "minimum benchmark" as agreed by the EFC and to the Pact obligation for euro area Member States and Member States participating in ERM II to have an MTO not lower than -1% of GDP, respectively, while the component MTO^{ILD} relates to explicit and implicit liabilities:

$$MTO^{ILD} = BALANCE_{debt-stabilising(60\%\,of\,GDP)} + \alpha * AgeingCost + Effort_{debt-reduction}$$

The first term on the right-hand side is the budgetary balance that would stabilize the debt ratio at 60% of GDP. The second term is the budgetary adjustment that would cover an agreed fraction* of the present value of the increase in the age related expenditure Alternatively, Member States can choose a fraction of the cost of ageing corresponding to the pre-financing of age-related expenditure up to an agreed number of years before the end of the AWG projections. The third term represents a supplementary debt-reduction effort, specific to countries with gross debt above 60% of GDP.

* 33% of age- related expenditures in 2040.

Source: EC 2012, Specifications on the implementation of the Stability and Growth Pact and Guidelines on the format and content of Stability and Convergence Programmes.

The financial and economic crisis of 2007-09 renewed the pressure on public finances. In result the countries of CEE region submitted jointly in 2010 another request to the Commission to redefine the general government deficit and debt by excluding public spending related to the creation of second pillars (as liabilities are explicitly recognized) so as not to discourage countries from sustaining funded parts of their pension systems. The request was turned down (Egert 2012).

Second reform of Stability and Growth Pact was a part of strengthening the economic governance in the EU during 2011- 2013 (the so-called six-pack, two-pack and fiscal compact).

In the preventive arm a decision on maintaining a differentiated MTOs (albeit with a smaller deficit limit for euro zone countries, i.e. 0.5% of GDP if the debt does not exceed 60% of GDP) was taken (Regulation (EU) No 1175/2011). All Member States are expected to reach their MTOs, or to be heading towards them by adjusting their structural budgetary positions at a rate of 0.5% of GDP per year as a benchmark.

Temporary deviation from the adjustment path to MTO allowed if:

- implementation of major structural reforms with a verifiable impact on the long term sustainability of public finances – emphasis on pension reform
- unusual event outside the control of the MS concerned with a major impact on its financial position
- severe economic downturn for the euro area or the EU as a whole provided this does not endanger medium term fiscal sustainability.

In the case of structural pension reforms introducing a multi-pillar system that includes a mandatory fully funded pillar, which have a direct negative impact on the general government deficit, the allowed deviation from the adjustment path to the MTO or the objective itself should reflect the amount of the direct incremental impact of the reform on the general government balance, provided that an appropriate safety margin with respect to the deficit reference value is preserved.

A new fiscal rule - expenditure rule - has been added. The rule imposes a limit on the growth rate of public expenditures (excluding expenditures on servicing public debt, expenditures financed from EU funds and cyclical expenditures on unemployment) depending on the level of public debt and actual fiscal position in relation to the MTO.

The introduction of the expenditure rule comes as the result of the assessment of Member States' fiscal policy after a period of good times. In 2007, only seven of them reached the MTO, including Sweden and Denmark, which do not belong to the euro zone. As demonstrated by research carried out by the European Commission, the main reason for not having achieved the MTO by individual countries was the excessive increase in public spending in the years 1998-2006.

For the euro area countries sanctions for the conduct of fiscal policy with significant deviation from the MTOs were introduced, which previously was not the case (Regulation (EU) No 1173/2011.

Significant changes have been introduced in the corrective arm of SGP (Regulation (EU) No 1177/2011). First of all, public debt rule has been operationalized and a minimum step towards the reduction of public debt in relation to the level of 1/20 (the excess of debt over 60% of GDP) on average over the last 3 years has been established. As regards to the benchmark for debt reduction a three-year transition period has been introduced for countries that on 8 November 2011 were subject to excessive deficit procedure 23 Member States.

The net costs of pension reforms when assessing the balance of GGS shall be maintained considering that the reform supports long-term sustainability of public finances without increasing the risk for the budgetary position in the medium term (additionally, the debt must be below the reference value), and if the actual deficit is close to the reference value.

A uniform standard for the presentation of information and data (actual and projected in the convergence and stability programs) together with an indication of the guidelines for macroeconomic assumptions has been introduced. As a part of the required information are the forecasts for long-term fiscal sustainability by identifying age-related expenditures. These should be in line with forecasts prepared by the AWG (currently published of 2015).

Countries may, but are not obliged to present forecasts representing adjustments after the introduction of structural reform in any of the areas taken into account. For example, the Polish Convergence Programme of 2014 mentions 'pension reform' of 2013, with an indication that it will contribute to the improvement of the measures of long-term sustainability of public finances, giving no further details.

The other regulations implemented during the reform of economic governance pose new requirements for MS’s fiscal policies. For example, the fiscal compact, being a part of the

Treaty on Stability, Coordination and Governance (obliges member states to enshrine medium-term budgetary objectives into national law and to set the limit for structural deficits at 0.5% of GDP (rising to 1% in exceptional circumstances).

6.3. Recommendations for the change of fiscal rules in the EU

The reform of economic governance and strengthening the fiscal surveillance in the EU member states carried out during 2011-2013, has removed to some extent the instruments that could discourage Member States to introduce or continue pension reforms with the multi-pillar approach. However, we see the need for further changes.

