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Preface

This report presents the results of a study "Transition costs of reformed pension systems" (contract ref no VC/2007/0233) commissioned by the European Commission's Directorate-General for Employment, Social Affairs and Equal Opportunities. The purpose of the study is to analyse transition costs faced by governments and individuals, and the impact of reforms on current and future pension adequacy in Member States that have implemented a pension reform with partial transition from a pay-as-you-go to a fully funded pension scheme.

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The core research team is solely responsible for any remaining errors, omissions or inaccuracies.

PRAXIS Center for Policy Studies, January 2008

Abbreviations

CEEC	Central and Eastern European Countries
DB	Defined Benefit
DC	Defined Contribution
EU	European Union
EUR	Euro (currency)
FF	Fully Funded
GDP	Gross Domestic Product
NDC	Notional Defined Contribution
OMC	Open Method of Coordination
PAYG	Pay-As-You-Go
SPC	Social Protection Committee
UK	United Kingdom

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1. Introduction

1.1. Background

The study focuses on transition costs associated with pension reforms and the implications of such reforms on pension adequacy in the EU Member States. It covers EU Member States which, over the last decade, have introduced multi-pillar pension systems with a funded pension scheme as part of their statutory pension system, namely: Hungary, Sweden, Poland, Latvia, Estonia, Lithuania, Slovakia and Bulgaria. In addition, it also addresses the reforms planned in the UK.

In 2001, the Laeken European Council European Union launched the open method of coordination (OMC) in the area of pensions 'to help Member States progressively develop their own policies so as to safeguard the adequacy of pensions whilst maintaining their financial sustainability and facing the challenges of changing social needs' (Council of the European Union 2001). The Council accordingly set 11 common objectives in light of these aspirations (see Annex 2).

This study deals particularly with the following common pension objectives:
- Objective 11 on the ability of pension systems to meet the challenges;
- Objective 8 on ensuring adequate and financially sound private and public funded pensions;
- Objective 6 on making pension systems sustainable in a context of sound public finances; and
- Objective 10 on ensuring the principle of equal treatment between women and men in pension systems.

In a joint report to the Stockholm European Council in 2001, the European Commission and the Council outlined a strategy to tackle the budgetary implications of ageing populations. According to the strategy, Member States should undertake ambitious reforms of pension systems in order to contain pressures on public finances, to place pension systems on a sound financial footing and to ensure a fair intergenerational balance. The strategy considered financial sustainability of pension systems as a necessary precondition for an adequate provision of pensions in the future.

The Social Protection Committee (SPC), which was established in 2000 to serve as a vehicle for cooperative exchange between the European Commission and the EU Member States for the modernisation of social protection systems, has a mandate to work on the policy challenges related to, among others, making pensions safe and pension systems sustainable. Its Indicators Sub-Group has developed a set of indicators for monitoring countries' progress towards the realisation of the commonly agreed pension objectives.

According to the streamlined OMC adopted by the European Council in March 2006, the overarching objectives for social protection and social inclusion are to promote adequate and sustainable pensions by ensuring (Commission of the European Communities 2006):
(1) adequate retirement incomes for all and access to pensions which allow people to maintain, to a reasonable degree, their living standard after retirement, in the spirit of solidarity and fairness between and within generations;
(2) the financial sustainability of public and private pension schemes, bearing in mind pressures on public finances and the ageing of populations, and in the context of the three-pronged strategy

for tackling the budgetary implications of ageing, notably by: supporting longer working lives and active ageing; by balancing contributions and benefits in an appropriate and socially fair manner; and by promoting the affordability and the security of funded and private schemes;

(3) that pension systems are transparent, well adapted to the needs and aspirations of women and men and the requirements of modern societies, demographic ageing and structural change; that people receive the information they need to plan their retirement and that reforms are conducted on the basis of the broadest possible consensus.

While the study focuses on one particular aspect of adaptation of pension systems – i.e., the issue of transition costs associated with pension reforms introducing funded defined contribution scheme – it shall be seen in the context of the streamlined OMC, addressing the aspects of adequacy, financial sustainability and modernisation of pension systems.

According to the *2006 Synthesis Report on Adequate and Sustainable Pensions*, future horizontal work in the framework of the OMC could, *inter alia*, focus on key issues in the development of private pensions, including efficient legal framework, inequality in coverage, security, information and transition costs (European Commission 2006). This study aims to make a contribution in respect of the latter issue, which is a crucial matter for states that have undertaken, or are planning to undertake, a partial shift in the financing principles of its pension system from pay-as-you-go to pre-funding.

1.2. General approach, research questions and methodology

In analyzing pension reforms that entail partial transition from PAYG to FF schemes, a distinction can be made between the impact of reforms at the macro level and the micro level.

At the macro level, *transition costs* occur due to the re-allocation of one part of the former pension contribution of a pay-as-you-go scheme to individual accounts of insured persons in a funded scheme, as pensions for current beneficiaries have to be financed in a situation of reduced contribution revenues.

Transition costs can be divided into (Leppik and Võrk 2006):

- gross transition costs, expressed as the amount of pension contributions transferred to the funded scheme on behalf of persons who joined (either voluntarily or mandatorily) the scheme;
- net transition costs, expressed as the difference between post-reform revenues and expenditures of the remaining PAYG pension scheme.

The notion of gross transition costs indicates that the annual transition costs cannot be higher than the inflow of revenues to the newly established funded schemes. On the other hand, the actual, net transition costs are often lower than the total contributions diverted to the funded scheme due to the fact that governments use different methods to reduce the burden and that certain other factors may have the effect of limiting transition costs.

The notions of gross and net transition costs are analytical categories that are not always easy to quantify because it is not always possible to segregate reform-induced costs from the 'regular' costs of the pension system, and it is not always clear what the counterfactual is. This difficulty in quantifying does not however render the analytical categories useless. In spite of some

practical measurement problems, it is evident that the difference between gross and net transition costs can be significant, which in turn may have significant effects on fiscal balance of the pension system and/or on access to, and adequacy of, benefits.

Gross transition costs are influenced by the rate of pension insurance contribution diverted to the FF scheme, the total number of insured persons who joined the FF scheme (either voluntarily or were obliged), and the average earnings of the FF scheme participants.

Direct government interventions to reduce actual transition costs have included the following methods:

- shifting part of the cost to the current beneficiaries by containing the cost on PAYG pensions (e.g., by less favourable pension indexation rules);
- restricting access to the pension system for future beneficiaries by increasing the statutory pension age and/or the average effective pension age (e.g., restricting access to early pension);
- modifying principles of acquisition of pension rights and/or pension formula of the PAYG scheme for persons joining the multi-pillar system.

In other words, some governments have transferred a part of the transition costs to current and/or future beneficiaries of the PAYG pension scheme (or to the micro level), with possible implications for the adequacy of current/future benefit. Moreover, even when the net transition costs are substantially lower than gross transition costs, the latter are sometimes perceived as opportunity costs (i.e., as costs which could have been potentially used for other purposes like increasing PAYG pensions at a higher rate to improve benefit adequacy).

In addition to direct government intervention through policy measures, certain external factors have contributed to the reduction of net transition costs in some member states. For example, net transition costs are reduced if the reform has had a positive influence on tax contribution compliance (i.e., increasing post-reform revenues from pension insurance contributions). In this case, transition costs are partly shouldered by employees/employers formerly engaged in the grey economy. Importantly, high economic growth rates in recent years, which can be partly attributed to the positive impact of EU accession, have boosted employment in several new EU Member States. This has had positive influence on revenues of the PAYG pension scheme, easing the burden of transition costs.

A 'demographic window' is another factor that has played a role in reducing the burden of transition cost. A demographic window of opportunity exists if the FF scheme is introduced at the time when the current and/or retiring cohorts of pensioners are small in relation to the cohorts entering the labour market (Palmer et al. 2006). Generally, the demographic developments in the CEECs have been quite favourable in this respect.

Governments have used different alternatives to shoulder the remaining net transition costs. These include:

- transfers from the state budget on account of other tax revenues (either increasing other taxes or reducing other public commitments);

- use of revenues from privatizing state enterprises or other property;

- use of reserves; and

- debt financing.

In some cases, the PAYG pension scheme was already in deficit at the time of introduction of the reform. In some of the countries, transition to the FF scheme was undertaken with the underlying idea of containing costs of the compulsory pension system in the long run, while costs increased in the shorter time horizon. Therefore, an analysis of transition costs in these countries must take into account the pre-reform deficit of the pension system. At the same time, in other countries, the pre-reform pension system had reserves which have been used to shoulder transition costs.

Apparently, different methods of shouldering transition costs shift the burden on different groups and cohorts. Hence, an analysis of methods used to finance transition costs sheds light on aspects of intra- and inter-generational solidarity associated with pension reforms.

It must be noted that the reforms in different countries have different lengths of history, some of the reforms being introduced quite recently. Transition to the multi-pillar pension system was implemented in Hungary (1998), Sweden (1999), Poland (1999), Bulgaria (2000), Latvia (2001), Estonia (2002), Lithuania (2004) and Slovakia (2005). Therefore, in addition to a retrospective assessment of the methods of financing that have been used so far, the study gives also an overview of existing strategies for cushioning transition costs in the future, as such costs will be present for several coming decades.

Introduction of FF schemes also entails other costs like *system establishment costs*, which are associated with the creation of necessary infrastructure for the operation of the FF scheme. These costs may include costs of establishing new structures (e.g., data registers, supervisory bodies) or costs of developing existing structures (e.g., acquisition of hardware, developing new or modifying existing software). Depending on the institutional set-up of the FF scheme in a particular Member State, some of these costs are borne by the state (i.e., financed from the state budget), while other costs by private institutions (e.g., pension fund management companies). The latter, in turn, may shift these costs to fund participants through pension fund management fees. Therefore, the fee structure of pension funds is also analyzed.

The study also analyses the impact of reforms on pension adequacy, with reference to both reforms in the PAYG scheme and partial transition to the FF scheme. Firstly, the actual development of the average replacement rate after the reform (i.e., average net old age pension to average net wage). This indicates whether, and if yes, to what extent the reform has had negative impact on pension adequacy of the current pensioner population. Secondly, the impact of reforms on future pension adequacy is analyzed. For this purpose, theoretical replacement rates are calculated based on economic assumptions defined by the Indicators Sub-Group of the SPC in the framework of the OMC on pensions[1].

Theoretical replacement rates are calculated using both pre-reform and post-reform pension formula for the following persons:

- average wage earner with a career of 40 years;
- person earning 2/3 of average wage with a career of 40 years;
- person earning 2/3 of average wage with a career of 30 years;

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[1]   See Indicators Sub-Group of the Social Protection Committee (2006), "Current and prospective theoretical pension replacement rates" 19 May 2006.
http://ec.europa.eu/employment_social/social_protection/docs/isg_repl_rates_en.pdf.

- inactive person entitled only to the minimum pension.

These persons broadly correspond to the categories of low earners, workers with a broken or short career (either due to raising children, unemployment or migration), and inactive persons. Impact of reforms on pension adequacy for these groups is analyzed using theoretical replacement rates, calculated both under pre-reform and post-reform pension formulas. Existing theoretical replacement rate calculations of the SPC were taken as the basis[2], but additional calculations were made for the purpose of this study.

In general, the FF schemes entail a strong link between contributions on earnings paid into the system and future benefits. In some countries, however, contributions are paid by the state or by other social insurance funds for certain periods outside active employment (e.g., state paying contributions during periods of childcare or unemployment). This signifies solidarity elements of the FF schemes, while maintaining the contribution-based feature of DC schemes. Another aspect of solidarity in some FF schemes examined in this study is the use of unisex life tables for benefit calculation entailing redistribution from men to women, given the fact that men have shorter life expectancy than women, a difference which is very significant in some Member States.

The rate of return earned on contributions made to the scheme is another aspect that has significant impact on pension adequacy of the FF schemes. Calculations of the Social Protection Committee assume a real rate of return of 2.5% in the long run (ie., 3% of gross real rates of return minus 0.5% of administrative charges). This assumption can be considered rather conservative. At the same time, it is clear that there are significant national variations as to the actual net rates of return. In particular, this study analyzes the extent to which participants of FF schemes are exposed to investment risks and the kind of guarantees in place.

Some Member States with newly established statutory funded schemes have left the choice of the level of investment risk to scheme participants, allowing a choice between pension funds with different investment strategies, and hence different risk levels (e.g., different exposure to equity risk).

This study also analyzes age and gender composition of fund participants and the age and gender pattern of fund choices. Furthermore, it addresses whether any legal restrictions exist on fund choice and whether any neutral guidance or public education tools (e.g., Internet pages) are available to assist participants in making relevant choices.

Core information on the topics and issues addressed in this study was collected from national experts using a questionnaire. Replies to the questionnaire were checked against other available sources of information such as national reports under the OMC, research articles, studies by the ILO, the World Bank and other sources.

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[2]   In particular, the report on current and prospective theoretical pension replacement rates
(http://ec.europa.eu/employment_social/social_protection/docs/isg_repl_rates_en.pdf)
and the study on minimum income provision for older people and their contribution to adequacy in retirement
(http://ec.europa.eu/employment_social/social_protection/docs/SPC%20Study%20minimum%20income%20final.pdf).

2. Analysis of transition costs and their implications for pension adequacy

Over the period 1998 – 2005, eight EU Member States have undertaken major pension reforms entailing a partial shift from a PAYG to a FF financing principle. These reforms were instituted for several considerations, among others: to strengthen individual responsibility towards retirement income, to cope with demographic pressures on PAYG schemes, to increase financial transparency, and to advance financial markets. While the emphasis, context and parameters of the reform vary from country to country, certain similarities and common patterns can be identified.

Reforms entailing a shift from PAYG to FF scheme have been more widespread in Central and Eastern Europe. In fact, 6 out of 8 new Member States, which joined the EU in 2004, have undertaken such a reform, as did Bulgaria, which joined the EU in 2007. All of the Central and Eastern European countries examined here had already initiated the reform prior to joining the EU.

2.1. Impacts of transition on fiscal balance of the pension system

2.1.1. Pension expenditures and fiscal balance of the pension system

Most of the Member States, which have introduced FF schemes as a part of their statutory pension systems, are spending on pensions less than the EU-25 average of 12.3% of GDP (Table 2.1). Only Poland has been spending on pensions over the EU average. Sweden's pension expenditures are close to the EU average, while Estonia, Latvia, Lithuania and Slovakia are in the group of countries with the lowest pension expenditures in the EU.

Table 2.1. Expenditures on pensions as % of GDP

Country (reform year)	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Bulgaria (2000)	..	..	..	..	..	..	..	..	..	..	8.0[p]
Estonia (2002)	..	..	..	..	..	6.7	6.0	5.9	5.9	6.1	5.9
Hungary (1998)	..	..	..	..	9.1	8.4	8.6	8.9	9.1	9.3	9.8
Latvia (2001)	..	..	9.5	10.2	10.8	9.5	8.6	8.2	7.5	6.8	6.3[p]
Lithuania (2004)	..	6.7	6.7	7.3	8.2	7.9	7.3	7.0	6.8	6.7	6.6[p]
Poland (1999)	..	..	..	..	..	12.6	13.6	13.7	13.8	13.3	12.7[p]
Slovakia (2005)	7.2	7.1	7.2	7.4	7.4	7.4	7.4	7.4	7.4	7.4[p]	7.6[p]
Sweden (1999)	12.7	12.7	12.4	12.2	12.0	11.6	11.6	11.9	12.7	12.6	12.5[p]
United Kingdom (2012)	11.8	11.8	11.9	11.4	11.5	12.1	11.7	11.0	10.8	10.7[p]	11.0[e]
EU15	12.6	12.7	12.7	12.5	12.5	12.4	12.3	12.3	12.4	12.3	12.3[e]
EU25	..	..	..	..	..	12.3	12.3	12.3	12.3	12.2	12.2[e]
EU27	..	..	..	..	..	..	..	..	..	..	12.2[e]

Note: Here and in the following tables the reform year refers to the year of introducing the fully funded (FF) scheme. Data for Sweden and United Kingdom also include occupational pensions.

While a common economic argument posits that transition from a PAYG to a FF scheme does not add new costs to the pension system, but only shifts the timing when certain pension liabilities have to be financed (Holzmann 1998), it is clear that the change in financing principle does create practical fiscal problems for states undertaking such reforms.

Governments have initiated transition to the multi-pillar system in quite different fiscal circumstances. Table 2.2 shows the development of fiscal balance of the PAYG pension scheme before and after the reform.

Table 2.2. Current year surplus/deficit of the PAYG scheme as % of GDP before any financial transfers to the PAYG scheme

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 (2000)	..	-0.4	-0.9	-2.0	-2.0	-3.1	-2.6	-2.4	-2.3	-3.6	..
Estonia (2002)	-0.9	-0.2	0.5	0.6	0.2	-0.1	-0.2	-0.2	..	..	..
Hungary (1998)	..	..	..	-0.5	-0.7	-0.7	-1.0	-1.8	-1.6	-2.0	-2.3
Latvia (2001)	-0.3	-0.9	-0.6	-0.1	0.0	0.1	0.7	0.9	1.3	..	..
Lithuania (2004)	-0.1	0.0	0.3	0.2	0.1	0.4	..	..	..	..	..
Poland (1999)	-0.9	-1.3	-1.3	-2.0	-2.3	-2.9	-3.4	-3.4	-3.3	-3.0	-3.3
Slovakia (2005)	-0.4	-0.4	-1.1	-2.2	-2.7	..	..	..	..	..	..
Sweden (1999)	..	..	..	..	2.2	..	2.0	..	2.1	..	..
United Kingdom (2012)	0.5	0.6	0.7	..	..	..	..	..	..	..	..

Source: National reports (see Annex 4 for details of the sources of data in each Table)

Notes: The reform year (T) takes into account the first effects of the reform. It must be noted that in Estonia, Latvia and Lithuania the FF scheme was introduced mid-year (from July). In other countries the reform was introduced from January of the respective year. United Kingdom – forecasts.

In Hungary, Poland, Bulgaria, Latvia and Slovakia, the PAYG scheme was in current deficit prior to the introduction of reform (i.e., expenditures exceed contribution revenues in the given year). Diverting a part of the former PAYG contribution to the FF scheme increased the deficit in Hungary, Poland, Bulgaria and Slovakia. In Bulgaria, Hungary and Slovakia, the additional factor, which has increased the deficit of the PAYG scheme, is the decline of the PAYG contribution rate (see Table 2.5).

In contrast, in the Baltic countries the pre-reform fiscal situation of the PAYG scheme was more favourable, as have been fiscal developments after the reform. In Estonia and Lithuania, the PAYG scheme was in surplus prior to initiating the reform. After the reform, the PAYG scheme in Estonia runs a small deficit around 0.2% of GDP. In Latvia and Lithuania, the PAYG scheme demonstrates an increasing surplus in spite of transition to the multi-pillar system.

The relatively favourable fiscal situation of the PAYG pension schemes in the Baltic countries is explained by the fact that transition to the multi-pillar system coincided with a boost in economic growth (around 10% in recent years) with subsequent increase in employment rates which, in turn, has increased the revenues of the PAYG pension scheme. This has allowed all three Baltic

countries not only to cover the reform-induced deficit, but also to create reserves in the pension scheme, currently reaching nearly 3% of GDP in Estonia[3] and 2% of GDP in Latvia and Lithuania (see Table 2.3).

Among the countries studied here, pre-reform situation was most favourable in Sweden where there was a large reserve fund amounting to over 30% of GDP administered outside the state budget (Kruse and Palmer 2007). Sweden's pre-reform pension scheme was financed by a combination of transfers from the state budget, contributions and withdrawals from the reserve fund.

Table 2.3. End of year cumulative surplus/deficit of the PAYG scheme as % of GDP after all financial transfers

Country (reform year)	T-3	T-2	T-1	Reform year	T+1	T+2	T+3	T+4	T+5	T+6	T+7
Bulgaria (2000)	..	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	..
Estonia (2002)	0.3	0.0	0.6	1.1	1.2	1.4	1.3	2.8	..	..	..
Hungary (1998)	..	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.4	-0.4
Latvia (2001)	0.2	-0.7	-1.2	-1.2	-1.2	-0.9	-0.1	0.8	1.9	..	..
Lithuania (2004)	0.0	0.5	0.7	1.0	1.3	1.9	..	..	..	..	..
Poland (1999)	0.2	-0.2	-0.1	-1.0	-0.6	-0.6	-0.4	-0.4	0.0	0.0	0.2
Slovakia (2005)	0.1	0.1	0.3	0.3	0.5	..	..	..	..	..	..
Sweden (1999)	32.3	32.2	31.9	29.2	32.6	24.3	20.1	22.9	24.6	28.1	29.6
United Kingdom (2012)	3.9	4.3	4.9	..	..	..	..	..	..	..	..

Source: National reports

Notes: Data for the United Kingdom are forecasts.

Bulgaria, Poland and Slovakia have had to make financial transfers from general state revenues amounting to 3% of GDP in order to reach financial equilibrium of the PAYG pension scheme (see Table 2.4). In Hungary, subsidies to the PAYG scheme have reached 2% of GDP, but this has not been sufficient to bring the PAYG scheme into financial balance, the residual deficit amounting to 0.4% of GDP in recent years (Table 2.3). In Estonia, additional transfers to the PAYG scheme have recently also amounted to 2% of GDP, but these transfers were made to increase the reserves of the PAYG scheme using the surplus of general tax revenues to create a financial buffer for financing transition costs in the coming years.

Table 2.4. Total additional financial transfers to the PAYG scheme as % of GDP

Country (reform year)	T-3	T-2	T-1	Reform year	T+1	T+2	T+3	T+4	T+5	T+6	T+7
Bulgaria (2000)	..	0.7	1.4	2.0	2.0	3.1	2.6	2.4	2.4	3.6	..
Estonia (2002)	..	..	..	0	0	0.4	0.3	1.9	..	..	..
Hungary (1998)	..	..	..	0.5	0.7	0.7	1.0	1.8	1.4	1.6	1.9
Latvia (2001)	0.1	0.1	0	0	0	0	0	0	0	..	..
Lithuania (2004)	0	0	0	0.1	0.2	0.3	..	..	..	..	..
Poland (1999)	0.9	0.9	1.0	0.9	1.6	2.2	2.9	2.9	3.3	3.0	3.4

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[3] In Estonia, a part of surplus of the general state budget on account of higher than expected tax revenues has been transferred to the PAYG pension reserve, which is invested by the State Treasury.

			0.5	1.3	2.5	3.2						
Slovakia (2005)		..	0.5	1.3	2.5	3.2	..	..	..	..	..	..
Sweden (1999)	0	0	0	0	0	0	0	0	0	0	0
United Kingdom (2012)	0	0	0	..	..	..	..	..	..	..	..

Source: National reports

Notes: United Kingdom – forecasts. Values in Tables 2.2 and 2.4 broadly make up values in Table 2.3, but the figures do not always add up exactly due to changes in GDP and rounding effects.

2.1.2. Contributions and inflow of revenues to the funded scheme

The inflow of revenues to the FF scheme is a function of three main factors:

- the share of the total contribution rate diverted to the FF scheme;
- the participation rate in the funded scheme;
- the ratio of average earnings of FF scheme participants to the average earnings of insured persons in the PAYG scheme.

In nominal terms, the highest contribution rates diverted from the former PAYG scheme to the FF scheme are in Slovakia (9%) and Hungary (8%). The lowest contribution rate for FF pensions is in Sweden (2.5 %) (Table 2.5).

Bulgaria, Latvia and Lithuania opted for a gradual increase in the contribution rate for the FF scheme to ease transition costs in the first post-reform years. Latvia started with the lowest contribution rate for the FF scheme at 2%, but adopted legislation aims to increase contribution rate to 10% by 2010. Lithuania has increased the contribution rate for the FF scheme from 2.5% to 5.5% over the period 2004-2007.

In relative terms, the share of the former PAYG pension contribution diverted to the FF scheme is slightly over 30% in Hungary, Poland and Slovakia; about 20% in Latvia, Estonia and Lithuania; and less than 20% in Bulgaria and Sweden. However, if the increase in the contribution rate for the FF scheme in Latvia will be implemented, the share of the FF scheme contribution will increase to 50% of the total statutory pension contribution.

Table 2.5. Contribution rates to the PAYG and FF schemes for switchers and non-switchers (%)

Country (reform year)		T-2	T-1	T	T+1	T+2	T+3	T+4	T+5	T+6
Bulgaria (2000)	Switchers PAYG				32	29	27	27	26	26	19
	Switchers FF				0	0	2	2	3	3	4
	Non-switchers	37	35.7	32	29	29	29	29	29	23
Estonia (2002)	Switchers PAYG				16	16	16	16	16	16	16
	Switchers FF				4+2	4+2	4+2	4+2	4+2	4+2	4+2
	Non-switchers	20	20	20	20	20	20	20	20	
Hungary (1998)	Switchers PAYG				25.0	25.0	25.0	23.0	21.0	19.5	18.5
	Switchers FF				6	6	6	6	6	8	8
	Non-switchers	31.0	31.0	31.0	31.0	31.0	28.0	26.0	26.5	26.5
Latvia (2001)	Switchers PAYG				18	18	18	18	18	18	16

	Switchers FF			2	2	2	2	2	2	4
	Non-switchers	20	20	20	20	20	20	20	20	20
Lithuania (2004)	Switchers PAYG	25	25.9	23.4	22.5	21.6	20.7			
	Switchers FF			2.5	3.5	4.5	5.5			
	Non-switchers	25	25.9	25.9	26	26.1	26.2			
Poland (1999)	Switchers PAYG			12.22	12.22	12.22	12.22	12.22	12.22	12.22
	Switchers FF			7.3	7.3	7.3	7.3	7.3	7.3	7.3
	Non-switchers	33	33	19.52	19.52	19.52	19.52	19.52	19.52	19.52
Slovakia (2005)	Switchers PAYG			15	15					
	Switchers FF			9	9					
	Non-switchers	28	26	24	24					
Sweden (1999)	PAYG			16.0	16.0	16.0	16.0	16.0	16.0	16.0
	Switchers FF			2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Before reform		18.5	..	..	..	..	..	..	..
United Kingdom (2012)	Switchers PAYG									
	Switchers FF									
	Non-switchers	19.85	19.85							

Source: National reports

Notes: The Polish pre-reform contribution rate covers also other social security benefits. In Latvia, the legislation prescribes a gradual increase of the FF contribution rate to 10% by 2010. UK – theoretical contribution rate equivalent to the share of pensions in total national insurance contribution. It is intended that from the year of the introduction of the FF scheme, employees will contribute 4%. Employer contribution rates will grow from 1% in the first year to an eventual 3%. An additional 1% contribution will come from tax relief.

Estonia has been the only Member State to increase the total contribution rate while introducing the FF scheme. It requires persons who join the FF schem to pay an additional individual contribution of 2% of gross wage. Contribution rate for non-switchers remains at the pre-reform level. In a similar way, the planned voluntary but auto-enrolment FF scheme for the UK will receive an additional total contribution of 7% from employees and employers.

Bulgaria and Poland reduced the overall contribution rate prior to, or at the time of, introducing the FF scheme. Bulgaria continued to reduce PAYG contribution rate after the introduction of the FF scheme, as has been the case in Hungary.

In essence, Hungary and Bulgaria have simultaneously instituted two major reforms in the field of pension finances: a partial transition to the FF scheme and a shift from contribution financing towards more general revenue financing of the remaining PAYG scheme. In fact, as long as liabilities of the pension scheme remain the same, reduction of the contribution rate of the PAYG scheme has similar effects as the partial transition to the FF scheme since both reforms create the need for additional financing.

The highest annual inflows of revenues to the FF scheme are observed in Poland, exceeding 1.4% of GDP. In Hungary, Estonia and Slovakia funded schemes also accumulate over 1% of GDP a year and in Sweden close to 1%.

Table 2.6. Inflow of revenues to the FF scheme as % GDP

Country (reform year)	Reform year	T+1	T+2	T+3	T+4	T+5	T+6	T+7
Bulgaria (2000)	0.1	0.1	0.1	0.3	0.5	0.5	0.6	..
Estonia (2002)	0.1	0.6	0.9	1.0	1.1	..	..	..
Hungary (1998)	0.3	0.5	0.7	0.7	0.7	0.9	1.0	1.2
Latvia (2001)	0.1	0.2	0.2	0.3	0.3	0.4	..	..
Lithuania (2004)	0.3	0.4	0.7	..	..	..	..	..
Poland (1999)	0.3	0.6	1.1	1.2	1.2	1.2	1.4	1.4
Slovakia (2005)	0.6	1.1	..	..	..	..	..	..
Sweden (1999)	1.1	1.0	0.8	0.8	0.8	0.8	0.9	0.9
United Kingdom (2012)	0.3	0.4	0.4	0.4	0.4	..	..	..

Source: National reports

Notes: UK – forecasts. In Estonia, inflow of revenues to the FF scheme is higher than gross transition costs because, besides the share of the former PAYG contribution which was diverted to the FF scheme (4%), there is also a supplementary individual contribution of 2% for the FF scheme.

A comparison of the data in Table 2.6 with that in Tables 2.2 and 2.4 shows that, in some countries, the annual deficit of the PAYG scheme and the additional transfers to bring the PAYG scheme into balance are higher than the inflow of contribution revenues to the FF scheme, indicating that contributions are not sufficient to cover PAYG commitments even in the absence of the FF scheme. This is the situation in Bulgaria, Hungary, Poland and Slovakia.

This is partly explained by the fact that the PAYG scheme in these countries was in deficit at the time of introducing the FF scheme and these imbalances have not only persisted, but also further increased after the reform. In the cases of Bulgaria and Hungary, another factor is the decline of the contribution rate, i.e., the shift in financing from contributions to general tax revenues. In Slovakia, the decline of the PAYG contribution rate reflects the introduction of a special reserve fund in the Social Insurance Agency. Hence, gross transition costs related to transition from the PAYG to the FF scheme only partly explain the increase of the annual deficit of the remaining PAYG schemes in these countries.

It can also be observed that net annual transition costs in Estonia, Latvia and Lithuania have been significantly below the inflow of revenues to the FF scheme (or gross annual transition costs). Moreover, all three Baltic states have accumulated increasing reserves even though a part of the former PAYG contribution to the FF scheme has been redirected (see Table 2.3). This was made possible due to high economic growth, resulting in increased employment and real wages and improved tax compliance.[4]

2.1.3. Policies and behaviour of joining the FF pension scheme

Transition costs are influenced, but at the same time can be controlled, by policies on which cohorts are obliged to join the new FF scheme, which cohorts are provided the option of joining, and which groups are prohibited from joining (see Palacios and Whitehouse 1998). These

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[4]   As has been noted earlier, reserves in Estonia have been created on account of a surplus of general tax revenues, and not from PAYG scheme revenues.

policies and, more importantly, the actual response to such policies (i.e., the behaviour of workers permitted to join the FF scheme) shape the path of development of transition costs.

The wide choice for joining the FF scheme combined with the high rate of joining place a relatively heavy burden of transition costs on the first decades of the reform. Subsequently, the size of annual transition costs gradually decreases.[5] At the same time, a relatively low cut-off age (i.e., the age at which joining the FF scheme is not allowed) would restrict transition costs during the initial years after reform. The costs would however gradually increase, reaching a maximum a couple of decades after the reform, and thereafter start to decline (Palacios and Whitehouse 1998).

Hungary, Lithuania, Estonia and Slovakia allowed the broadest choice, permitting all employed persons to join the FF scheme (Table 2.7). Bulgaria adopted the most restrictive policy, setting the cut-off age at 40. Poland and Latvia opted for a middle way, allowing choice for persons aged 30-50 and imposing mandatory participation on persons under 30 at the time of the reform and restricting access to all over 50.

Obviously, when designing policies in respect of joining the FF scheme, states had also other considerations than only restricting transition costs. First and foremost, most countries either restricted or discouraged older workers to join the FF scheme because the shorter time period of pension accumulation implies smaller additional benefit from joining, if any.

Table 2.7. Policies in respect of possibilities to join the FF scheme

Country (reform year)	Obligatory	Optional	Not allowed
Bulgaria (2000)	Aged under 40 at the time of the reform (born 1.1.1960 or later)	None	Aged 40 or over at the time of the reform (born 1959 or earlier)
Estonia (2002)	Aged under 19 at the time of the reform (born 1.1.1983 or later)	Aged 19-60 at the time of the reform (born 1942-1982)	Aged over 60 (born 1941 or earlier)
Hungary (1998)	Entering labour market 1.1.1998 or later	All employed at the time of the reform	Retired persons
Latvia (2001)	Aged under 30 at the time of the reform (born 1.7.1971 or later)	Aged 30-49 at the time of the reform (born 2.71951-1.7.1971)	Aged 50 or over at the time of the reform (born 1.7.1951 or earlier)
Lithuania (2004)	None	All persons insured for full social insurance pension	Persons above pension age
Poland (1999)	Aged under 30 at the time of the reform (born 1.1.1969 or later)	Aged 30-50 at the time of the reform (born 1.1.1949-31.12.1968)	Aged over 50 at the time of the reform (born 1948 or earlier)
Slovakia (2005)	Entering social insurance scheme 2005 and later	Persons who had entered social insurance scheme before 2005	None
Sweden (1999)	Aged under 62 at the time of the reform (born 1938 or later)	None	Aged 62 or over at the time of the reform (born 1937 or earlier)

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[5]   Obviously, the yearly transition costs also decrease as the obligations to pensioners under the old rules decline. Furthermore, demographic factors like the cohort size may significantly influence the pattern of development of annual transition costs.

United Kingdom (2012)	All employees will be automatically enrolled, unless already participating in an appropriate scheme provided by their employer, but can opt out. Persons changing employer or having been opted out for three years will be automatically re-enrolled.	The self-employed as well as those not in paid work can voluntarily opt in.

Notes: Bulgaria – certain hazardous categories of workers (classified as I and II labour category) are subject to mandatory insurance in a professional pension fund regardless of their age.
Lithuania – farmers and self-employed who are not insured for the full social insurance pensions cannot join the FF scheme. Slovakia – with effect from 2008, the obligation to join was cancelled.

Instead of restricting access to the FF scheme, older persons in Slovakia were discouraged to join through a policy that sets a threshold of at least 10 years of saving before a pension can be taken from the FF scheme.

Similarly, in Estonia, were the cut-off age was close to the pension age, older workers were discouraged from joining since benefits from the FF scheme are available only from 2009 (i.e., required at least 6.5 years of affiliation). Moreover, older cohorts had a considerably shorter time window for joining (having to make a decision within a period of 7 months), while for the younger cohorts window for joining is still open (Table 2.8).