We propose the following:

1. The change in determining MTO: the cost of pension reform should be fully taken into account: current regulations lack of symmetry – there is a partial upholding of public spending associated with age possible, but without taking into account the loss of government revenue due to their transfer to the mandatory pension funds.
2. The evaluation of the GG sector deficit (under the excessive deficit procedure) should fully consider the cost of pension reform, even if it leads to excess of the reference value. The present method of treatment of pension reform costs is pro-cyclical and does not support long-term economic growth and fiscal sustainability.

The latest declaration of the European Commission (European Commission, 2015), which encourage effective implementation of structural reforms and promote investment (specifically in context of the new European Fund for Strategic Investment) provides opportunities to reconsider fiscal rule in the EU regulations.

Following our proposal, the calculation of the MTO could be based on the following rule:

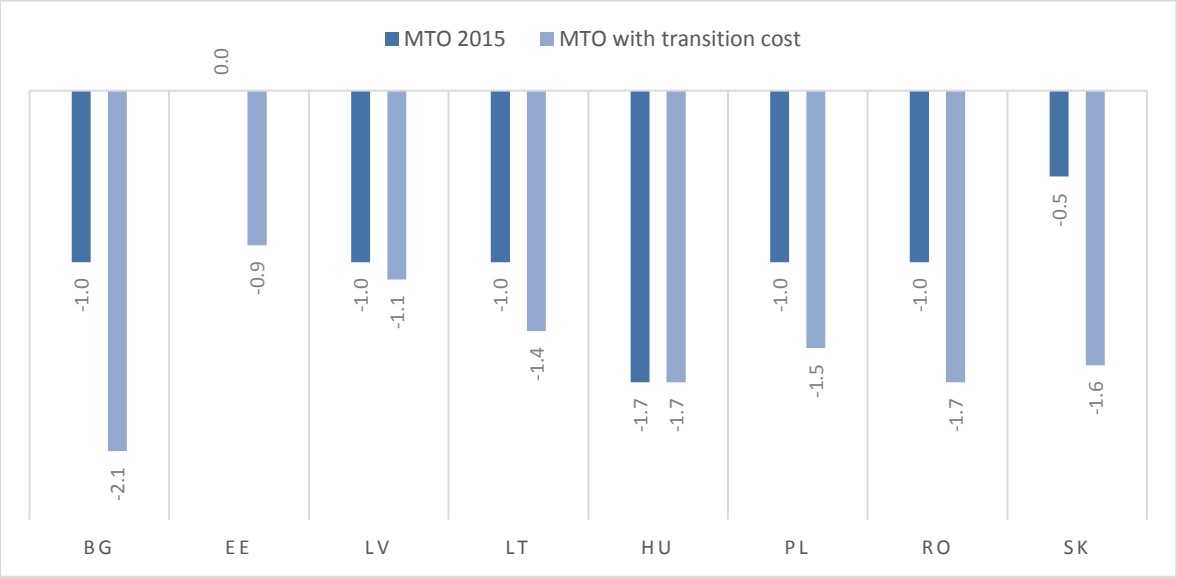
$$MTO = \max\left(MTO^{ILD}, MTO^{MB}, MTO^{Euro/ERM2}\right) - TC$$

where TC is the level of contributions transferred to mandatory funded part of the pension system in the year before (alternatively, this could be an average of several years prior to MTO calculation, i.e. three to five years).

Comparison of the 2015 MTOs values with the suggested change is presented in Figure 6.1. Inclusion of the transition costs in the level of MTO increases the fiscal space for all

countries that have their mandatory multi-pillar pension systems to a level from 0.9% of GDP in Estonia to 2.4% of GDP in Latvia.

Figure 6. 1. Simulation of change in the MTO level according to the proposed change (% GDP)

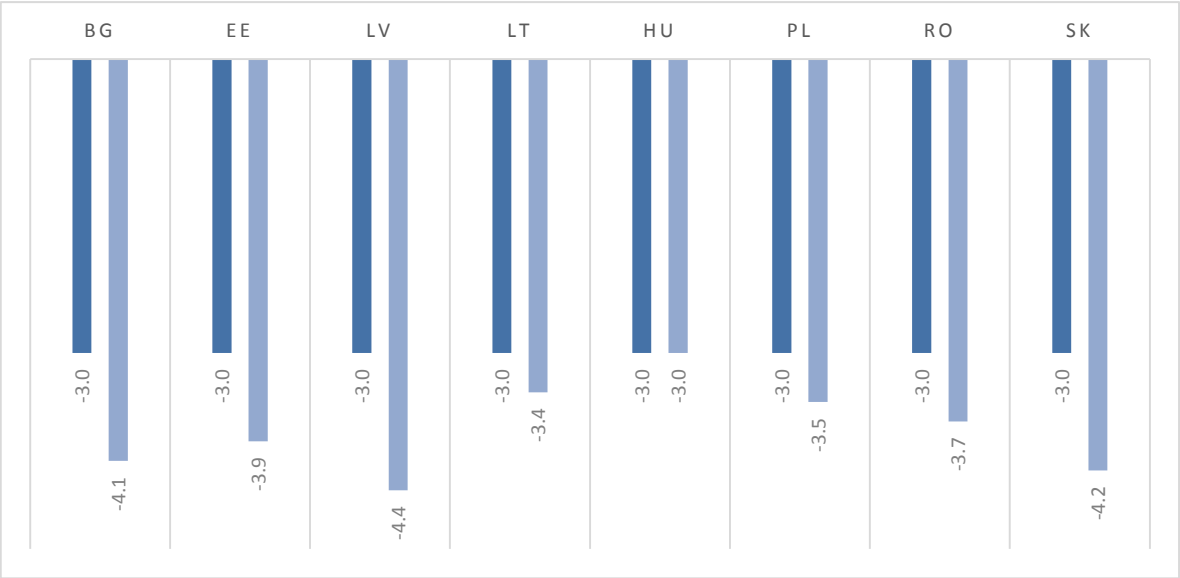


Note: transition costs for latest available information: for BG and SK: based on 2011 level, for EE, LV and LT based on AWG 2015 report, for PL national data for 2014.

Source: Stability and Convergence Programmes 2015 of analysed countries and authors' calculations.

Concurrently according to our second proposal, transition costs (TC) should be fully accounted for during the assessment of the fiscal position at the EDP procedure. Full consideration of TC in the limit of the GG deficit leads to an increased threshold for countries that have made a higher fiscal effort due to the introduction of multi-pillar pension scheme. The results of the simulation, presented in Figure 6.2, indicates that in times of economic crisis in some countries (Bulgaria, Latvia, Lithuania) excessive deficit procedures could be implemented later and would not demand so strong fiscal consolidation during the recession.

Figure 6. 2. Simulation of limit of fiscal position at the EDP procedure with transition cost fully accounted for (% GDP).



Note: transition costs for latest available information: for BG and SK: based on 2012 level, for EE, LV and LT based on AWG 2015 report, for PL national data for 2014.

Source: Author' simulations.

Chapter 7. Conclusions

Kamila Bielawska, Agnieszka Chłoń-Domińczak, Dariusz Stańko

In this chapter we present a short synthesis of findings in the report, from the perspective of the initial hypotheses that were formulated in the introduction.

Hypothesis 1: ***Rise of the public debt and fiscal deficit in the CEE countries was not primarily caused by the costs of financing transition to funded pension systems.***

The overview of socio-economic and fiscal situation as well as performance of pension funds in the mandatory part of the multi-pillar scheme, presented in the report indicates that there are many differences in all of the analysed areas between the eight CEE countries taken into account. Each of these factors, alongside the political economy, in theory had a contribution to the sustainability of pension systems during the times of the economic crisis as well as in the long run. Table 7.1 presents the summary of potential impact of the analysed factors on decisions on pension reform reversals or reductions.

Table 7. 1. Summary: social, economic and fiscal context of pension reform reversals

	Fertility	Dependency rate	Employment	Pension expenditure	Pensioners	Performance of funded Pension fund returns	Government deficit	Government debt	Pension system changes after crisis
Bulgaria	-	-	+	+	+	-	-	+	**No change**
Estonia	-	-	+	+	+	-	+	+	**Temporary reduction with offset**
Latvia	--	--	-	-	-	-	--	-	**Partial reduction**
Lithuania	-	-	--	+	+	-	--	-	**Partial reduction**
Hungary	--	-	-	--	-	+	-	--	**Permanent reversal**
Poland	--	--	++	--	-	+	--	--	**Permanent reduction and partial reversal**
Slovakia	--	--	++	-	-	-	--	--	**Permanent reduction**

Source: Authors' analysis.

Countries with the smallest changes in pension systems – Bulgaria and Estonia indeed have the most favourable situation when we look at the overall outcome, including most importantly low levels of government debt and deficit, but also stable or declining pension expenditure and rising employment levels. Countries that followed most radical reversals or reductions – Hungary, Poland and Slovak Republic – have the worst public finance indicators, but also their demographic outlook shows fast population ageing and current pension expenditure puts additional fiscal pressure, despite relatively favourable employment level as well as performance of the funded pillar.

This comparison indicates that indeed the fiscal situation is one of the strongest drivers behind decisions on stepping back from initial multi-pillar pension reforms. The lesson from experiences of CEE countries is that a weak political consensus on reform priorities and a lack of strong national fiscal rules dilute the initial concept of financing the transition cost. As a result, rising fiscal pressure leads to decisions to scale down or effectively eliminate the multi-pillar approach and return to pension financing based fully or predominantly on PAYG basis.

Hypothesis 2: ***The way the CEE countries governments justified cuts in pension funds contributions can threaten the social trust to mandatory pension systems.***

The governments in their decisions to permanently reverse from the funded system frequently used arguments related to the poor performance of pension funds. As our analysis shows in the case of the two countries that had the most far-reaching reversals: Hungary (elimination of the funded system) and Poland (maintaining small funded part in accumulation phase based on voluntary participation) also had the highest real rates of return, exceeding GDP growth. Both in Hungary and Poland, after the changes in mandatory system, participation in the voluntary schemes did not increase significantly. This may indicate that the voluntary savings did not replace the loss caused by the reduction of assets in the mandatory funded scheme.

Hypothesis 3: ***Short-term effects of reduction of contributions to pension funds were positive for public finance and did not have a negative impact on pension systems, but may lead to increased volatility of financial markets.***

Fast fiscal consolidation, carried out both on revenue and expenditure side, including changes in the funded pillars of pension system in analysed countries, brought the fiscal position to

the required levels (all of the studied countries came out of the excessive deficit procedure as for fiscal year 2014). Given the relatively short period of time that passed after the changes in the pension system were introduced, we cannot verify the impact of the change on the financial markets volatility.