Table 2.8. Time window for joining to the FF scheme for cohorts whose participation was optional

Country (reform year)	Time window for joining
Estonia (2002)	Different cohorts have had a different time window to make the decision, varying from 7 months to 8.5 years: born 1942-1951: 1.4.2002-31.10.2002 born 1957-1961: until 31.10.2003 born 1962-1964: until 31.10.2004 born 1965-1967: until 31.10.2005 born 1968-1970: until 31.10.2006 born 1971-1973: until 31.10.2007 born 1974-1976: until 31.10.2008 born 1977-1979: until 31.10.2009 born 1980-1982: until 31.10.2010
Hungary (1998)	20 months (1 January 1998 – 31 August 1999)
Latvia (2001)	no time limit
Lithuania (2004)	no time limit
Poland (1999)	12 months (1 January 1999 - 31 December 1999)
Slovakia (2005)	18 months (1 January 2005 - 30 June 2006)

Notes: In 2007, the Parliament of Slovakia approved another option during the period January 2008 - June 2008, when people will have the possibility to move in both ways, to join the FF scheme pillar or to switch back to the PAYG. According to the Slovak Government, joining of the FF scheme is beneficial only persons earning at least SKK 29.000 (€862) on a condition that they are saving for at least 25-30 years. Therefore, the Government decided to give people an opportunity to re-evaluate their original decision, which was often made under the influence of advertising. In January 2008, about 4900 persons who had joined the FF scheme switched back to the PAYG scheme.

Table 2.9 illustrates the participation rate in the FF scheme using as the proxy indicator the ratio of participants of the FF scheme to the total number of insured persons (actual contributors) to

the PAYG scheme. This proxy indicator overestimates the active participation rate as FF scheme participants include 'non-active participants' i.e., persons who have joined the FF scheme but do not make contributions to the scheme in a given year.

Table 2.9. Share of participants of the FF scheme as a proportion of contributors to the PAYG scheme (%)

Country (reform year)	Reform year	T+1	T+2	T+3	T+4	T+5	T+6	T+7
Bulgaria (2000)	..	..	..	76	86	91	92	..
Estonia (2002)	6	35	59	71	75	..	..	..
Hungary (1998)	35	55	57	58	57	59	62	64
Latvia (2001)	27	33	47	58	68	77	..	..
Lithuania (2004)	36	44	53	..	..	..	..	..
Poland (1999)	78	80	83	86	90	93	89	93
Slovakia (2005)	43	60	..	..	..	..	..	..
Sweden (1999)	100	100	100	100	100	100	100	100

Source: National reports

Notes: Estonia – FF scheme participants to employed 15-69. Lithuania – FF scheme participants to contributors for full PAYG social insurance pension. Bulgaria – National Social Security Institute (NSSI) estimates that the share of active FF scheme participants to PAYG contributors is about 80%. Latvia – the share of active FF scheme participants to active PAYG contributors in 2006 was 67%. In Hungary, the participation rate in 2002 slightly declined as the Government allowed switching back to the PAYG in consideration of 'overswitching' by persons for whom joining the FF scheme was not a rational decision.

The participation rate is apparently influenced by rules on which cohorts were obliged to join the new system, on which cohorts were provided the option of joining, and on which groups were prohibited from joining the funded scheme.

Apart from Sweden, where it was mandatory to join the new system (albeit with only partial contributions going to the FF scheme for persons born before 1954), the highest participation rates in the FF schemes are observed in Poland and Bulgaria (over 90% of the employed), followed by Latvia and Estonia (about 75%). The lowest participation rate is currently observed in Lithuania, exceeding 50%. However, it must be considered that the Lithuanian reform has a shorter history and that joining the FF scheme (partially opting out from the state pension insurance) has been voluntary for all workers. In Hungary and Slovakia, participation rates are around 60-70%.

In addition, the development of participation rate over the post-reform period is influenced by the time window for joining the FF scheme (Table 2.8). In Hungary, Poland and Slovakia, where the open season for joining was limited, the participation rate increases further only on account of compulsory participants (young cohorts entering the labour market). In Estonia, Latvia and Lithuania where the option to join the FF scheme is still open (in Estonia only for younger cohorts), participation rate also increases due to some additional voluntary participants.

Table 2.10 compares participation rates in Estonia and Lithuania using another indicator – the ratio of FF scheme participants to the total number of persons in age cohorts who were eligible to join the FF scheme. In both countries, joining the FF scheme has been most active in age group 25-44 and lowest in age group 55-64.

Table 2.10. Ratio of FF scheme participants to the total potential participants: Estonia, Lithuania (%)

	Estonia	Lithuania
Men	58	37
Women	54	39
15-24	65	23
25-34	73	61
35-44	73	53
45-54	45	39
55-64	17	8

Source: National reports

Notes: Data from 2006. Estonia – the two lower age cohorts in the table are 15-23 and 24-34.

Data from Estonia, Lithuania and Slovakia indicate that the high-wage earners were among the first to join the FF scheme (Table 2.11). However, as the window for joining the FF scheme closes and the share of compulsory participants (new entrants to the labour market with lower wage levels) increases, the ratio of average earnings of FF scheme participants comes closer to the average earnings of persons insured in the PAYG scheme. In Latvia and Bulgaria, the ratio is below 100% because of a cohort effect: participation in the FF scheme was mandatory for younger cohorts with lower earnings.

Table 2.11. Ratio of average earnings of FF scheme participants to the average earnings of persons insured in the PAYG scheme (%)

Country (reform year)	Reform year	T+1	T+2	T+3	T+4	T+5
Bulgaria (2000)	..	..	91	92	96	97
Estonia (2002)	..	113	118	116	106	..
Latvia (2001)	29	72	67	81	82	80
Lithuania (2004)	124	113	105	..	..	..
Slovakia (2005)	107	109	..	..	..	..

Source: National reports

Notes: Estonia – only FF scheme participants with positive earnings were considered; earnings of insured persons in the PAYG scheme include imputed income based on social tax paid by the state. Lithuania – the ratio of the average wage of FF scheme participants to the average wage of contributors insured for full PAYG social insurance pension. Hungary and Poland – comparable data was not available. Sweden is not included in the table as participation was compulsory for all.

2.1.4. Reforms of PAYG scheme with impacts on transition costs

Parallel to the introduction of the FF schemes, most of the states in this study have undertaken various reforms of their remaining PAYG schemes. Most reforms have to do with switching to a more conservative indexation, increasing the statutory pension age, reducing the options for earlier retirement, and changing the PAYG pension formula (Table 2.12). While these policy measures were normally not taken with the explicit aim of reducing transition costs, but rather

with the more general goal of improving the financial sustainability of the PAYG scheme, it is clear that such measures may potentially have a very significant long-term impact on the development of transition costs.

Furthermore, a switch towards less favourable indexation rules transfers a part of the gross transition costs respectively to current or future beneficiaries and may have significant implications for pension adequacy.

Table 2.12. Impact of reforms of the PAYG scheme on transition costs

Measure ↓ reduces costs ↑ increases costs 0 no measures taken	Bulgaria	Estonia	Hungary	Latvia	Lithuania	Poland	Slovakia	Sweden	United Kingdom
Changing indexation	↓	↓	↓	↓	0	↓	0	↑	↑
Increasing statutory pension age	↓	↓	↓	↓	↓	↓ (plan)	↓	0	↓
Reducing early retirement options	↓	↓	↓	↓	0	↓	↓ (from 2008)	↓	↓
Changing PAYG pension formula	↓	↑	0	↓	0	↓	0	↓	↑

Source: National reports

Notes: In Latvia, legislated changes will make indexation more favourable starting 2010.

More conservative indexation rules were adopted in Bulgaria, Estonia, Hungary and Poland. Nevertheless, in most cases, this has not (yet) influenced the actual replacement rates of current PAYG pensions (see below). In Sweden, the reform package included a shift towards a more generous indexation of pensions, while the rules for acquiring pension rights were tightened. The planned reform in the UK moves in the same direction.

In Estonia, automatic indexation of pensions was introduced only in 2002 parallel to the introduction of the FF scheme. Pensions were previously increased only by *ad hoc* decisions, depending on revenues of the PAYG scheme. However, such method of increasing pensions could not be maintained in a situation of reduced contribution rate for the PAYG scheme. At the same time, the indexation rules enacted in 2002 were quite conservative (arithmetic average of the consumer price index and social tax revenues index) which, under circumstances of high real wage growth, resulted in surplus of revenues and allowed *ad hoc* increases.

The statutory minimum pension age has been, or is being, increased in Bulgaria, Estonia, Hungary, Latvia, Lithuania and Slovakia; while Poland is planning to increase it (Tables 2.12 and 2.13). Latvia, Hungary and Slovakia aim at equalising the pension age of men and women at 62 years of age. In all three countries, the target pension age for men has already been reached; the target age for women will be reached in Latvia and Hungary in 2008, and in Slovakia in 2014. In Estonia, the target age is 63, which is to be reached for women in 2016. In the UK, the

target age is 65, but the gradual equalisation of pension age of women will take place over the period 2010-2020. The eventual target age (legislated for in 2007) is 68 in 2046. In Bulgaria and Lithuania, gender-specific pension ages are maintained and women are entitled to pension at a lower age, although the age gap between men and women has been narrowed. In Sweden, where the pre-reform pension system included a full-benefit pension age of 65 years, but a minimum pension age of 60, the reform increased the minimum age to 61 and legislated the right to work up to 67. Prior to the reform, union-management agreements set a *de facto* pension age at 65. Reform in Sweden has introduced flexible retirement based on life expectancy at the time of retirement.

Table 2.13. Changes in statutory pension age

Country (reform year)		T-2	T-1	T	T+1	T+2	T+3	T+4	T+5	T+6	T+7	Target (year)
Bulgaria	M	60	60	60.5	61	61.5	62	62.5	63	63	63	..
(2000)	F	55	55	55.5	56	56.5	57	57.5	58	58.5	59	60 (2009)
Estonia	M	62.5	63	63	63	63	63	63	..	..	..	..
(2002)	F	57.5	58	58.5	58.5	59	59.5	59.5	..	..	..	63 (2016)
Hungary	M	60.0	61.0	61.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	..
(1998)	F	56.0	56.0	57.0	57.0	58.0	58.0	59.0	59.0	60.0	60.0	62 (2008)
Latvia	M	60	60.5	61	61.5	62	62	62	62	..	..	..
(2001)	F	57.5	58	58.5	59	59.5	60	60.5	61	..	..	62 (2008)
Lithuania	M	60.83	61	61.5	62	62.5	62.5	62.5	62.5	62.5	..	..
(2004)	F	56.67	57	57.5	58	58.5	59	59.5	60	60	..	..
Poland	M	65	65	65	65	65	65	65	65	65	65	..
(1999)	F	60	60	60	60	60	60	60	60	60	60	..
Slovakia	M	60	60.75	61.5	62	..	..	..	..	..	..	..
(2005)	F	57	57.75	58.5	59.25	..	..	..	..	..	..	62 (2014)
Sweden	M	65	65	..	..	..	..	..	..	..	..	..
(1999)	F	65	65	..	..	..	..	..	..	..	..	..
United Kingdom (2012)	M	65	65	65	65	65	65	65	..	..	..	..
	F	60	60.5	61	61.5	62	62.5	63	..	..	..	65 (2020)

Source: National reports

Notes: Slovakia – pension age for women with no children. Hungary – in 2006 the pension age of women was already 61. Sweden – the reform abolished a statutory pension age; however, pensions can be paid from the age of 61, while the guarantee pension is not paid before the age of 65.

Table 2.13 also indicates that, as a rule, increases in the pension age were initiated before launching the FF scheme, except in Bulgaria, where these two measures were taken simultaneously. Therefore, in most of the cases, it cannot be claimed that the increase of pension age was undertaken with an explicit agenda to shoulder transition costs. Rather, both measures were undertaken with the similar aim of improving sustainability of the pension system.

Moreover, all countries studied here have also taken steps to reduce early retirement options, including phasing out of special rights granted during the socialist period. Increase of pension age effectively reduces the burden of transition costs, in particular as the speed of increasing pension age exceeds improvements in life expectancy (as has been the case in the countries analysed here) and as the employment rate of older workers (55-64 age group) has increased (observed in all countries analysed here, except Poland).

Latvia, Poland and Sweden changed their PAYG pension formulas by introducing NDC schemes that contain the costs of the PAYG scheme compared to the earlier DB arrangement. Transitional rules in Latvia (i.e., awarding of initial capital to the notional accounts of workers) had an additional cost containment effect. In Poland and Sweden, the NDC formula is the same for those who joined the FF scheme and those who did not, but due to lower contributions to the PAYG scheme the rights acquired from the NDC scheme are proportionally lower for FF scheme participants[6]. However, NDC designs in these countries differ with respect to indexation of pensions.

In Bulgaria, Estonia and Lithuania, the PAYG pension formula is also the same for all, although the DB system has been retained. In Estonia and Lithuania, joining the FF scheme influences only the contribution-related 'insurance' component of the PAYG pension, but it does not affect the flat-rate base amount of the PAYG pension.[7] This gives an incentive to join the FF scheme, but, at the same time, it entails additional transition costs since pension rights in the PAYG scheme are not reduced in the same proportion as contributions are reduced.

2.1.5. Means and strategies to shoulder transition costs

While governments have taken various steps to control transition costs, the long-term outlook on methods to finance the remaining net transition costs is still unclear in most of the countries studied here.

Experts from Estonia, Latvia, Lithuania, Poland and Slovakia claim that no long-term strategy on financing transition costs exist in their respective countries. Hungary and Bulgaria have adopted relevant strategy papers, but experts question their practicability. Nonetheless, most governments have at least outlined some short-term measures for covering transition costs.

In Bulgaria, the National Pension Reform Strategy adopted by the Parliament in 1999 prescribes the use of budget transfers (subsidies) from other tax revenues to cover the deficit of the public pension scheme. The strategy paper envisaged that the deficit should last only until 2010. However, subsequent policy decisions (specifically, the decision to reduce contribution rate) imply that the deficit will last even until 2050.

In Estonia, during the early post-reform years, transition costs have been financed from two sources: surplus of social tax revenues from previous periods and transfers from general taxes. The Government Budget Strategy until 2011 indicates that the same sources will be used in the medium term. In 1997, a stabilisation reserve was established from state budget surpluses and revenues of privatisation which, according to the legislation, may be used to cover expenditures related to major structural reforms, including pension reform. However, the stabilisation reserve has not yet been used to finance transition costs. The 2000 Government Budget Strategy also indicated that additional loans may be taken to cover the deficit of the pension reform; however, no loans have so far been taken to cover transition costs.

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[6] In Latvia, it is possible to switch back from the FF scheme to the PAYG scheme at eth etime of retirement, by transferring the accumulated capital from the FF scheme to the NDC scheme and withdraw the total benefit from the NDC scheme.

[7] The flat-rate base amount currently constitutes about 35% of the average old age pension. In 2007, legislation has been adopted to gradually increase the relative share of the base amount.

In Slovakia, in 2005-2006, the reserve fund and surpluses from other funds of the Social Insurance Agency and privatisation revenues have been used to cover transition costs. The government has deposited part of the revenues from privatisation of the national gas plant and the national electricity plant (i.e., more than EUR 2 billion including interests) to finance transition costs. These revenues are supposed to cover transition costs until 2009, but, apparently, a plan on how to proceed thereafter is missing.

In Lithuania, there is an informal agreement that 50% of income lost by the PAYG pension scheme will be covered by the stabilisation reserve fund annually. While the principle is not legally binding, it has been respected thus far in appropriating annual budgets.

In Poland, a Demographic Reserve Fund of the PAYG NDC scheme was established in 2002 and 0.1 percentage point of the 19.52% NDC contribution was earmarked for this buffer fund. The contribution rate allocated for the Demographic Reserve Fund was increased to 0.14% in 2004 and to 0.2% in 2005. However, according to the current legislation, contributions to the Fund will be paid only until the end of 2008.

The Swedish system includes a buffer fund and an automatic balancing mechanism which ensures that long-run PAYG expenditures cannot exceed revenues.[8] Therefore, the Swedish reform has not induced any direct transition costs as any imbalances are cushioned within the PAYG system. Whenever assets (contribution assets plus the buffer fund) fall below liabilities (balancing ratio less than 1), the balancing mechanism is activated by lowering the accrual rate in the PAYG notional accounts and by lowering outgoing benefits. For the time being, this remains a hypothetical scenario since assets have exceeded liabilities of the system in the post-reform years.

In Latvia, the government has projections on the evolution of transition costs, but no former strategy paper for financing transition costs has been adopted. The plan to increase the FF contribution rate from the current 4% to 10% by 2010 will obviously influence the evolution of transition costs. In their analysis of the projected development of transition costs in Latvia, Palmer et al. (2006) argue that the increase of the FF contribution rate to 10% cannot be realistically achieved because this would lead to major trade-offs with pension indexation for pensioners. They suggest stopping the increase of the FF contribution rate at 7% or 8%. Similarly, Vanovska (2006) suggests not increasing the FF contribution rate in Latvia beyond 8%.