Hypothesis 4: ***Future pension benefits will be lower due to reduction of contributions transferred to mandatory pension funds.***

The results of microsimulations presented in the report indicate that the level of pension benefits will change differently in all countries. Only in Poland workers can expect losses in pension wealth. In this country pension savings on financial markets were replaced by GDP-indexed NDC account, and under the long-run assumptions accumulated pension wealth will be lower, unless the changes in the design of the funded pension system would lead to the systemic penalty due to the design inefficiencies. On the other hand, the design of the pension system in Slovakia leads to higher levels of pension wealth. Results of the microsimulations are also in line with the OECD projections (OECD, 2013). The level of PAYG benefits is expected to be higher in Slovakia, while in the Baltic countries the change does not lead to a significant change in expected pension level. Thus, the research evidence only partially supports this hypothesis.

Hypothesis 5: ***Future stability of pension systems and public finance will worsen due to reduction of contributions to mandatory pension funds.***

Long-term projections of pension systems prepared by the member states and published in the Ageing Reports show that only in Poland the level of public pension expenditure according to the 2015 projections will be higher compared to previous reports, which can be attributed to the shift of the funded contribution to the public system. In other CEE countries, the level of pension expenditure in 2060 projected in 2015 will be lower than projected three years before. This indicates that other changes to the PAYG systems, such as modifications of benefit formulae or rising retirement ages contribute to increasing sustainability of pension systems. While the result of the change of the level of contributions may have contributed to the increase in the pension spending, other parallel changes, such as raising retirement age levels, reduces this effect. There is no available evidence that could allow for the assessment of the marginal effect of the change related to the reduction of the fully funded pension system parts.

Changes to the funded pillar of pension systems helped to improve the fiscal stability measured by S1 and S2 indicators in analysed countries, both in the medium and long term. However, it should be noted that in most of the CEE countries, the effect of the increase in public pension expenditures related to the acquisition of all or a part of the contribution from the second pillar will emerge in the years beyond the forecast horizon (after 2060). The 2015 Ageing Report supports the European Commission preliminary assessment of S1 and S2 indicators as of 2014. The forthcoming Fiscal Sustainability Report (2015) should reflect positive changes in public finances stability at least over 2060 horizon.

Hypothesis 6: ***A compromise between solving fiscal tensions and maintaining a significant role of mandatory funded pillars would have to involve considerable changes in the fiscal rules in the EU, the Eurostat classification methods of pension debt and countries internal public finance laws.***

The reform of economic governance and strengthening the fiscal surveillance in the EU member states carried out during 2011-2013, has removed some instruments that could discourage Member States to introduce or continue pension reforms with the multi-pillar approach. However, the changes in the fiscal rules were applied after most of the analysed countries decided to retreat or permanent reduce the role of funded pillar in financing future pensions. Further changes to the fiscal rules are needed to fit the challenges of ageing populations. This report proposes the new rules that would strike the balance between the need for observance the fiscal discipline and the necessity for securing diversified source of future retirement income.

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Additional sources:

Statistical data from EUROSTAT and OECD
Country information based on authors' questionnaire
Convergence and Stability Programmes of analysed CEE countries 2004-2012

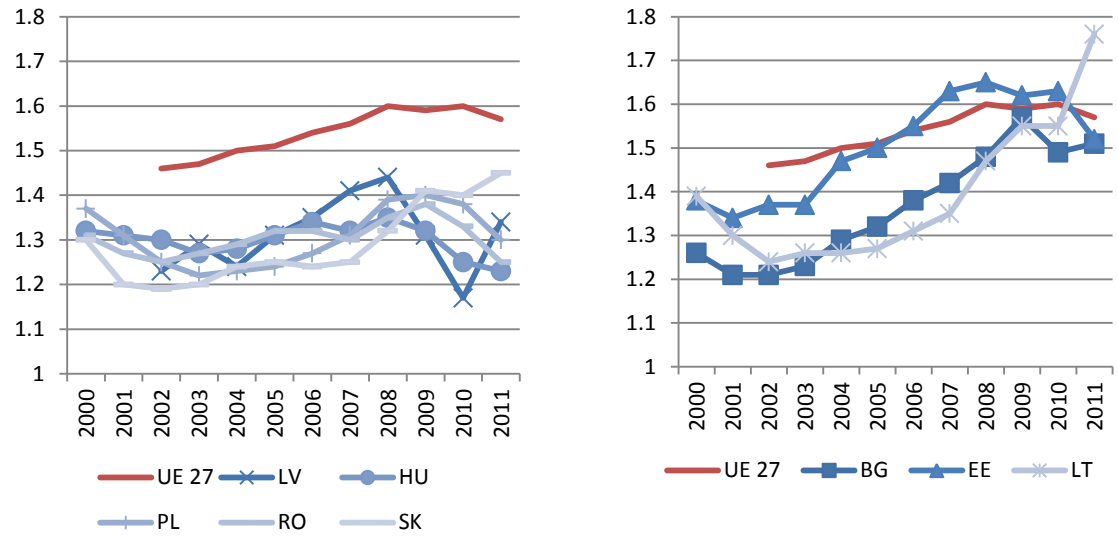
Annex. Socio-economic context of pension systems

Pension system reform is an on-going phenomenon, which has a wider socio-economic context. In this section we present and discuss the changes in the areas of demographic developments, labour market performance as well as current pension systems development, including the number of pensioners and pension expenditure after 2000. These developments have an impact both on current financial situation of pension systems and on the future sustainability of pensions.