One of the still understudied aspects, which may have some impact towards reducing transition costs, is the effect of the reform on contribution compliance (see also Fultz and Stanovnik 2004). Funded schemes entail a strong contribution-benefit link and sums accumulated on individual accounts are regarded as private assets. From this perspective, transition from a PAYG scheme to a FF scheme strengthens incentives to contribute to the pension system, and, presumably, leads to better contribution compliance. It is, however, difficult to establish whether this presumption has materialised, or if there has been an impact at all. As such, reforms have coincided with the rather favourable economic developments in most of the Central and Eastern European countries; contribution revenues have also increased due to increasing employment and wage levels. There have been no specific studies carried out to segregate the effect of reforms on contribution compliance from other factors at play (e.g., legalisation of employment

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[8]   Five so-called National Pension Plans (AP funds) administer the capital of the buffer fund.

and wages) in the countries concerned. However, based on revenue statistics, officials and experts in Estonia, Latvia and Slovakia have claimed that the reform has probably improved contribution compliance.

2.1.6. System establishment costs

Besides transition costs, which have a long-term nature, introduction of FF schemes also entails short-term system establishment costs, including:

- costs associated with the preparation and enactment of the necessary legislation;

- costs associated with the set up or upgrade of the necessary infrastructure for the operation of the FF scheme, including costs of establishing new structures (e.g., data registers, supervisory bodies) or costs of developing existing structures (e.g., acquisition of hardware, developing new or modifying existing software); and

- costs associated with public education campaigns and marketing.

The expected benefits of these costs include an improved financial education of the population and advanced institutional arrangements.

Some of the system establishment costs are been borne by the state (financed from the state budget), while private institutions (e.g. pension fund management companies) bear the other costs. Systematic information on system establishment costs is not always available, but the following provide examples of such costs in the countries studied.

In Estonia, one-off costs associated with the introduction of the reform in 2002 included costs for a public education campaign financed by the state in the amount of EEK 3 million (EUR 190.000), EEK 4 million (EUR 255.000) for upgrading the IT system of the Tax Board to administer the additional contribution for the FF scheme, and EEK 1.5 million (EUR 96.000) for additional personnel costs of the Tax Board. The state also made a lump-sum transfer to the registrar of pension fund units (Estonian Central Depository of Securities) in the amount of EEK 3 million (EUR 190.000) to cover the costs related to setting up the registry. Pension fund management companies, through registrars' fee, cover the annual administrative costs of the registrar. Administrative costs of the registrar amounted to EEK 5.5 million (EUR 350.000) in 2006.

In Latvia, the public education campaign cost the state LVL 115.000 (EUR 67.000). Another LVL 112.000 (EUR 65.000) were spent for the preparation of relevant legislation and LVL 50.000 (EUR 29.000) on additional staff and training costs. Part of costs related to introduction of the pension reform (service of advisers, public information, etc.) was financed by the World Bank loan and grants (Welfare Reform Project and Social Insurance Reform Project).[9]

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[9] The Welfare Reform Project Loan amounted to 9 million EUR, grant funds provided by the Swedish International Development Cooperation Agency (SIDA) 46 million SEK and the Japanese grant 0,1 million USD for Programmatic Structural Adjustment Loan , but these funds covered also other activities in addition to pension reform.

In Lithuania, reform-related costs included LTL 2.3 million (EUR 667.000) for updating the IT system of the Social Insurance Institution in 2003 (a year before the reform), LTL 750 thousand (EUR 217.000) for two public information campaigns in 2003 and 2006-2007, and LTL 216 thousand (EUR 63.000) for additional staff costs. Marketing costs of private pension funds and costs of fund sales agents were about LTL 9 million (EUR 2.6 million) in 2003.

In Poland, major costs relate to ZUS (Social Insurance Institution) which has to pay interest to private pension funds for overdue contribution (due to failures of administration and information systems) as well as to banks for credits incurred. These costs totalled PLN 3.1 billion (EUR 800 million) over 1999-2002 and PLN 1.1 billion (EUR 300 million) over 2003-2006. The costs of renewing the IT system amounted to PLN 1.1 billion (EUR 300 million) in 1999-2002. Public information campaign by the government amounted to PLN 18 million (EUR 4.5 million) in 1999. Acquisition and marketing costs of private pension funds were estimated to total PLN 1.6 billion (EUR 370 million) in 1999. Marketing expenditures were identified as the main factor contributing to financial losses of pension funds in 1999 and 2000 (Chłon-Dominczak 2002; Fultz 2002).

In Slovakia, the most significant have been the IT costs for the Social Insurance Agency (SIA) amounting to SKK 163 million (EUR 4.4 million) over 2003-2007, supplemented by SKK 104 million (EUR 2.8 million) for the SIA staff training and SKK 5 million (EUR 135.000) for SIA's overhead costs. Reform-related costs to the public sector also included about SKK 50 million (EUR 1.3 million) for public information campaign and SKK 13 million (EUR 0.4 million) for legal costs on external experts to prepare the legislation for the FF scheme.

In Hungary, marketing costs of private pension funds in the first year of the reform were estimated to amount to HUF 4-5 billion (EUR 18-22 million).

In Sweden, the renewal of the IT system cost SEK 151 million (EUR 17 million) in 1999. Private fund providers also devoted considerable sums of money to general advertising to attract initial choosers.

In the UK, where the reform is still in planning phase, one-off gross implementation costs to employers are estimated to reach GBP 225 million (EUR 162 million), supplemented by GBP 92 million (EUR 66 million) as additional annual administrative costs to employers. The net effect, however, is likely to be smaller and will be partly absorbed by lower growth in salaries and by inflation. Additional administrative costs for the state pension system are estimated to be GBP 211 million (EUR 152 million) and for the Personal Accounts Delivery Authority GBP 21 million (EUR 15 million).

2.2. Impact of reforms on pension adequacy

2.2.1. Benefit adequacy for current pensioners

This section looks into the development of the ratio of the average net old age pension of the PAYG scheme to the average net wage of contributors. We shall examine whether the transition to a multi-pillar system has had any immediate negative implications for pension adequacy of current pensioners.

Table 2.14. Average net pension ratio from the PAYG scheme before and after the reform (%)

Country (reform year)	T-3	T-2	T-1	Reform year	T+1	T+2	T+3	T+4	T+5	T+6	T+7
Bulgaria (2000)	..	46	45	51	48	50	50	51	52	53	..
Estonia (2002)	53	46	43	42	43	44	43	44	..	..	..
Hungary (1998)	..	60	57	59	59	59	57	57	60	61	62
Latvia (2001)	57	62	60	56	56	52	52	51	49	..	..
Lithuania (2004)	45	44	43	44	46	44	..	..	..	..	..
Poland (1999)	..	67	65	62	60	62	64	65	65	64	64
Slovakia (2005)	56	57	57	57	56	..	..	..	..	..	..
Sweden (1999)	..	..	..	..	47	..	46	48	49	47	..

Source: National reports
Notes: Sweden – replacement rate for males. Other countries – the average of both sexes

As shown in Table 2.12 above, most of the countries studied have switched to less generous indexation rules of their PAYG pensions. Table 2.14 on the development of pre-reform and post-reform pension ratios, however, indicates that, in reality, the reform has had little impact on replacement rates of pensions in payment.[10] In other words, transition to the FF scheme has had no or very limited immediate effect on pension adequacy and the current pensioner population has not carried the burden of transition costs.

Only in Latvia has there been a notable decline in the average net pension ratio.[11] In Estonia, indexation rules adopted in 2002 restricted the increase of pensions, but in practice, *ad hoc* additional pension increases have been implemented annually, maintaining the average net

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[10]   In Estonia, in 1999, there was an *ad hoc* increase of pensions by ca 20% that led to temporary increase of replacement rate. In Hungary, in 2003, an additional 13th month pension was implemented that increased the effective replacement rate.
[11]   This decline has been attributed to the wage profile of cohorts who have retired (with subsequent effect on the initial capital in the NDC system) and to the fact that pensions in payment are not indexed to real earnings growth (Vanovska 2006) while real earnings have grown at a rapid rate in recent years. The amendments to the pension indexation provided an *ad hoc* increase in average pension amount in 1998.

replacement rate at 43-44%. Recently, in October 2007, indexation rules in Estonia have been relaxed, expected to reduce the need for additional *ad hoc* increases.[12]

2.2.2. Impact of reforms on future benefit adequacy

As a rule, FF schemes entail a strong link between contributions paid into the scheme and the level of future benefits. Therefore, even a partial transition from PAYG to FF scheme may have significant implications, reducing intra-generational transfers. In relative terms, DC schemes provide higher benefits to persons with longer working careers and benefits are proportional to earnings over the lifetime. This may place parents taking care of children, unemployed, chronically ill and disabled persons in a disadvantaged position unless contributions are paid into the scheme by the state or other parties (e.g., other insurance schemes) for the periods. Transition to the FF schemes also has a gender dimension as women on average have shorter working careers than men due to child-raising responsibilities and other periods out of employment (Ginn 2004).

Table 2.15 summarises the types of non-working periods for which contributions are paid respectively to the PAYG and FF schemes.

Table 2.15. Credited periods or contributions to PAYG and FF schemes for periods out-of-employment

Country + contributions - no contributions		Maternity leave	Parental leave	Child care	Unemployment benefit period	Sickness/ Disability	Other minor cases
Bulgaria	PAYG	+	+	-	+	-	+
	FF	-	-	-	-	-	-
Estonia	PAYG	-	+	+	-	-	+
	FF	-	+	-	-	-	-
Hungary	PAYG	-	+	-	+	-	-
	FF	+	+	-	+	-	-
Latvia	PAYG	+	-	+	+	+	+
	FF	+	-	+	+	+	+
Lithuania	PAYG	+	-	+	+	-	+
	FF	-	-	-	-	-	-
Poland	PAYG	+	+	-	+	-	-
	FF	+	+	-	+	-	-
Slovakia	PAYG	-	-	+	-	+	+
	FF	-	-	+	-	-	+
Sweden	PAYG	+	+	+	+	+	+
	FF	+	+	+	+	+	+
United Kingdom	PAYG	+	-	+	+	+	-
	FF	-	-	-	-	-	-

Source: National reports

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[12] Formerly, the index depended on the evolution of consumer prices and social tax revenues with the ratio of 50-50. In the modified index the relative weight of consumer prices and social tax revenues is 20-80. Also, the flat-rate component and contribution-based component of the pension formula are indexed according to different speeds.

Note: In Lithuania, persons receiving social insurance benefits (e.g. maternity or unemployment insurance benefit) earn pension rights as if contributions are collected from the benefit received, although no actual contributions are paid into the PAYG scheme.

Latvia, Poland and Sweden take an identical approach on 'credited' periods both under the PAYG and FF schemes. Bulgaria, Estonia, Lithuania, Slovakia and the UK provide credits for some periods under the PAYG scheme, but not under the FF scheme (or not to the same scale).

Table 2.16 takes a closer look at how child-raising and unemployment periods are treated in the PAYG and FF schemes. In Latvia, Poland, Slovakia and Sweden, these periods are treated equally under the PAYG and FF schemes both in terms of the duration of payment of contributions and the applicable contribution base.[13] On the other hand, Bulgaria, Estonia, Hungary and Lithuania treat individuals differently in the PAYG and FF schemes.

Table 2.16. Contributions made to the PAYG and FF schemes for periods of raising children and unemployment

Country		Maternity, parental leave and child-raising		Unemployment period	
		Approximate duration (months)	Contribution base (or fixed amount)	Approximate duration (months)	Contribution base (or fixed amount)
Bulgaria	PAYG	25.5 (10.5+15)	Minimum wage	12	Minimum wage
	FF	None	None	None	None
Estonia	PAYG	36	Flat rate contribution base (about 20% of average wage, less than minimum wage)	None	None
	FF	14	1% on parental benefit	None	None
Hungary	PAYG	22 (6+16)	Fixed amount	9	Fixed amount
	FF	18 (2+16)	1% of last wage	12	1% of gross benefit
Latvia	PAYG	22.5 (4.5+18)	Maternity benefit (about 108% of average wage), followed by flat rate (about 18% of average wage)	9	Unemployment benefit (initially), followed by flat rate (about 29% of average wage)
	FF	22.5 (4.5+18)	Maternity benefit (about 108% of average wage), followed by flat rate (about 18% of average wage)	9	Unemployment benefit (initially), followed by flat rate (about 29% of average wage)
Lithuania	PAYG	36	50% of basic pension, about 30% of average wage	None	None
	FF	None	None	None	None
Poland	PAYG	28.5 (4.5+24)	Maternity benefit (initially), followed by flat rate (about 17% of average wage)	18	Flat rate (about 20% of average wage)
	FF	28.5 (4.5+24)	Maternity benefit (initially), followed by flat rate (about 17% of average wage)	18	Flat rate (about 20% of average wage)

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[13]   For applicable contribution rates, see Table 2.5.

Slovakia	PAYG	72	Flat rate (about 60% of average wage)	None	None
	FF	72	Flat rate (about 60% of average wage)	None	None
Sweden	PAYG	4 years from child birth	Initially 80% of former wage. Later flat-rate supplement to earnings.	12	80% of former wage
	FF	4 years from child birth	Initially 80% of former wage. Later flat-rate supplement to earnings.	12	80% of former wage

Source: National reports

Notes: The table describes the situation as of 1 January 2007. Sweden – If the parent who makes the claim works during these 4 years then the benefit for these periods is smaller.

Another aspect of intra-generational redistribution in the FF schemes relates to the use of unisex life tables for calculating the pension (life annuity) from the FF schemes. This principle has been legislated in Estonia, Hungary, Latvia, Slovakia and Sweden. On the other hand, Bulgaria, Lithuania, Poland and the UK have not (yet) adopted unisex life tables.

Table 2.17. Application of unisex tables in the FF scheme

Country	Unisex tables
Bulgaria	No
Estonia	Yes
Hungary	Yes
Latvia	Yes
Lithuania	No
Poland	No
Slovakia	Yes
Sweden	Yes
United Kingdom	No

Source: National reports

Notes: Latvia – There are two options for payment of pension from the funded scheme. Firstly, the accumulated pension capital may be transferred to a life annuity paid by a life insurance company. Secondly, the accumulated pension capital may be transferred to the NDC scheme, sums added to the notional capital and pension paid only from the NDC scheme. Unisex life tables are used only in the latter case, i.e., when the whole pension is paid from the NDC scheme. Poland – it is planned to use unisex life tables, however, there is still no legislation on the calculation and payment of pensions from the funded scheme.

Unisex life tables have a certain balancing effect, narrowing the gender pension gap in a situation of existing differences in life expectancy (average remaining life-time) of men and

women at the time of retirement.[14] These are in the range of 6-8 years in Hungary, Slovakia, Latvia, Lithuania, Bulgaria, Estonia and Poland (Table 2.18). In Sweden, the difference in life expectancy between men and women at pension age is about 3 years.

The absence of unisex life tables combined with the existing gender employment and wage gaps (the latter being at a range of 15-25%) may lead to a significant gender pension gap in the FF scheme (see Fultz et al. 2003).

Table 2.18. Life expectancy at statutory old age

Country	Life expectancy at pension age		
	Women	**Men**	**Difference**
Bulgaria	22.0	14.3	7.7
Estonia	22.2	14.1	8.1
Hungary	21.6	15.4	6.2
Latvia	20.8	13.8	7.0
Lithuania	21.6	14.3	7.3
Poland	22.8	14.5	8.3
Slovakia	22.0	15.2	6.8
Sweden	20.8	17.6	3.2
UK	23.6	16.6	7.0

Source: National reports, Hungary – Eurostat database; latest available year (2005 or 2006).

Notes: For statutory pension age, see Table 2.13. Sweden – life expectancy at 65, which is the retirement peak.

An attempt to quantify the total impact of reforms on future pension adequacy has been made by calculating theoretical replacement rates for four categories of persons (with varying wage level and length of career), broadly corresponding to the categories of average earners, low earners, workers with broken or short career and inactive (for details, see description in section 1.2 and Annex 4).

Post-reform theoretical replacement rates are calculated based on pre-defined economic assumptions as agreed by the Indicators Sub-Group of the SPC. Post-reform replacement rates include both pensions from PAYG and FF schemes, but not occupational pensions.

Two different sets of assumptions have been used depending on data availability for the pre-reform theoretical replacement rates. For Bulgaria, Poland, Slovakia, Sweden and the United Kingdom, pre-reform replacement rates are calculated on the basis of actual historical data (Table 2.19) — that is, comparing replacement rates before the actual reforms with the simulated replacement rates after the reforms are fully implemented in the future. As demographic and macroeconomic circumstances change, part of the absolute difference in the changes in the replacement rates are due to different environments.

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[14]   Note that pension ages for men and women are still different in all countries studied here (except Sweden) women have a lower statutory pension age than men. Thus, differences in life expectancy of men and women in pension age are greater than differences in life expectancy at a given age, e.g., 60.

For Estonia, Latvia, Lithuania and Hungary, the pre-reform scenario replacement rates were calculated on the hypotetical proposition that the pre-reform situation continues for 40 years using the same macroeconomic developments as the post-reform scenario (Table 2.20). This reduces the impact of development in the demographic and macroeconomic variables when comparing pre- and post-reform cases. However, extension of the pre-reform case for the next 40 years is an artificial exercise as the situation would not had been sustainable in the long run.

Obviously, replacement rates are sensitive to the assumptions used in calculations. Therefore, when comparing pre- and post-reform situations, we look at qualitative aspects, in particular the long-term impact of the reform on the relative position of persons at different levels of wage level and lengths of career.