A.1. Demographic developments.

Demographic developments are important mainly from the long-term perspective. Reforms were triggered by observed very low fertility rates as well as rising life expectancies. The economic transition triggered sharp declines in fertility. However, some demographers (Bongaarts 2001 and 2002) and Sobotka (2004) both suggested that lowest-low fertility was a transient phenomenon, which they expected to end soon. The majority of official population projections followed this view, projecting increases in lowest-low fertility from observed levels under 1.3 children per woman to levels above 1.5. (Goldstein, Sobotka, Jasilioniene, 2009) support this argument, indicating that the bulk of evidence to date points to a recovery of period fertility well above lowest-low levels, which may help to maintain the sustainable level of demographic dependency rates in the future. If we look at fertility levels after 2000, we can divide the 8 CEE countries into two groups (see Figure A.1). In Latvia, Hungary, Poland, Romania and Slovak Republic, fertility rate after 2000 remained at a low level, ranging from 1.2 to 1.4, significantly below EU average. This translates into rising risk of declining labour force in the future. Furthermore, after the hit of the financial crisis, the fertility rates dropped in this group of countries (with exception of Slovak Republic) again below the lowest-low level of 1.3. In three remaining countries: Bulgaria, Estonia and Lithuania, fertility increased to the level at or above EU average. However again, after the crisis, fertility rates dropped in Estonia and Bulgaria.

Figure A. 1. Fertility rates in CEE countries, 2000-2011



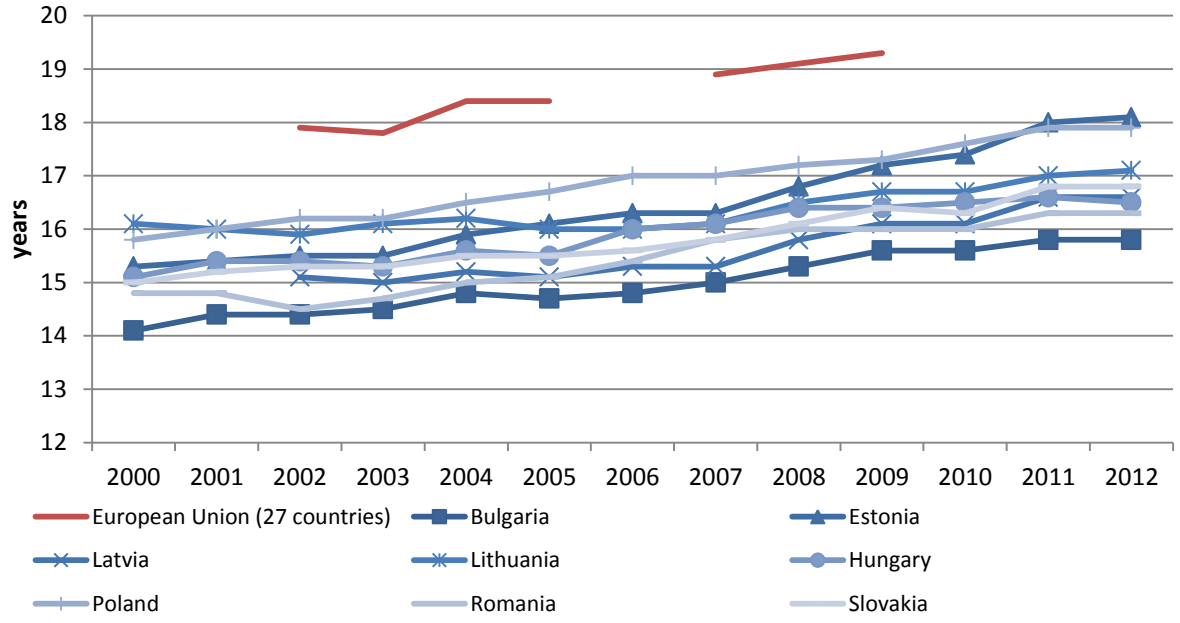
Source: EUROSTAT, extracted in December 2013.

Simultaneously, average life expectancy increased (see Figure A.2). This means that people live longer lives, including the period spent on retirement. Between 2000 and 2012 life expectancy at 65 increased on average by 1.7 years (ranging from increase of 2.8 years in Estonia to around 1 year in Lithuania). These increases were partially off-set by increases of retirement age, as presented in previous section. However, modest increases of retirement age did not compensate fully the longer life expectancy at age 65.

After the EU enlargements of 2004 and 2007, increased emigration from the CEE countries also had an impact on the size of their labour forces. Okólski (2007, p. 14) points out the increased mobility of citizens of several countries who before their accession hardly figured in European migration statistics. Migrant workers registered in the three EU15 countries that immediately opened their labour markets to the citizens of EU8 constituted a considerable fraction of the potential workforce of the donor countries.

A similar pattern occurred after the accession of Romania and Bulgaria in 2007. In 2008 Romanians and Bulgarians were in the top three of the most mobile nationals in Europe (Rolfe et al., 2013).

Figure A. 2. Average life expectancy at age 65 (total for men and women)

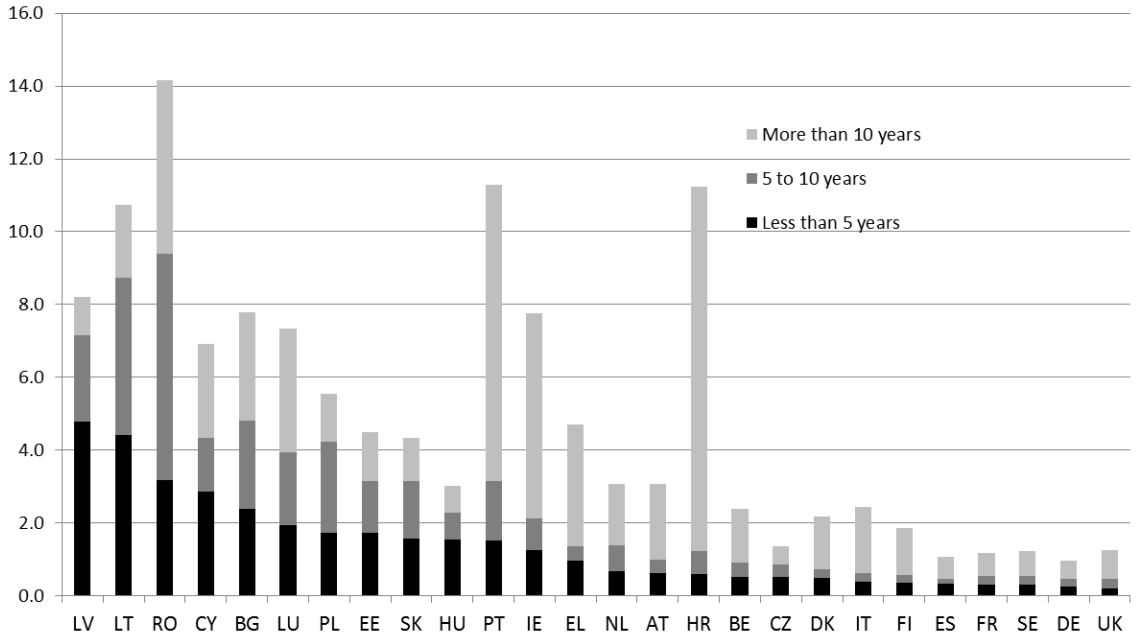


Source: EUROSTAT, extracted in December 2013.

According to the European Commission estimates in 2012 migrants accounted for 14 per cent of the working age population in Romania, more than 10 per cent in Lithuania and around 8 per cent in Latvia and Bulgaria (Figure A.3). The World Bank (2006, p. 29) underlines that the increased migration has several short and long-term consequences, such increasing wage pressure that in turn reinforces inflationary pressures. High emigration can also gradually slow output growth and place a greater burden on domestic workers to care for their nations' ageing populations.

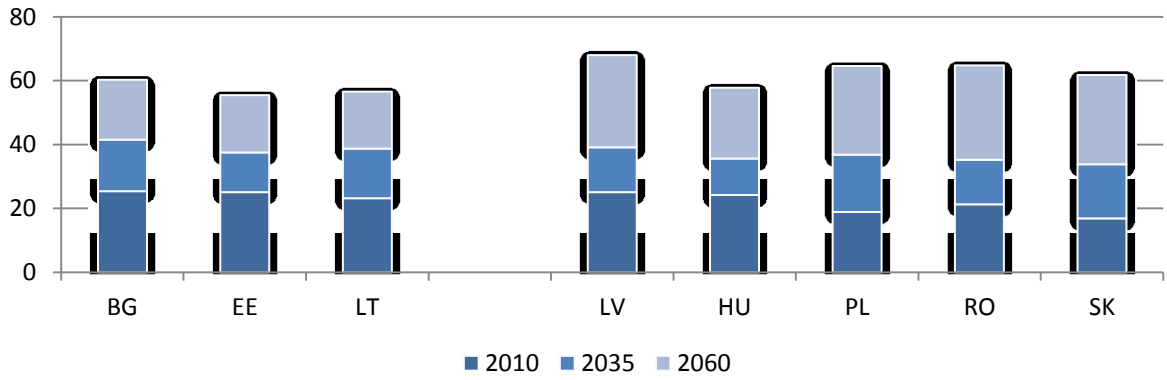
Demographic projections show expected increases of old-age dependency rate, particularly in the countries with low fertility levels. This is the result of presented demographic processes and changes in the age structure of population. According to the Eurostat population projections, the current dependency rate will more than double in all of the countries by 2060 (Figure A.4).

Figure A. 3. Mobility rates by sending country — mobile EU citizens living in another EU Member State, by years of residence (age group 15-64, 2013, in % of working-age population of country of citizenship)



Source: DG EMPL calculations based on Eurostat-EU-Labour Force Survey (http://ec.europa.eu/europe2020/pdf/themes/27_skills_gaps_and_labour_mobility_02.pdf)

Figure A. 4. Current and projected demographic dependency rate (people age 65+ per 100 people in age 18-64)



Source: EUROSTAT demographic projection (EUROPOP 2011).

Overall, demographic developments after 2000 still indicate that the CEE countries have to make significant effort to adjust to the demographic change. Additional, not foreseen, developments related to post-accession increased migration flows led to a decrease of potential labour force remaining in the country.