As we are interested in relative gains we compare changes in the replacement rates of different worker categories with the change in the replacement rates for the average wage earner. The latter is taken as baseline and is set to zero (see Annex 4 for details and intermediate results)

All the changes in replacement rates are calculated with respect to average wage earner with career 40 years („reference=0").

$$\Delta\Delta pp_j = \Delta pp_j - \Delta pp_{AW} = \left(GRR_j^{POST} - GRR_j^{PRE}\right) - \left(GRR_{AW}^{POST} - GRR_{AW}^{PRE}\right)$$

$$\Delta\Delta\%_j = \Delta\%_j - \Delta\%_{AW} = \frac{GRR_j^{POST}}{GRR_j^{PRE}} - \frac{GRR_{AW}^{POST}}{GRR_{AWW}^{PRE}}$$

where GRR_j is gross replacement rate for group j.

Table 2.19. Simulated differences in gross replacement rates before and after the reform introducing transition to the FF scheme: Bulgaria, Poland, Slovakia, Sweden, UK (%)

Country		Average wage, career 40 years	2/3 average wage, career 40 years	2/3 of average wage, career 30 years	Inactive person entitled only to the minimum pension
Bulgaria	ΔΔpp	reference=0	16	23	42
	ΔΔ%	reference=0	1	-1	34
Poland	Δpp	reference=0	0	-2	34
	Δ%	reference=0	0	-9	44
Slovakia	ΔΔpp	reference=0	-21	-22	-8
	ΔΔ%	reference=0	-31	-32	-22
Sweden	Δpp	reference=0	-10	..	..
	Δ%	reference=0	-12	..	..
UK	ΔΔpp	reference=0	7	2	-19
	ΔΔ%	reference=0	6	2	-48

Source: National reports.

Notes: Replacement rates are in respect of average wage or 2/3 of average wage. Minimum pensions are relative to average wage.
ΔΔpp - absolute difference in post-reform and pre-reform replacement rates, compared to the average wage earner
ΔΔ% - relative difference in post-reform and pre-reform replacement rates, compared to the average wage earner
Poland – net replacement rates; other countries – gross replacement rates
Sweden – pensions for inactive persons include additional housing benefits

While in nominal terms replacement rates tend to decrease in comparison to the pre-reform actual situation (see Annex 4), the relative impact of reform are however different across countries. In Poland and the UK, the relative impact of the reform is more or less the same for workers with different wage/career parameters. In Slovakia and Sweden, where the new system provides the same replacement rate for workers with different wage and career length, the reform weights relatively more on workers with wages below the average, as these workers enjoyed relatively higher replacement rates under the old system. In Bulgaria, the relative position of persons with lower than average wage and shorter careers even improves vis-à-vis the average wage earner with the reform, albeit in nominal terms replacement rates decline for all workers.

Table 2.20. Simulated differences in gross replacement rates before and after the reform introducing transition to the FF scheme: Estonia, Latvia, Lithuania, Hungary (%)

Country		Average wage, career 40 years	2/3 average wage, career 40 years	2/3 of average wage, career 30 years	Inactive person entitled only to the minimum pension
Estonia	ΔΔpp	reference=0	-1	-8	-15
	ΔΔ%	reference=0	-15	-38	-71
Hungary	ΔΔpp	reference=0	-14	-35	..
	ΔΔ%	reference=0	-17	-46	..
Latvia	ΔΔpp	reference=0	0	-9	-11
	ΔΔ%	reference=0	0	-15	-20
Lithuania	ΔΔpp	reference=0	0	-5	..
	ΔΔ%	reference=0	-4	-15	..

Source: National reports

Notes:
ΔΔpp - absolute difference in post-reform and pre-reform replacement rates, compared to the average wage earner
ΔΔ% - relative difference in post-reform and pre-reform replacement rates, compared to the average wage earner
Hungary – net replacement rates; other countries – gross replacement rates
Estonia – pensions for inactive persons include additional subsistence benefits

Table 2.20 shows the results for Hungary, Estonia, Latvia and Lithuania where the pre-reform situation has been extended to the future. It confirms the general trend that the reforms weight more heavily on persons with career breaks and/or lower than average wage and tend to lead to a higher differentiation of pensions.

2.3. Features of funded schemes

2.3.1. Investment risks and guarantees

All other factors being equal, joining the FF scheme is advantageous to the average earner only if in the long run the net rate of return earned in the FF scheme exceeds the rate of pension increase in the PAYG scheme. However, potentially higher returns of the FF scheme are accompanied by significantly higher risk (see e.g., Miles and Timmermann 1999).

While increase of pensions in the PAYG scheme depends largely on the development of the gross wage bill, the funded pensions in the FF scheme depend on net returns on investment of pension fund assets. While legislators in most of the countries have introduced various measures to mitigate investment risks, only a few countries have introduced direct guarantees against investment risks. Table 2.21 gives an overview of the main categories of measures taken to mitigate investment risks in the countries concerned (see also Financial Advisory Ltd. 2003).

Table 2.21. Measures against investment risks

Country	Limits to the types of investment instruments	Limits to the portfolio structure	Guaranteed rate of return	Geographical restrictions	Guarantee in case of fund mismanagement	Responsibility of the fund management company
Bulgaria	Yes	Yes	Yes	Yes	..	..
Estonia	Yes	Yes	No	Yes	Yes	Yes
Hungary	Yes	Yes	No	Yes	Yes	..
Latvia	Yes	Yes	No	Yes	Yes	Yes
Lithuania	Yes	Yes	No	Yes	Yes	Yes
Poland	Yes	Yes	Yes	Yes	Yes	Yes
Slovakia	Yes	Yes	Yes	Yes	Yes	..
Sweden	No	..	No	No	No	..
United Kingdom	No	..	No	No	No	..

Source: National reports

Slovakia, Poland and Bulgaria have legislated a guaranteed rate of return. All these countries apply a relative rate of return guarantee mechanism, declaring a rate of return in relation to a market benchmark. Such guarantees address the concern for equity among contributors within a FF pension scheme. However, the other side of the coin is that such guarantees may lead fund managers to exhibit "herding" behaviour, regressing all funds towards similar types of portfolio (Sin 2002).

In Slovakia, the pension companies have to compare the rates of returns of their pension funds with the average returns of all pension funds on the market. If the rate of return of the particular fund falls below specific thresholds given for each type of fund (as a percentage of average return of all funds), the pension company must increase value of that particular fund from its own resources.

In Bulgaria, the second pillar pension funds are obligated to achieve a minimum rate of return of the invested assets. The Financial Supervisory Commission determines this rate at the end of each quarter on the basis of the return achieved for the preceding 24-month period. The minimum rate of return represents 60% of the average rate of return achieved by the pension funds. The rate of return has to be declared to the Financial Supervisory Commission by the end of each month succeeding the reporting quarter. If the pension fund achieves a lower rate of return than the minimum, the pension insurance company (PIC) managing the fund is obligated within ten days after the declaration of the return to cover the difference up to the minimum from reserves that have been established for this purpose. The minimum rate of return is guaranteed by establishing reserves at the pension fund and the PIC. The PIC establishes out of its own

funds a reserve for each second pillar fund in the amount between 1% and 3% of the assets of the respective funds.

In Poland, the guaranteed minimum rate of return is a rate of return lower by 50 percent or 4 percentage points (whichever is lower) than the weighted average rate of return of all pension funds established for a given period.[15] The mechanism of a minimum relative rate of return guarantees the fund participants that there will be no significant negative differences between the rate of return generated by the fund they have chosen and the average rate of return of all pension funds.

The rate of return guarantee in Poland is enacted via a three-level financial security mechanism: reserve fund – share capital – Guarantee Fund (Borowczyk 2002). When the rate of return of a pension fund for the 36-month period has fallen below the required minimum rate of return, the fund is considered to be in deficit (Rozinka and Tapio 2007).[16] Legislation provides that in this case the pension fund is obliged to cover the deficit within 3 days, from resources available at their own reserve account, by sale of units accrued on the reserve account. Each fund is obliged to create and keep its own reserve account under the sanction of a penalty of up to PLN 500 thousand (EUR 125.000). Should the assets from the reserve account be insufficient to meet the deficit, the fund management company is obliged to compensate the deficit from their own assets. These own resources – the share capital – may not be lower than EUR 4 million, of which 50 per cent (EUR 2 million) must always be kept at bank account as own capital. If the deficit of the pension fund cannot be fully covered by a manager's own reserves or from the share capital, the remaining deficit shall be covered by the Guarantee Fund.[17] In case where the Guarantee Fund has to step in, the supervisory body initiates the bankruptcy procedure of the fund management company. In case where the Guarantee Fund lacks sufficient resources, the State Treasury provides the final guarantee for deficit coverage.

The supervisory agency calculates the average nominal rate of return for all pension funds, weighted by the asset size of fund, at the end of each quarter. The relatively long averaging period provides some flexibility for pension funds. However, the prescribed sanctions imply a strong pressure to avoid falling below the minimum rate of return and have resulted in a relatively homogeneous portfolio structure of pension funds in Poland. Also, as shown by Turner and Rajnes (2002), the Polish guarantee system tends to reduce the variability in the nominal rate of return received by workers over time.

During the first years of operation of the Polish pension system, one pension fund – Bankowy – failed to attain the minimum rate of return and created a deficit of PLN 35 million or EUR 9

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[15]   The weighted average rate of return of all open pension funds for the 36-month period is established by multiplying the fund's rate of return by its average market share index.
[16]   The deficit amount is established by multiplying the number of the pension fund's accounting units (existing on the last working day of the 36-month period) by the difference between such accounting unit value as would have ensured the minimum rate of return and the real accounting unit value as established on the last working day of the 36-month period.
[17]   Guarantee fund is created from compulsory fees payable by all pension funds and the investment income of the guarantee fund. The total value of the guarantee fund shall not exceed 0.1 per cent of the value of total net assets of all pension funds (Turner and Rajnar 2001). The Guarantee Fund has been created from compulsory payments of all universal pension societies. The value of its financial resources may not exceed 0.1 per cent of the value of total net assets of all open pension funds.

million and had to offset the deficit from the resources accumulated on its reserve account (Pelc 2001).[18] From 2003 onwards, all Polish pension funds have reached the minimum rate of return.

2.3.2. Types of pension funds

Most of the countries analyzed here have left the choice of an appropriate investment risk level to participants of the FF scheme. These countries allow a choice between pension funds with different risk levels. There are alternatives offered that differ according to the proportion of equity investments in the fund portfolio. This approach has been adopted in Estonia, Latvia, Lithuania, Hungary, Slovakia and Sweden.[19] A similar approach is envisaged in Bulgaria and the UK. In Bulgaria, participants in the FF scheme will be given the opportunity to choose pension funds with different investment strategies starting 2008.

Estonia, Latvia and Slovakia have opted for division of pension funds into three categories according to the investment risk level, expressed in terms of the upper limit on investment of pension fund assets in shares. Sweden classifies funds according to risk levels, but legislation does not prescribe categories and participants are free to choose between funds with different risk level. In Lithuania, legislation does not prescribe categories of different investment strategies for pension funds, but each pension fund management company has more than one pension fund (min 2 - max 6 pension funds) with assets invested under different investment strategy.

Table 2.22 presents the categories of pension funds according to the limits on portfolio structure. However, it must be noted that the categories of low, medium and high risk are only relative categories, indicating the relative risk level of a pension fund *vis-à-vis* other available options. As can be seen, medium risk funds in Lithuania and Slovakia and some low risk funds in Sweden would count as high risk funds in Estonia and Latvia, countries which allow a maximum of 50% of pension fund assets invested in shares. At the same time high risk funds in Sweden and Lithuania may invest up to 100% assets in shares.

Table 2.22. Categories of pension funds according to investment risk

	Low risk	Medium risk	High risk
Estonia	100% in fixed income instruments	Up to 25% in shares	Up to 50% in shares
Latvia	100% in fixed income instruments	Up to 15% in shares	Up to 50% in shares
Lithuania	100% in fixed income instruments	Up to 50% in shares	Up to 100% in shares
Slovakia	100% in fixed income instruments	Up to 50% in shares	Up to 80% in shares

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[18]   The weighted average rate of return of all pension funds over the period 30.09.1999 - 28.01.2001 was 18.091%, and the minimum rate of return was 9.046%. The rate of return achieved by Bankowy was only 1.376%, significantly below all other pension funds (Pelc 2001).

[19]   In Hungary, since 2007, FF scheme participants can choose the pension fund with different investment and risk strategies.

| Sweden | 50-90% in fixed income instruments, 10-50% in shares | 10-50% in fixed income instruments, 50-90% in shares, | 90-100% in shares |

Source: National reports

Note: In Latvia, the maximum proportion of assets invested in shares for high pension funds is 50% starting from 2008.

In Estonia, Latvia, Lithuania and Slovakia, legislation prescribes the option of low risk funds investing all assets in fixed income instruments. In Sweden, even funds classified as low risk funds may invest up to half of all assets in shares. However, it must be noted that in Sweden the relative size of the FF scheme (i.e., in terms of the allocated contribution rate) to top-up the pensions is the smallest among countries analyzed here. Existing investment restrictions and guarantee mechanisms are likewise evaluated against the relative role of the FF scheme in the overall pension system.

The set of data in Table 2.23 shows the behaviour of FF scheme participants in choosing pension funds.

Table 2.23. Distribution of FF scheme participants by risk level of pension funds

Estonia	Low risk	Medium risk	High risk
Women	6	13	81
Men	8	17	75
15-23	3	2	95
24-35	2	7	91
36-44	5	21	74
45-54	16	36	49
55-64	45	28	27

Latvia	Low risk	Medium risk	High risk
Women	25	4	71
Men	26	4	71
15-24	22	1	76
25-34	28	2	70
35-44	17	5	78
45-54	58	8	34
55-64	42	9	48

Lithuania	Low risk	Medium risk	High risk
Women	14	84	2
Men	12	84	4
14-24	3	88	9
25-34	6	91	3
35-44	10	88	2
45-54	28	71	1
55-65	61	39	1

Slovakia	Low risk	Medium risk	High risk
Total	4	27	69
15-24	4	9	88
25-34	2	16	82
35-44	4	37	59
45-54	15	71	14
55-64	99	1	0

Sweden	Low risk	Medium risk	High risk
Women	10	84	5
Men	8	84	8
18-24	15	67	18
25-29	6	85	9
30-39	3	90	6
40-49	5	90	6
50-59	14	80	6
60+	23	71	6

Source: National reports

Note: The definition of risk levels is not comparable across countries (see Table 2.22).

Table 2.23 suggests that there is a clear preference for funds that invest a significant portion of assets in equities. At the same time, as the cases of Lithuania and Sweden illustrate, funds which invest 90-100% of assets in shares are much less attractive, i.e., the extreme is avoided. Workers aged 45+ opt more often for low or medium risk funds.

In Poland, the legislation does not provide for different types of pension funds according to the equity investments. The original legislation of 1997 stipulated that after the initial phase with uniform types of pension funds, fund portfolios are to be diverted into two types by 2005 (Chłon-Dominczak 2002).[20] But this plan did not materialize as a change of legislation in 2004 that repealed this provision. Given that the minimum rate of return guarantee has also caused all funds to follow similar investment strategies, pension savers in Poland have little choice in the portfolio allocation of their savings.

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[20]   Type A with a more risky investment strategy; and B with a more conservative investment strategy.

2.3.3. Restrictions on changing funds

All countries covered with this study allow participants of the FF scheme to change pension funds, although certain restrictions apply in some of the countries with regard to the frequency of changing funds or the length of participation in the fund. Change of funds may also have financial implications (Table 2.24).

Table 2.24. Options and limits on changing funds

	Alternatives	Frequency limit	Other limits	Financial implications
Bulgaria	change of fund	once a year	changing is possible two years after the initial registration with the fund	change of fund fee (up to 10 EUR)
Estonia	(a) change of fund (changing all previously acquired units of this fund) (b) redirecting new contributions to a new fund (keeping units of the old fund)	once a year	changing of units possible only, if the person has at least 500 units	unit remittance fee of the old fund and unit issuing fee of the new fund (some fund managers waive the fee, if changing from one fund to another with the same fund manager)
Hungary	change of fund	twice a year	min 6 months in the fund	max 0.1% the total private account claim
Latvia	(a) change of fund (b) change of investment plan with the same fund manager	(a) once a year (b) twice a year	none	no cost
Lithuania	(a) change of fund management company (b) change of fund with the same fund management company	none	not before 3 years of participation	Change of fund fee. Same manager: a) no charge if changing once a year b) max 0.2% if changing more than once a year. Different manager: a) max 0.2% if changing once a year; b) max 4% if changing more than once a year
Poland	change of fund	none	none	fixed fee, if changing earlier than after 2 years of membership
Slovakia	change of fund	none	1) cannot join high-risk fund, if 15 years or less to pension age 2) cannot join medium-risk fund, if 7 years or less to pension age	lump sum SKK 500
Sweden	change of fund	none	none	no individual cost

Source: National reports[21]

Note: Sweden – the overall cost of changing funds is a part of the cost of the overall fund administration, which is charged on an individual basis. Slovakia – No frequency limit to change the fund, but changing pension fund management company is restricted to once per two years.

Sweden has the most liberal rules on changing funds, with no frequency limits and also no individual fees applicable. Likewise, Lithuania and Poland do not restrict the frequency of changing funds, but fees apply. In Latvia, there are frequency limits, but no fees involved when changing funds.

The fees applicable upon changing funds discourage frequent changes. In Lithuania, the fee is higher if fund is changed more than once a year.

2.3.4. Public education tools

In contrast to the PAYG scheme, FF schemes entail a number of choices, subject to conditions stipulated in respective countries, in particular decisions about:

- switching from the PAYG scheme to the FF scheme;

- choosing a pension fund;

- changing funds.