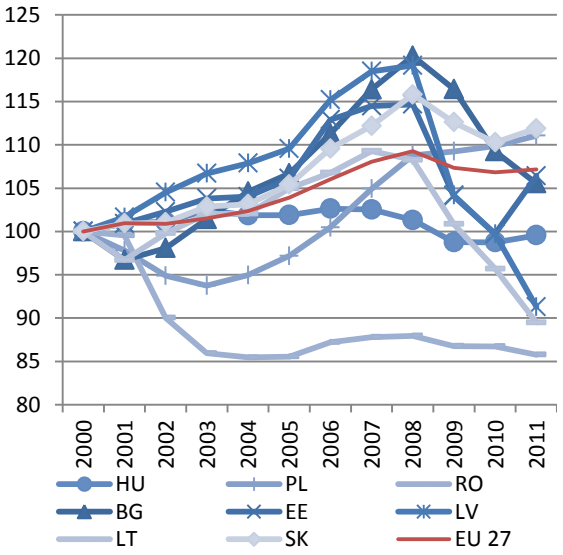
A.2 Labour market

Upon implementation of pension reforms, projections scenarios also assumed relative growth of the employment that in turn led to higher expected inflows of contributions needed to finance the current PAYG expenditure. These higher inflows would help to bridge the increased financing gap caused by diverting part of contributions to funded tiers. Again, in reality these expectations were not fully met (see: Figure A.5A).

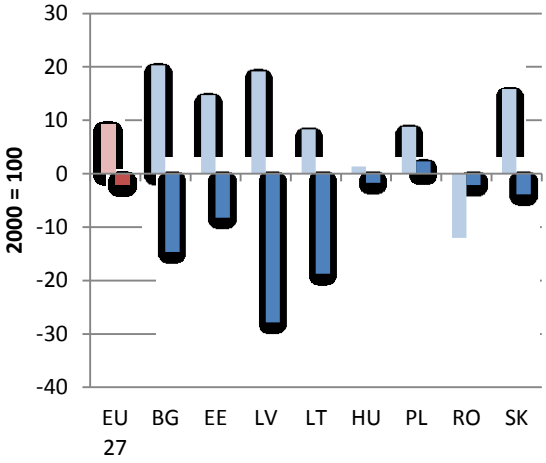
In cases of Romania and Hungary before the economic crisis (2000-2008), employment declined or remained at the 2000 level. Poland and Lithuania experienced modest growth, while in the case of Bulgaria, Latvia and Estonia, employment growth ranged between 15 and 20 per cent. After 2008 employment decreased, especially in Baltic States and Bulgaria. Overall, between 2000 and 2011 employment declined in Romania, Lithuania, Latvia and Hungary and increased modestly in Slovak Republic, Poland, Estonia and Bulgaria (Figure A.5B).

Figure A. 5. Employment changes in 8 CEE countries, 2000-2011

A. Employment level (2000=100)



B. Total change in employment between 2000, 2008 and 2011



Source: Authors' calculations based on EUROSTAT.

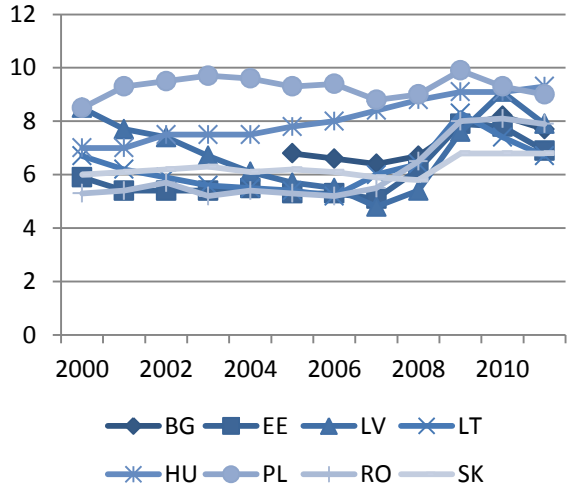
The labour market changes did not support pension reforms implementation in CEE countries as initially expected. Modest growth or decline in the number of people employed mean that pension contribution revenue in the PAYG part was lower than expected by reformers, causing larger than expected current deficits in pension financing.

A.3. Pensioners and pension expenditure

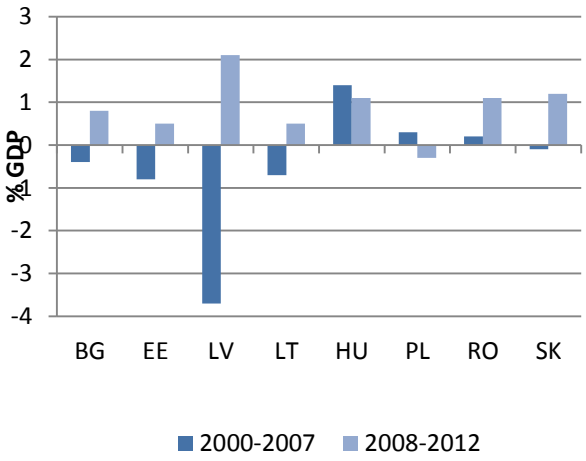
Last but not least, the current pension system situation is also an important factor that affects the implementation of pension reforms. As noted in the first part, the countries expected to finance part of their transition costs from reduced pension expenditure. This reduction was to follow parametric or paradigmatic shifts in their pension systems. However, if we look at the actual performance, the level of PAYG pension expenditure remained relatively constant after 2000, ranging from around 5 per cent of GDP in Estonia to around 10 per cent of GDP in Poland. After 2008 in many countries pension expenditure in relation to GDP increased, which is related to relatively stable nominal level of pension expenditure combined with observed recession and GDP decline (Figure A.6A).

Figure A. 6 Old-age pension expenditure in CEE countries, 2000-2011

A. Pension expenditure as % of GDP



b. Total change in pension expenditure, between 2000 and 2011 (% of GDP)



Note: In Bulgaria the initial year of comparison is 2006, due to the limitations of the ESPROSS database.