In the future, there will also be choices on the timing of retirement and/or type of benefit (annuity).

To make these choices, participants need information about the dimensions of choice, available alternatives, possible risks and opportunities, and likely outcomes.

As private bodies administer the FF schemes, there are interested parties to supply information. In this context, it is relevant whether public education and information tools are available to assist participants in making relevant choices and provide balanced information. Most countries provide such information electronically through web sites designed specifically for this purpose.

In Estonia, detailed information about the FF scheme is provided in a web site, www.pensionikeskus.ee, which is maintained by the Estonian Central Depository of Securities (the administrator of FF scheme pension accounts) and is available in three languages – Estonian, Russian and English. The web site explains the relevant provisions of the legislation and provides information about types of pension funds, fund portfolios, applicable fees, and

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[21] According to the reform plan of the United Kingdom, it will be possible to change target funds and move assets either on an annual or semi-annual basis. It is likely that there will be no cost for members changing their asset allocation. The Pension Commission has proposed to limit fees to an annual management charge and avoid any other fees as this would help keep administrative cost down. However, the government has not yet declared a clear preference and it is likely that the new Personal Accounts scheme will have the competence to develop appropriate charging structures.

historical performance of funds that allows comparison between different funds (ie., the development of the value of pension fund units). It also provides an interface for submitting various applications electronically, using digital identification through ID-cards, for the FF scheme (joining the scheme, changing funds, etc.) This interface also allows immediate access to data of own pension account, including the value of accrued pension assets.

In Latvia, relevant information on the FF scheme can be accessed in the web site www.manapensija.lv, which is maintained by the State Social Insurance Agency in two languages – Latvian and Russian. The web site gives general information about the funds, investment plans, fund performance, and it also allows immediate access to own account data. Legislation also prescribes annual notification of scheme participants about their account balance.

In Lithuania, the Ministry of Social Security and Labour has established an internet page dedicated to the pension system with focus on the FF scheme: www.pensijusistema.lt. Information is provided in three languages (Lithuanian, Russian, English). The web site provides general information on pension funds with links to the web pages of funds and a comparative table of administrative charges of pension funds. The web page also includes a calculator to compare the amount of pension in case of joining the FF scheme or remaining in the PAYG scheme and also calculate the accumulated pension capital under different investment returns and fee rates. It is the obligation of the pension fund management company to provide information on the historical investment performance of the pension fund on its internet page. The fund management company is also obliged to provide every participant an annual information on accumulated pension capital, including tax deduction and investment returns.

In Slovakia, the Ministry of Labour has set-up a web page with general information about different types of pension funds and their risk characteristics, including projections of replacement rates for specific individuals. There is also a web site maintained by the association of the private pension companies that provides information on historical performance of pension funds, fees for the fund management, etc. Legislation mandates the publication of information about performance and fees on a web page of the particular pension company.

In Poland, the Association of Pension Funds is the main provider of general information on the pension system with focus on the funded pillar. It maintains the web site at http://www.igte.com.pl/ with information about investment regulations, fees, historical performance of funds and links to all fund management companies. The website of the Polish Financial Supervision Authority (Polish abbreviation KNF), in Polish and English, www.knf.gov.pl, also provides information on the Funded Pension System.

In Sweden, information on the FF scheme is concentrated on the web site www.ppm.nu, maintained by the Premium Pension Authority (PPM). The web site contains information in various languages – Swedish, English, Finnish, Serbo-Croatian, Arabic and Turkish. It gives information on choices available in the FF scheme, types of funds, histories of returns, risk evaluation, fees applicable, etc. The site also has a 'my account' feature for immediate access to personal pension account. There is also an interactive internet tool, PPM-Lotsen, which is designed to facilitate the choice of a pension fund portfolio based on personal answers on income, age and risk acceptance. The tool suggests a list of suitable funds; the list is organised in such a way that the fund with the lowest fund fee appears at the top of the list. This tool is particularly relevant, considering the high number funds available in the Swedish scheme. Daily information about funds performance is available at the PPM web site and in major daily

newspapers. At the beginning of every year, the national social security office and PPM send out annual information (the "orange letter" – named after the color of the envelope) containing account information and pension projections based on the individual's account and most recent earnings, projected forward with an assumed rate of growth and average rate of return on funds.

In the UK, where the reform is still in the planning stage, a wide array of different media (newspapers, magazines, radio, internet) report on investment funds and their performance. In addition, government information strategy for communicating the planned changes to the pension system and the principles of the fund selection is being prepared.

In Bulgaria, the web page of National Social Security Institute www.nssi.bg has historical reports on the financial performance of the funds. It is also available in English.

In Hungary, participants can find information about pension funds at the home page of the Hungarian Financial Supervisory Authority. There is also a web page www.privatbankar.hu on historical performance of the funds and projected replacement rates under different scenarios.

2.3.5. Fees

Since the FF schemes are self-financing, all costs of their operation are covered by the scheme's own resources. As such, the fee structure will have significant impact on future benefits and hence, on pension adequacy. The fee structure is also an instrument that influences the choices and behaviour of fund participants. For example, unit remittance and change of fund fees place negative incentives to change funds.

The challenge for the government is how to regulate the fee structure so as to maintain a proper incentive structure for fund participants as well as for fund managers. Additional consideration is to avoid placing heavy burden on low-income earners.

Table 2.25 presents the main types of fees applicable.

Table 2.25. Fees payable by participants of the FF scheme (basis, legal limits, range)

Country		Unit purchasing fee	Unit remittance fee	Fund management fee	Account maintenance fee	Other
Bulgaria	Fee base	% of contribution	none	% of fund value (annual average)	none	Small fees for account creation, changing fund, early withdrawal
	Limits	max 5%		max 1%		
	Fee range	..		..		
Estonia	Fee base	% of unit stock value	% of unit stock value	% of net fund value (annual	none	no other fees permitted
	Limits	none	max 1%	fixed income funds: max 1.5% equity funds: max 2%		
	Fee range	1.0-3.0%	1.0% (all funds)	0.75-1.88%		
Hungary	Fee base	annual revenue without yield	% of stock value	% of fund value (annual average)	flat rate	

	Limits	in 2007: max 5.5%, from 2008 max 4.5%	none	max 0.9 % in 2007 max 0.8 % from 2008		
	Fee range	4-5%		0.5-1%	130-200 HUF	
Latvia	**Fee base**	none	% of annual average net assets	% of annual average net assets	% of annual payments	
	Limits		max is set by pension fund manager	max is set by pension fund manager	max 2.5%	
	Fee range		0-0.25%	0.75-1.52%	1.25%	
Lithuania	**Fee base**	% of contribution		% of fund value (annual average)		change of fund fee
	Limits	max 10%		max 1%		
	Fee range	1.19%-5.5%		0.95-1.0%		
Poland	**Fee base**	% of contribution		% of net fund value (monthly		change of fund fee: 80 or 160 PLN depending on the length of membership in the fund
	Limits	max 7%		0.015-0.045% depending on volume		
	Fee range	4-7%		0.015-0.045%		
Slovakia	**Fee base**	None	None	% of net fund value (monthly	% of contribution	Transfer fee of payment through Social Insurance Agency to pension fund: 0.5% of contribution monthly. Change of fund fee: lump-sum 500 SKK
	Limits			0.065% (max 0.075% for first three years after the pension company gets the licence)	1% (monthly)	
	Fee range					
Sweden	**Fee base**	None	None	% of fund value (annual average)	flat rate	
	Limits				max 100 SEK	
	Fee range			0.2-1.5%	0.16% from each account	

Source: National reports

Notes: Estonia – until 1.1.2007 there was a maximum limit on unit purchasing fee 3%. Hungary – until 2007 there was no limit on the unit purchasing fee. Lithuania, Hungary, Poland and Slovakia – for a change of fund fee, see Table 2.24. Poland – the maximum limit of unit purchasing fee will decrease to 3.5% from 2014. United Kingdom – the Pension Commission had proposed to limit fees to an annual management charge and avoid any other fees as this would help keep administrative cost down. However, at this point the government has not declared a clear preference and it is likely that the new Personal Accounts scheme will have the competence to develop appropriate charging structures.

Contribution-based charges are 'front-loaded', placing a burden in early years. Asset-based charges are 'back-loaded' as the accumulated fund is larger closer to retirement (Whitehouse 2000).

Clearly, different fee structures can be observed (see also Chłon-Dominczak 2003 and Fultz 2006). In Poland, Hungary, Bulgaria and Lithuania, the fee structure is more front-loaded. These states allow rather high up-front fees, but asset-based fund management fees are more restricted.

In Estonia, Latvia, Slovakia and Sweden, the fee structure is more back-loaded with relatively small or no up-front (unit purchasing) fees, but more heavy reliance on fund management fees. Sweden, Slovakia, Latvia and Hungary also allow account maintenance fees.

3. Conclusions

Transition from a PAYG pension system to a mixed system, which includes PAYG and FF tiers remains a highly debated topic among academics (see e.g., Ribhegge 1999; Orszag and Stiglitz 2001; Holzmann et al. 2003; Müller 2003; Cesarrato 2006). Transition costs, pension adequacy and distributional impacts are obviously very important considerations when planning and implementing such reforms.

Over the period 1998 – 2005, eight of the current twenty seven EU Member States have undertaken pension reforms entailing a partial shift from a PAYG to a FF scheme: Hungary, Sweden, Poland, Latvia, Estonia, Lithuania, Slovakia and Bulgaria. Seven of these countries are new Member States from Central and Eastern Europe. Remarkably, most countries undertaking such reforms (except Poland) have been spending on pensions below the EU average.

Countries have undertaken the partial transition from a PAYG to a FF pension scheme with the broad agenda to improve the long-term financial sustainability of the pension system. Further considerations of Governments have included strengthening individual responsibility towards retirement income, diversifying sources of retirement income, coping with demographic pressures, increasing financial transparency, and advancing of financial markets. However, besides rational policy choices, the paradigmatic change involving transition from the PAYG to the FF scheme bears also significant ideational motivations (Leppik 2006).

Budgetary implications

In spite of some broad similarities in the reform strategy, the reforms have been undertaken in rather different fiscal circumstances. In Bulgaria, Hungary, Poland and Slovakia the PAYG scheme was already in deficit (i.e., expenditures exceeding contribution revenues in a given year) prior to the introduction of reforms. Hence, diverting a part of the former PAYG contribution to the FF scheme has only increased fiscal pressures. Bulgaria, Hungary and Slovakia have simultaneously instituted two major reforms on the financing side of the pension system. Aside from taking on partial transition to the FF scheme, these states have further reduced the PAYG contribution rate, moving more towards general revenue financing of the remaining PAYG scheme. Both reforms create the need for additional financing.

On the other hand, the pre-reform fiscal situation in the Baltic countries was more favourable as a result of economic developments. Economic growth and increasing employment rates in these countries have considerably mitigated the fiscal difficulties that come with the transition, allowing the Baltic countries to build up reserves of the PAYG pension scheme (about 3% of GDP in Estonia and 2% of GDP in Latvia and Lithuania). Sweden has had a large reserve fund amounting to over 30% of GDP at the outset, which, as a result, facilitated designing a particular reform and cushioning transition costs within the system.

When analysing transition costs, it is useful to make analytical distinction between gross and net transition costs. The former is defined by the total contributions transferred to the FF scheme, while the latter relates to the difference between post-reform revenues and expenditures of the remaining PAYG scheme. Gross annual transition costs, sometimes conceived as opportunity

costs, can be quantified through the inflow of revenues to the FF scheme. The actual financial burden for governments is expressed trough the notion of net transition costs. However, precise measuring of net transition costs is difficult. Firstly, the size of transition costs depends on a number of variables: the contribution rate redirected from the PAYG to the FF scheme; policies in respect of joining the FF scheme; participant behaviour in response to these policies; average earnings of FF scheme participants. Secondly, transition costs are influenced (and can be mitigated) by simultaneous policy changes in the PAYG scheme. Therefore, the counterfactual is not always clear, i.e. against which situation transition costs are to be measured.

The highest contribution rates diverted from the former PAYG scheme to the FF scheme are in Slovakia (9%) and Hungary (8%), whereas in Sweden the FF scheme relatively small with 2.5% contribution rate. Bulgaria, Latvia and Lithuania opted for a gradual increase in the contribution rate for the FF scheme to ease transition costs in the first post-reform years, Latvia starting with the lowest contribution rate for the FF scheme at 2%, but aiming to increase it to 10% by 2010.

The methods of shouldering transition costs in the early post-reform years vary from country to country, but often include a mix of different methods and sources. Bulgaria and Poland have made significant transfers from the state budget to cover the loss of revenues of the PAYG scheme. Estonia, Slovakia and Sweden have relied mostly on previously accumulated reserves. Hungary has used also some debt financing along with budget transfers.

In most of the countries – specifically, Estonia, Latvia, Lithuania, Poland and Slovakia – there is still no long-term strategy on financing transition costs. In Hungary and Bulgaria, while relevant strategy papers have been formally adopted, experts question their practicability.

Joining the FF schemes

Hungary, Lithuania, Estonia and Slovakia allowed the broadest choice, permitting all employed persons to join the FF scheme. Bulgaria adopted the most restrictive policy, setting the cut-off age at 40. Poland and Latvia opted for a middle way, imposing mandatory participation on persons under 30 at the time of the reform, allowing choice for persons aged 30-50, and restricting access to all over 50. In Sweden it was mandatory for all persons under 62 to join the new system.

Apart from Sweden, the highest participation rates in the FF schemes are observed in Poland and Bulgaria (over 90% of the employed), followed by Latvia and Estonia (about 75%). In Hungary and Slovakia, participation rates are around 60-70%. In Lithuania, participation rate exceeds 50%. The further evolution of participation rates are also influenced by the time window for joining the FF scheme for cohorts whose participation was optional. In Estonia, Latvia and Lithuania the option of joining the FF scheme is still open (although in Estonia only for younger cohorts born 1974-1982). In Slovakia, the Parliament recently opened the possibility to switch back from the FF scheme to the PAYG scheme, although for a limited time period. In Latvia, there is a possibility to switch back to the PAYG scheme at the time of retirement, withdrawing the whole benefit from the NDC scheme. Obviously, such policies have significant effect on the development of transition costs.

The highest annual inflows of revenues to the FF scheme are observed in Poland, exceeding 1.4% of GDP. In Hungary, Estonia and Slovakia funded schemes also accumulate over 1% of GDP a year. In Sweden, although the contribution rate is the lowest among countries analysed here, funds accumulate close to 1% of GDP due to universal coverage of the FF scheme.

Parallel reforms of the PAYG schemes

Parallel to the introduction of the FF schemes, most of the states in this study have undertaken various reforms of their remaining PAYG schemes, including changes in indexation of pensions in payment, increasing the statutory pension age, reducing the options for earlier retirement, and changing the PAYG pension formula. While these policy measures were mostly not taken with the aim of reducing transition costs, it is clear that such measures have a very significant long-term impact on the development of transition costs.

Impact on adequacy of pensions

Analysis of the average net pension ratio of the PAYG scheme reveals that implemented reforms have had no or very limited immediate effect on average pension ratios, implying that the current elderly has not had to carry the burden of transition costs. Nevertheless, implications on future benefit adequacy are likely to be significant. Transition from the PAYG to the FF scheme entails not only a change in the financing principle, but often also in the distributional patterns, reducing intra-generational transfers.

As FF schemes involve a strong link between contributions and benefits, we analysed the extent to which periods out of employment, in particular periods of raising children and period of unemployment give pension rights in these schemes. Latvia, Poland and Sweden take an identical approach on 'credited' periods both under the PAYG and FF schemes. However, in Bulgaria, Estonia and Lithuania parents caring for children are less well off in respect of their pension rights under the FF scheme than under the PAYG scheme, because either no contributions are paid for some periods of child-raising or contributions are paid at a lower rate. This aspect has a strong gender dimension as women on average have shorter working careers than men due to child-raising responsibilities.

Another gender aspect relates to the existing differences in life expectancy between men and women, which will have significance when calculating annuities from the FF schemes. To counterbalance this effect, Estonia, Hungary, Latvia, Slovakia and Sweden have legislated the use of unisex life tables. On the other hand, Bulgaria, Lithuania, Poland and the UK have not adopted unisex life tables, which in combination with the existing gender employment and wage gaps may lead to a significant gender pension gap in the FF scheme.

Future benefit adequacy of the FF schemes depends highly on the actual net returns from investment of pension fund assets. However, as is well known, potentially higher returns of FF schemes are accompanied with higher risks. While most of the countries have instituted an array measures to mitigate investment risks of pension funds, only Slovakia, Poland and Bulgaria have legislated a rate of return guarantee, applying a relative rate of return mechanism. However, in Poland this has lead pension fund managers to follow similar investment strategies, restricting the choice of portfolio allocation for pension savers.

Choices in the FF scheme

Participation in the FF scheme entails a number of choices and decisions to be made such as joining the FF scheme, choosing a pension fund, changing funds, on timing of retirement and some choices with regard to the form of benefit. Most countries have introduced public information tools, including the provision of relevant information electronically through web sites designed specifically for this purpose. In Estonia and Latvia, the system is particularly

transparent as participants of the FF scheme have among others electronic access to their individual pension account data.

All countries analysed here, except Poland, allow participants of the FF scheme a choice between pension funds with different investment strategies. Analysis of participant behaviour indicates that there is clear preference for funds that invest a significant portion of assets in equities. In Estonia, Latvia and Slovakia, 70% or more of the FF scheme participants have opted for funds which invest the maximum allowed portion of assets in equities. At the same time, Lithuanian and Swedish cases illustrate that funds which invest 90-100% of assets in equities are much less attractive, i.e., the extreme is avoided. Workers aged 45+ opt more often for low or medium risk funds. All countries allow changing of funds, however subject to some frequency limits (in Bulgaria, Estonia, Hungary and Latvia) and financial implications (all countries, except Latvia and Sweden).

Administrative charges

Generally, administrative costs of FF schemes tend to be significantly higher than in PAYG schemes (European Commission 2003) and hence the need for policies to reduce administrative charges recognized (Social Protection Committee 2005). Different fees structures are observed in the countries studied here. Poland, Hungary, Bulgaria and Lithuania apply a front-loaded fee structure that allows a rather high up-front unit purchasing fees, but restricts more strongly asset-based fund management fees. In contrast, the fee structure in the countries of Estonia, Latvia, Slovakia and Sweden is more back-loaded with relatively small, and even no, up-front fees; but these countries rely more heavily on fund management fees. Most of the countries have introduced limits on the levels of administrative charges in the form of ceilings expressed as a percentage of contributions or of assets.

References

Augusztinovics, M., Gál, R., Matits, A., Máté, L., Simonovics, A., Stahl, J. (2002). The Hungarian Pension System Before and After the 1998 Reform. – In Fultz, E. (Ed.) *Pension Reform in Central and Eastern Europe - Volume 1. Restructuring with Privatization: Case Studies of Hungary and Poland*. Budapest: ILO.

Borowczyk, E. (2002). *Guarantees brought by the compulsory open pension funds in Poland*. Paper presented at the ISSA European regional meeting "New and revised approaches to social protection in Europe", Budapest 13-15 November 2002.

Cesarrato, S. (2006). Transition to fully funded pension schemes: a non-orthodox criticism. *Cambridge Journal of Economics* 30(1):33-48.

Chłon-Dominczak, A. (2002). The Polish Pension Reform of 1999. – In Fultz, E. (Ed.) Pension Reform in Central and Eastern Europe - Volume 1. Restructuring with Privatization: Case Studies of Hungary and Poland. Budapest: ILO.

Chłon-Dominczak, A. (2003). *Costs and charges of pension funds in transition economies*. Paper presented at a conference "Pension reform in Russia: from legislation to implementation", Moscow, 25 September 2003.

Commission of the European Communities (2006). *Working together, working better: A new framework for the open coordination of social protection and inclusion policies in the European Union*. Brussels. COM(2005) 706 final.

Council of the European Union (2001). *Joint report of the Social Protection Committee and the Economic Policy Committee on objectives and working methods in the area of pensions: applying the open method of coordination*. Brussels.

European Commission (2003). *Adequate and Sustainable Pensions*. Joint Report by the Commission and the Council. Luxembourg.

European Commission (2006). *Adequate and Sustainable Pensions: Synthesis Report 2006*. Luxembourg.

Financial Advisory Ltd. (2003). *Investments of Pension Funds in CEE Countries*. Research Report. Budapest.

Fultz, E. (2002) Pension Reform in Hungary and Poland: A Comparative Overview – In Fultz, E. (Ed.) (2002). *Pension Reform in Central and Eastern Europe - Volume 1. Restructuring with Privatization: Case Studies of Hungary and Poland*. Budapest: ILO.

Fultz, E. (2006). Pension Reform in the Baltics: Expectations and Early Experience. – In Fultz, E. (Ed.). *Pension Reform in the Baltic States: Estonia, Latvia, Lithuania*. Budapest: ILO.

Fultz, E., Stanovnik, T. (Eds.) (2004). *The Collection of Pension Contributions: Trends, Issues, and Problems in Central and Eastern Europe*. Budapest: ILO.

Fultz, E., Ruck, M., Steinhilber, S. (Eds.) (2003). *The Gender Dimensions of Social Security Reform in Central and Eastern Europe: Case Studies of the Czech Republic, Hungary and Poland*. Budapest: ILO

Försäkringskassan (2000). *The Scope and Financing of Social Insurance in Sweden*. Regeringens proposition 1999.

Ginn, J. (2004). European Pension Privatisation: Taking Account of Gender. *Social Policy and Society* 3:2, pp. 123–134.

Holzmann, R. (1998). *Financing the Transition to Multipillar*. World Bank Social Protection Discussion Paper No 9809.

Holzmann, R., MacKellar, L., Rutkowski, M. (2003). Accelerating the European Pension Reform Agenda: Need, Progress, and Conceptual Underpinnings. – R. Holzmann, M. Orenstein and M. Rutkowski (Eds.) *Pension Reform in Europe: Process and Progress*. Washington, D.C.: The World Bank, 1–45.

Indicators Sub-Group of the Social Protection Committee (2006). *Current and Prospective Theoretical Pension Replacement Rates*. Brussels.

Kruse, A., Palmer, E (2007). Sweden. – In Penner, R. (Ed.) *International Perspectives on Social Security Reform*. Baltimore: The Urban Institute Press.

Lazutka, R. (2006). Pension reform in Lithuania. – In Fultz, E. (Ed.) *Pension reform in the Baltic states*. Budapest: ILO.

Leppik, L. (2006). *Transformation of the Estonian pension system: policy choices and policy outcomes*. Tallinna University Dissertations on Social Sciences. Vol.21. Tallinn: Tallinn University Press.

Leppik, L., Võrk, A. (2006). *Pension reform in Estonia*. – In Fultz, E. (Ed.) Pension reform in the Baltic states. Budapest: ILO.

Lindeman, D., Rutkowski, M., Sluchynskyy, O. (2000). *The Evolution of Pension Systems in Eastern Europe and Central Asia: Opportunities, Constraints, Dilemmas and Emerging Practices*. Washington DC. World Bank.

Miles D., Timmermann A. (1999). Risk sharing and transition costs in the reform of pension systems in Europe. Economic Policy, Vol. 14, No 29, pp. 251-286.

Müller, K. (2003). The Making of Pension Privatization in Latin America and Eastern Europe. – R. Holzmann, M. Orenstein and M. Rutkowski (Eds.) *Pension Reform in Europe: Process and Progress*. Washington, D.C.: The World Bank, 47–78.

OECD (2004). *Pension Reform in the Baltic Countries*. Paris.

Orszag, P.R., Stiglitz, J.E. (2001). Rethinking Pension Reform: Ten Myths about Social Security Systems. – R. Holzmann and J.E. Stiglitz (Eds.) *New Ideas about Old Age Security*. Washington DC: The World Bank, 17–56.

Palacios, R., Whitehouse, E. (1998). *The Role of Choice in the Transition to a Funded Pension* System. Social Protection Discussion Paper No.9812. Washington, D.C.: World Bank.

Palmer, E., Stabina, S., Svensson, I., Vanovska, I. (2006). NDC Strategy in Latvia: Implementation and Prospects for the Future. – In Holzmann, R. and Palmer, E. (Eds.) *Pension Reform through NDCs: Issues and Prospects for Non-Financial Defined Contribution Schemes*. World Bank: Washington DC.

Pelc, P. (2001). *Supervision over pension funds in Poland*. Presentation delivered in Warsaw, 8-9 November 2001.

RFV (2002) *Social insurance expenditure in Sweden 1999 – 2002: Who gets the money and how is the insurance financed*? Stockholm: RFV.

Ribhegge, H. (1999). The Controversy Between the Pay-As-You-Go System and the Fully-Funded System in Old-Age Security. – K. Müller, A. Ryll and H.-J. Wagener (Eds.) *Transformation of Social Security: Pensions in Central-Eastern Europe*. Heidelberg: Physica-Verlag, 61–77.

Rozinka, E., Tapia. W. (2007). *Survey of Investment Choice by Pension Fund Members*. OECD Working Papers on Insurance and Private Pensions No. 7, 01/2007.

Sin,Y. (2002). *Minimum pension guarantees*. Paper presented at the ISSA Seminar for Social Security Actuaries and Statisticians: Actuarial Aspects of Pension Reform. Moscow, 3-5 July 2002.

Social Protection Committee (2005). *Privately Managed Pension Provision*. Brussels.

Social Protection Committee (2005). *Minimum income provision for older people*. Brussels.

Turner, J.A, Rajnes, D.M. (2002). *Relative Rate of Return Guarantees for Social Security Defined Contribution Plans: What Do They Accomplish?* Discussion Paper PI-0202. London: The Pension Institute.

Vanovska, I. (2006). *Pension reform in Latvia*. – In Fultz, E. (Ed.) Pension reform in the Baltic states. Budapest: ILO.

Whitehouse, E. (2000). *Administrative Charges for Funded Pensions: An International Comparison and Assessment*. World Bank Social Protection Discussion Paper No 0016.

Annex 1 – Overview of country reforms

Bulgaria

The pension reform in Bulgaria has been implemented since 2000. The compulsory pension system comprises of two pillars: the public PAYG scheme and the supplementary mandatory funded pension insurance.

In the PAYG scheme, reform measures have introduced a stronger link between pensions received and contributions made. Since 2000, the pension age has been gradually increased from the former level of 60 for men and 55 for women to 63 for men and 59 for women in 2007. The pension age of women will continue to increase to reach 60 in 2009.

Contribution to the PAYG pension scheme stood in 2006 at 23% of the individual insured income, reduced from the former rate of 29% in 2005. The minimum and maximum level of the insured income is specified by the Parliament for each year.

All persons born after 31 December 1959 who are insured under the public PAYG scheme shall participate in a universal pension fund. The contribution rate payable towards the funded scheme in 2006 was 4% of the individual insured income, 2.6% paid by employer and 1.4% by employee.

Employees working under harmful or hazardous working conditions are insured additionally in a professional pension fund for early retirement pensions. Contributions to the professional pension fund are paid by the employer, the contribution rate in 2006 was 12% for the first category (more hazardous working conditions) and 7% for the second category (less hazardous working conditions).

Estonia

The pension reform in Estonia started in 1998, modifying the pay-as-you-go scheme and introducing new mandatory and voluntary funded components.

The statutory pension system comprises of two types of schemes: the state PAYG DB pensions and mandatory funded DC pensions. In the PAYG scheme, pensions can be divided into two groups: employment-related and national pensions. Employment-related pensions (old age, invalidity, survivors) are financed by 20 percentage points (or 16 in the case of members of the mandatory funded pillar) of the 33% social tax, paid by employers. The national pension is a flat-rate minimum pension for those who are not entitled to an employment-related benefit. National pensions are financed from the general state budget.

The compulsory funded DC scheme was introduced in 2002 by diverting a portion of contributions from the statutory PAYG scheme into private funds. Participation in the funded DC scheme is mandatory only for persons born in 1983 or later (i.e., new entrants to the labour market). For people born between 1942 and 1982 joining the scheme was voluntary. For younger cohorts, the window of choice for joining the funded scheme remains open until 2010.

Participation in the second pillar entails an additional individual contribution of 2% of gross wage to be paid by employee. This is supplemented by the state with 4% of gross wage, being re-directed from the pension insurance part of social tax paid by employers. The total contribution to the second pillar is thus 6% of gross wage.

Benefits can be received upon reaching the standard retirement age. First benefits should be paid in 2009. The funded scheme covers only the risk of old age. Invalidity and survivor risks are covered only by the PAYG scheme.

Contributions are directed to a pension fund at the choice of a participant. Pension fund assets are managed by private fund managers. There are 3 different categories of second pillar pension funds:

- low-risk funds, which invest only in fixed-interest instruments (bonds, money market instruments and bank deposits);

- medium-risk funds, which invest up to 25% of assets in equities;

- higher-risk funds, which invest the maximum allowed amount (50%) of assets in equities.

Accordingly, participants of the second pillar have the choice of the risk level depending on investment strategy of the pension fund. Each fund manager is obliged to establish a low-risk fund. In 2007, 6 fund managers operate on the market, administering a total of 15 different pension funds: 6 low-risk, 3 medium-risk and 6 higher-risk funds.

Hungary

Since the 1997 pension reform the mandatory public pension system consists of two tiers. The first tier is a publicly managed, pay-as-you-go financed, defined-benefit, social security pension scheme that covers all employees and the self-employed. It provides earnings related to old-age, disability and survivors benefits. The pension age for claiming a full pension, which was 55 for women and 60 for men under the former system, is being raised gradually to 62 years (for men by 2002 and for women by 2009).

The contribution rate for pensions in 2007 was 29.5%, increased from 26.5% in 2006. Participants of the FF scheme pay 8 percentage points towards the funded pension. New entrants to the labour market are compulsorily enrolled in the funded scheme, while those who had already acquired PAYG pension rights before 1998 could voluntarily opt for the new system at the time of its inception.

Latvia

Reform of the PAYG pension scheme was implemented in Latvia in January 1996 and the former DB pension scheme was diverted into a notional defined contribution scheme. Social insurance contributions for pensions (20% of gross wage) are recorded in notional individual accounts, and indexed with increase in average social insurance contributions' wages until retirement. Pensions are calculated by dividing the amount accumulated in the notional account by projected cohort unisex life expectancy at retirement.

The funded DC pension scheme started operation in July 2001. It is a FF statutory pension scheme, in which the State Treasury or private pension fund managers invest a part of the social insurance contributions. The contribution rate to the mandatory funded pillar was 2% from 2001 to 2006, and increased to 4% in 2007. The contribution rate to the funded scheme is set to gradually increase in the next years, to 8% in 2008, 9% in 2009 and 10% from 2010 onwards, with respective decline in the PAYG contribution rate as the total pension contribution rate remains at 20%.

Lithuania

Lithuania's statutory social insurance pension system consists of two tiers: the state PAYG DB pensions and a mandatory funded DC scheme. The state social insurance pension system was reformed in 1995, introducing the insurance principle, extending the requirement for contributory years, and increasing the pension age.

The total pension contribution is 26% of gross wage: 23.5% being paid by the employer and 2.5% by the employee.

The mandatory funded pension scheme was introduced in 1 January 2004. Participation in the funded scheme is voluntary through a mechanism of partial opting out from the PAYG scheme. Entitled to join the funded scheme are persons insured with the PAYG scheme aged under the statutory pension age. The contribution rate for the funded scheme was diverted from the social insurance contribution and has been increased from 2.5% in 2004 to 5.5% of gross wage in 2007.

Poland

Poland has introduced significant reforms of its pension system since 1999. The statutory pension system implemented in 1999 consists of two mandatory schemes: a PAYG NDC scheme, administered by the state, and a FF DC scheme, managed by private fund managers. Thus, both statutory schemes depend on the DC principle.

However, there is a guaranteed minimum pension which is paid if the total pension from the two DC schemes is below the statutory minimum old-age pension, conditional upon a contribution period of 25 years of insurance for men and 20 years for women. The guaranteed minimum pensions are covered from the state budget.

The retirement age is 65 for men and 60 for women. There are special schemes for farmers and some civil servants.

The old-age pension contribution is 19.52% of gross salary (subject to the ceiling of 2.5 times the national average earnings), equally shared between employers and employees. From the total contribution, 12.22% is allocated for NDC pensions and 7.3% for the FF scheme. An additional contribution of 13% of wages is paid for disability and survivor pensions. From 2002, the NDC scheme includes a Demographic Reserve Fund financed by a small share of old-age contributions (0.2% of wages in 2005 to increase to 0.4% in 2009).

Slovakia

The Slovak pension system has undergone a major reform in 2005 splitting the statutory old-age pension scheme (survivor's benefits included) into two tiers: one being PAYG DB scheme, the other a FF DC scheme. According to the original rules, all new entrants to the labour market were enrolled in the new two-tier system. However, since 2008 participation was made voluntary also for new entrants to the labour market. Those already working at the time of inception of the reform had to choose by June 2006 whether to join the new system or stay in the old system. From January 2008 until June 2008 the system is re-opened in both ways: to switch from the PAYG to the FF scheme, or from the FF scheme back to the PAYG scheme. Both the PAYG and the FF scheme receive a contribution rate of 9% of wages for old age pensions. An additional 6% is collected by the PAYG scheme for disability benefits. The reform started a gradual rise of pension ages to 62 for both men and women, to be reached by 2007 and 2015, respectively. Previously the pension age for men was 60, and for women 53-57 (depending on the number of children).

Sweden

From 1999, the statutory pension system comprises of two elements: the PAYG NDC scheme and the FF DC scheme. The system is financed from social security contributions, which are planned to be kept constant at the level of 18.5% of pensionable earnings (subject to a ceiling). From the total contribution, 16% are financing PAYG NDC pensions, the remaining 2.5% are invested in one or more funds selected by the member (the so-called premium pension). Funding for the FF scheme already began in 1995, with funds being held on an account at the National Debt Office with a bond rate of return, although individual accounts were not created until 1999.

In the NDC scheme, contributions earn a notional interest rate following income growth, while pensions are indexed with income growth minus 1.6%. At the time of retirement, the notional capital in the NDC scheme is converted to a pension, taking into account the remaining life expectancy. Partial pension (25%, 50% or 75%) may be drawn. The capital accumulated under the premium pension can be either paid out from the pension fund or transferred into an annuity.

There is an old-age guarantee pension that provides a minimum pension for persons aged 65 years or over. The guarantee pension is proportional to the years of residence in Sweden (maximum after 40 years of residence). It is financed by general taxes, price-indexed and not reduced by wage income, capital income, and occupational or private pension benefits.

Survivors' pensions are covered by general taxes. Disability pensions are paid under the sickness insurance scheme.