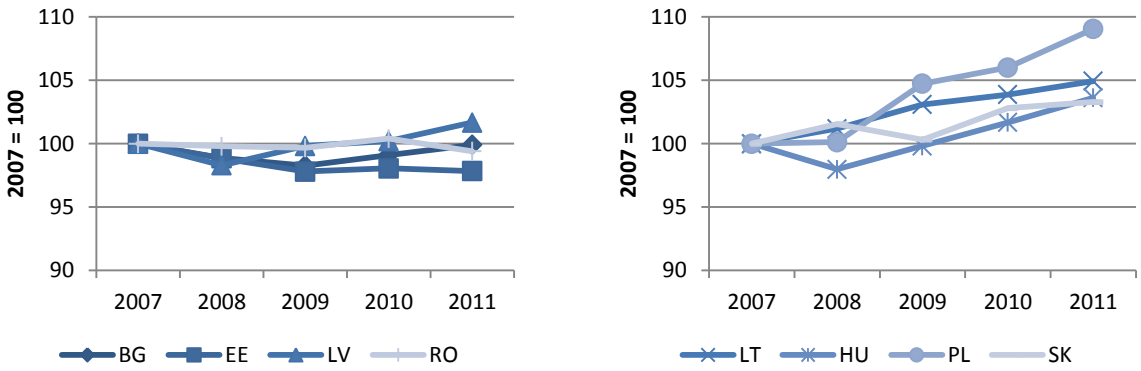
Source: EUROSTAT Espross Database.

Estonia, Bulgaria, Latvia and Lithuania successfully implemented and executed laws on rationalisation of PAYG expenditure. This also translated in reduced pension expenditure between 2000 and 2007. Between 2008 and 2012 the ratio of pension expenditure to GDP increased again in 7 countries (with exception of Poland). In Hungary and Romania pension expenditure increased both in pre-crisis and after crisis periods.

Drop in pension expenditure in Estonia is partly explained by the actual drop in number of old-age pensioners. Comparable data, available in Eurostat statistics from 2006 shows that in Bulgaria, Estonia, Latvia and Romania the number of old-age pensioners did not change

significantly, while in Lithuania, Hungary, Poland and Slovak Republic the actual number of old-age pensioners increased (Figure A.7).

Figure A. 7. Changes in the number of old-age pensioners in 8 CEE countries (2007=100).



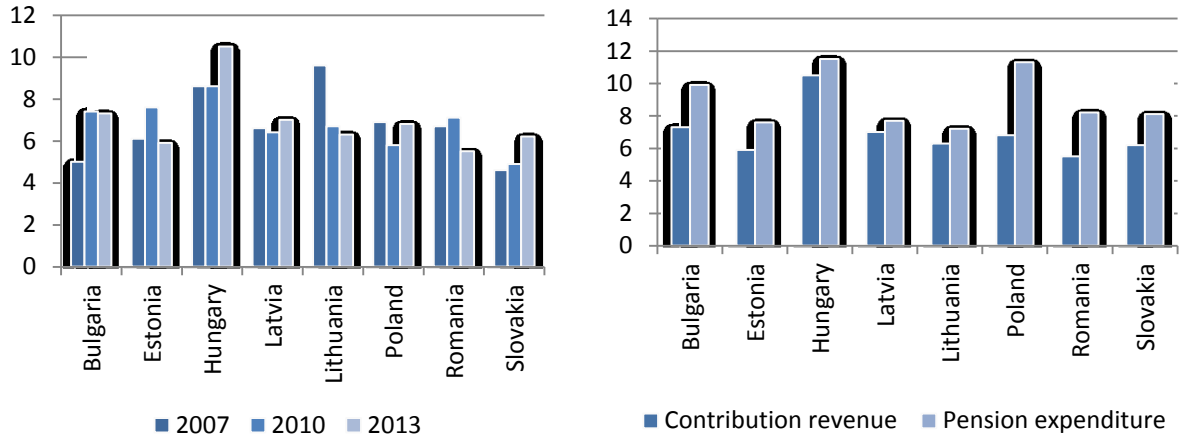
Source: EUROSTAT Espross Database.

The rise of the pension expenditure after 2008 was one of the reasons behind the reduction of fully funded contribution levels. The contribution revenue, relative to GDP increased after 2007 in Bulgaria, Estonia, Hungary, Romania and Slovakia. We also observe an increase in contribution revenue in Poland between 2013 and 2010. Only in Lithuania we observe decline of contribution revenue compared to GDP.

Figure A. 8. Pension contribution revenue in the analysed countries (% of GDP), 2007-2013

A. Contribution revenue, 2007-2013

B. Pension expenditure and contribution revenue in 2013



Source: (European Commission DG ECFIN, 2009, 2012, 2015).

However, as shown in Figure A.8B, in all of the countries, there is a difference between contribution revenue and pension expenditure. The contribution revenue does not cover the pension system spending. The largest differences are seen in Poland, Romania and Bulgaria.

Changes in PAYG pension systems, implemented in the 8 CEE countries did not lead to actual savings in pension expenditure that could support pension reform implementation. The level of pension expenditure in relation to GDP in 2012 exceeded the one observed in 2000, mainly due to increases in pension-to-GDP spending after 2008 in 6 countries (with exception of Bulgaria and Latvia).

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