United Kingdom

In the UK, the statutory state pension system consists of a flat-rate basic pension and an earnings-related additional pension, the State Second Pension that reformed the previous State Earnings-Related Pension Scheme (SERPS). These two tiers are financed through National Insurance contributions. Earnings-related pensions of government sector employees are covered in part by the state budget.

State pension age is 65 for men and 60 for women but legislation is in place to equalise pension age of men and women at 65 by 2020. A full flat-rate basic State Pension normally requires 44 qualifying years of National Insurance Contributions (which may include some credits) for men and 39 years for women.

A feature of the UK pension system is the possibility to contract out of the additional State Pension. This requires coverage by an occupational or personal pension scheme providing equivalent or better benefits than the earnings-related component of the statutory scheme. 60% of the employed are in such contracted-out schemes and are entitled to a National Insurance contribution rebate. The State Second Pension, which was introduced in 2002, enables people on lower earnings to build up their pension entitlements. In addition, individuals are credited second pension rights for periods when they cannot work due to caring responsibilities or disability.

Pension Credit introduced in 2003 is an income-related benefit for people aged 60 or over. It is targeted at the least well off pensioners and the income test is more generous than for previous income-related benefits.

Sources: European Commission (2006). Synthesis report on adequate and sustainable pensions: country summaries; MISSOC database; national reports

Annex 2 – European common pension objectives

The Laeken European Council of December 2001 decided to apply the open method of coordination in the area of pensions with the broad aim 'to safeguard the adequacy of pensions whilst maintaining their financial sustainability and facing the challenges of changing social needs'. The Council adopted 11 common objectives to meet these aspirations, which read as follows (Council of the European Union 2001):

- **Adequacy of pensions**

Member States should safeguard the capacity of pension systems to meet their social objectives. To this end against the background of their specific national circumstances they should:

1. Ensure that older people are not placed at risk of poverty and can enjoy a decent standard of living; that they share in the economic well-being of their country and can accordingly participate actively in public, social and cultural life;

2. Provide access for all individuals to appropriate pension arrangements, public and/or private, which allow them to earn pension entitlements enabling them to maintain, to a reasonable degree, their living standard after retirement; and

3. Promote solidarity within and between generations.

- **Financial sustainability of pension systems**

Member States should follow a multi-faceted strategy to place pension systems on a sound financial footing, including a suitable combination of policies to:

4. Achieve a high level of employment through, where necessary, comprehensive labour market reforms, as provided by the European Employment Strategy and in a way consistent with the Broad Economic Policy Guidelines;

5. Ensure that, alongside labour market and economic policies, all relevant branches of social protection, in particular pension systems, offer effective incentives for the participation of older workers; that workers are not encouraged to take up early retirement and are not penalised for staying in the labour market beyond the standard retirement age; and that pension systems facilitate the option of gradual retirement;

6. Reform pension systems in appropriate ways taking into account the overall objective of maintaining the sustainability of public finances. At the same time sustainability of pension systems needs to be accompanied by sound fiscal policies, including, where necessary, a reduction of debt. Strategies adopted to meet this objective may also include setting up dedicated pension reserve funds;

7. Ensure that pension provisions and reforms maintain a fair balance between the active and the retired by not overburdening the former and by maintaining adequate pensions for the latter; and

8. Ensure, through appropriate regulatory frameworks and through sound management, that private and public funded pension schemes can provide pensions with the required efficiency, affordability, portability and security.

- **Modernisation of pension systems in response to changing needs of the economy, society and individuals**

9. Ensure that pension systems are compatible with the requirements of flexibility and security on the labour market; that, without prejudice to the coherence of Member States' tax systems, labour market mobility within Member States and across borders and non-standard employment forms do not penalise people's pension entitlements and that self-employment is not discouraged by pension systems;

10. Review pension provisions with a view to ensuring the principle of equal treatment between women and men, taking into account obligations under EU law; and

11. Make pension systems more transparent and adaptable to changing circumstances, so that citizens can continue to have confidence in them. Develop reliable and easy-to-understand information on the long-term perspectives of pension systems, notably with regard to the likely evolution of benefit levels and contribution rates. Promote the broadest possible consensus regarding pension policies and reforms. Improve the methodological basis for efficient monitoring of pension reforms and policies.

New common objectives from 2006

On basis of the Commission Communication "Working together, working better: A new framework for the open coordination of social protection and inclusion policies in the European Union" (Commission of the European Communities 2006), the European Council adopted in March 2006 a new framework for the social protection and social inclusion process.

The existing open methods of coordination in the fields of social inclusion and pensions, and the process of co-operation in the field of health and long-term care, were brought together.

The overarching objectives of the Open Method of Co-ordination for social protection and social inclusion are to promote:

- social cohesion, equality between men and women and equal opportunities for all through adequate, accessible, financially sustainable, adaptable and efficient social protection systems and social inclusion policies;

- effective and mutual interaction between the Lisbon objectives of greater economic growth, more and better jobs and greater social cohesion, and with the EU's Sustainable Development Strategy;

- good governance, transparency and the involvement of stakeholders in the design, implementation and monitoring of policy.

The following objectives apply to pensions.

Adequate and sustainable pensions by ensuring:

- adequate retirement incomes for all and access to pensions which allow people to maintain, to a reasonable degree, their living standard after retirement, in the spirit of solidarity and fairness between and within generations;

- the financial sustainability of public and private pension schemes, bearing in mind pressures on public finances and the ageing of populations, and in the context of the three pronged strategy for tackling the budgetary implications of ageing, notably by: supporting longer working lives and active ageing; by balancing contributions and benefits in an appropriate and socially fair manner; and by promoting the affordability and the security of funded and private schemes;

- that pension systems are transparent, well adapted to the needs and aspirations of women and men and the requirements of modern societies, demographic ageing and structural change; that people receive the information they need to plan their retirement and that reforms are conducted on the basis of the broadest possible consensus.

Annex 3 − Details of replacement rate calculations

Table A1. Simulated gross replacement rates before and after the reform introducing transition to the FF scheme: Bulgaria, Poland, Slovakia, Sweden, UK (%)

Country		Average wage, career 40 years	2/3 average wage, career 40 years	2/3 of average wage, career 30 years	Inactive person entitled only to the minimum pension
Bulgaria	Pre	85	57	43	23
	Post	38	26	19	18
	Δpp	-47	-31	-24	-5
	Δ%	-55	-54	-56	-22
Poland	Pre	78	78	69	24
	Post	44	44	33	24
	Δpp	-34	-34	-36	0
	Δ%	-44	-44	-52	0
	SPC post	44	44		
	SPC Δpp	-34	-34	..	..
Slovakia	Pre	51	72	72	32
	Post	54	54	53	27
	Δ	3	-18	-18	-5
	Δ%	6	-25	-26	-16
	SPC post	50	50	..	..
	SPC Δpp	1	-9	..	..
Sweden	Pre	53	63	50	~35
	Post	40	40	..	(35)
	Δ	-13	-23	..	
	Δ%	-25	-37	..	..
	SPC post	40	40	..	..
	SPC Δpp	-13	-23	..	..
United Kingdom	Pre	40	48	42	0
	Post	59	74	63	0
	Δ	19	26	21	0
	Δ%	48	54	50	0
	SPC post	19	28	21	..
	SPC Δpp	2	3	..	..

Source: National reports; SPC: figures from "Current and prospective theoretical pension replacement rates", Report by the Indicators Sub-Group of the SPC, 19 May2006 – Table 4, Statutory pensions, and country tables, year 2050.

Notes:
Replacement rates are with the respect of average wage or 2/3 of average wage. Minimum pensions are relative to average wage.
Pre – actual pre-reform replacement rates, calculated on the basis of actual historical data
Post – simulated post-reform replacement rates
Δ - absolute difference in post-reform and pre-reform replacement rates
Δ% - relative difference in post-reform and pre-reform replacement rates
SPC post – simulated post-reform replacement rates from the Social Protection Committee study
SPC Δpp – absolute difference in post-reform and pre-reform replacement rates from the Social Protection Committee study
Poland – net replacement rates; other countries – gross replacement rates.
Sweden – pensions for inactive persons will have additional housing benefits top-up the pensions.
For UK SPC figures include only gross replacement rates from the 1st pillar and not occupational pensions.

Table A2. Simulated gross replacement rates before and after the reform introducing transition to the FF scheme: Estonia, Latvia, Lithuania, Hungary (%)

Country		Average wage, career 40 years	2/3 average wage, career 40 years	2/3 of average wage, career 30 years	Inactive person entitled only to the minimum pension
Estonia	Pre	21	25	21	7
	Post	36	39	33	7
	Δ	15	14	7	0
	Δ%	71	56	33	0
	SPC post	36	39	..	..
Hungary	Pre	73	73	62	..
	Post	102	90	58	..
	Δ	31	17	-4	..
	Δ%	40	23	-6	..
	SPC post	98	92	..	..
Latvia	Pre	46	46	42	30
	Post	55	55	44	30
	Δ	11	11	2	0
	Δ%	20	20	5	0
	SPC post	55	55	..	..
Lithuania	Pre	34	40	35	..
	Post	45	51	41	..
	Δ	11	11	6	..
	Δ%	32	28	17	..
	SPC post	42	50	..	..

Source: National reports; SPC: figures from "Current and prospective theoretical pension replacement rates", Report by the Indicators Sub-Group of the SPC, 19 May 2006 – Table 4, Statutory pensions, and country tables, year 2050.

Notes:
Replacement rates are with the respect of average wage or 2/3 of average wage. Minimum pensions are relative to average wage.
Pre – simulated pre-reform replacement rates, on the assumption that the pre-reform situation continues for 40 years using the same macroeconomic developments than the post-reform scenario.
Post – simulated post-reform replacement rates
Δ - absolute difference in post-reform and pre-reform replacement rates
Δ% - relative difference in post-reform and pre-reform replacement rates
SPC post – simulated post-reform replacement rates from the Social Protection Committee study
SPC Δpp – absolute difference in post-reform and pre-reform replacement rates from the Social Protection Committee study
Hungary – net replacement rates; other countries – gross replacement rates.
Estonia – pensions for inactive persons will have additional subsistence benefits to top-up the pensions.

Bulgaria

Source: Country report.

Main assumptions: The replacement rates are calculated using both the pre-reform and post-reform pension formula for a person retiring in 2006 and on the basis of the most recent data needed for the calculations.

In case of career 30 years, the assumed break of the career is at the beginning. To accumulate pension rights he/she will be given a pension at the age of 65 calculated using the same pension formula. That pension cannot be less than 85% of the minimum amount of the general pension. Minimum general pension is BGN 85 for 2006.

Estonia

Source: Country report.

Main assumptions similar to those in SPC study.

Main base assumptions: inflation 2%; labour productivity and wages 3.2%; employment growth -0.4%; real increase in pension index 1.39%; real rate of return in the FF scheme (after administration fees) 2.6%. Return rate during the time of annuity payment was assumed at 3%. Unisex mortality tables. In case of career 30 years, the pattern 15-10-15 was used.

Minimum pension: assumes that ratio of minimum pension to the base component remains unchanged.

Latvia

Source: Country report. Ministry of Finance. Main assumptions as in SPC study. No further details available.

Lithuania

Source: Country report.

Calculations in "pre-reform" case were made for a person who, in all 40 years, did not join the FF scheme (non-switcher), and compared with a person who joined the FF scheme at the beginning (switcher who participated in the FF scheme for 40 years).

Main assumptions: basic pension and official insured income will grow in line with average wage. Assumed real investment return 2.5%. Return rate during the time of annuity payment was assumed at 2%. Mortality tables are not unisex. No difference when the break in the career occurs.

Hungary

Source: Country report. Main assumptions as in SPC study. No further details available.

Poland

Source: Country report. Main assumptions as in SPC study. No further details available.

Minimum pension: Discretionary set flat-rate is not available for the post-reform scenario, but it is assumed that the ratio to average wage is unchanged.

Slovakia

Source: Country report. Based on INEKO pension calculator.

Pre-reform replacement rates refer to year 2003. The reform of the PAYG was put in effect in 2004. The fully funded pillar was introduced in 2005. Post-reform replacement rates refer to year 2045.

Main assumptions: real annual growth in earnings 2%; real annual rate of return 2.5%. Career break: average earnings lost due to 10-year child care at any time during the career.

Minimum pension: After the reform, there is no minimum pension. People with low pensions may ask for a regular social assistance (welfare benefits), which was used for calculating the post-reform replacement rate (for a single person without children). The post-reform calculation is based on numbers valid for 2006.

Sweden

Source: Country report, referring to simulations made in "The Swedish National Strategy Report on Adequate and Sustainable Pensions", 9 August 2005, http://www.regeringen.se/sb/d/108/a/68150

Main assumptions: 40-year career; productivity and real wage development: 1.8 per cent; inflation: 2 per cent; real rate of return: 3 per cent. Housing supplement for pensioners is also included in the calculations. Private pension saving is excluded from the calculations.

Minimum pension: A state tax-financed guarantee pension is paid to those who have not earned an adequate income-related pension themselves. The guarantee pension is expressed in terms of the price base amount and it is adjusted upwards every year with reference to the consumer price index. For those who do not qualify for a sufficiently large guarantee pension there is a so-called maintenance support for the elderly. A means-tested housing supplement may also be granted to those in need of it. Pre-reform replacement rate is around 35% and also housing supplement; post-reform replacement rate is more or less the same as in the old system. Occupational pensions not included.

United Kingdom

Source: Country report.

Main assumptions: nominal earnings growth: 3.8%; inflation: 2.0%; real return on assets: 2.5%. For the post-reform scenario replacement rates are calculated using a 40 year forecast and applying all the reform components, mainly: retirement age is 68; eligibility criteria for state pension have been eased; Personal Accounts have been introduced. Remaining life expectancy at age 68 in 2051: males 18, females 20.5.

Minimum pension: Inactive persons will not have any pension entitlement before the age of 80. The minimum pension payable from that age replaces 12.3% of average salary. Occupational pensions not included.

Annex 4 – Overview of data sources in the country reports

The following table gives the overview of the data sources used by national experts. When the experts did not explicitly provide the data source in the country report, the table indicates the names of the country experts.

Tables	Bulgaria	Estonia	Hungary	Latvia	Lithuania	Poland	Slovakia	Sweden	United Kingdom
2.1.	For all: Eurostat database, ESSPROS data on pension expenditures, % of GDP, last updated 14 December 2007								
2.2, 2.3, 2.4, 2.6	NATIONAL SOCIAL SECURITY INSTITUTE, National Statistical Institute	Estonian Ministry of Finance, Estonian National Social Insurance Board; expert's calculations	A.Simonovits; J.Szucs	State Social Insurance Agency, Central Statistical Bureau	T. Medaiskis	KNF, ZUS, CSO, expert's calculations	Ministry of Labour, Social Affairs and Family, Social Insurance Agency, Statistical Office, expert's calculations	RFV: Social insurance expenditure in Sweden, different years. Försäkringskassan. Kruse and Palmer (2007)	Government Actuary's Department (GAD): Report on drafts of the Social Security Benefits Uprating Order 2007, January 2007, expert's calculations
2.5	NATIONAL SOCIAL SECURITY INSTITUTE	State Pension Insurance Act	A.Simonovits; J.Szucs	Law On State Pensions, Law On State Funded Pensions	T. Medaiskis	Law on social insurance	Act 274/1994 on Social Insurance Agency, Act 461/2003 on Social Insurance, Act 43/2004 on Old-Age Savings	RFV: Social insurance expenditure in Sweden, various years	M. Zeeb
2.7.	Social Insurance Code	Funded Pensions Act	A.Simonovits; J.Szucs	Law On State Pensions	Law on Pension Accumulation	Law on pensions	Act Nr. 43/2004 on Old-Age Savings; Proposal of the amendment to the Act Nr. 461/2003 on Social Insurance.	Försäkringskassan: "Orange report. Annual Report of the Swedish Pension System 2006", Försäkringskassan: "Regelbok för Socialförsäkringen. 2007	Department for Work and Pensions: Personal accounts - a new way to save, December 2006
2.8.	-	Funded Pensions Act	Auguszti-novics et al. 2002	Law On State Pensions	*Law on Pension Accumulation*	*Law on pensions*	Act Nr. 43/2004 on Old-Age Savings; Proposal of the amendment to the Act Nr. 461/2003 on Social Insurance.	-	-

2.9.	NATIONAL SOCIAL SECURITY INSTITUTE	Estonian Central Depository for Securities; Statistics Estonia; expert's calculations	A.Simonovits; J.Szucs	State Social Insurance Agency	T. Medaiskis	ZUS, KNF, expert's calculations	Social Insurance Agency, expert's calculations	Försäkringskassan: "Orange report. Annual Report of the Swedish Pension System 2006", Försäkringskassan: "Regelbok för Socialförsäkringen. 2007	-
2.10.	-	Estonian Central Depository for Securities; Statistics Estonia; expert's calculations	-	-	T. Medaiskis	-	-	-	-
2.11.	National Social Security Institute	Estonian Central Depository for Securities; Estonian National Social Insurance Board; expert's calculations	-	State Social Insurance Agency	T. Medaiskis	-	Social Insurance Agency	-	-
2.12 (also expert opinions)	National Social Security Institute, National Statistical Institute, Social Insurance Code, Regulation for recategorisation of labour for retirement	State Pension Insurance Act	A.Simonovits; J.Szucs	Law On State Pensions	Law on State Social Insurance Pensions; National Strategy Report on Adequate and Sustainable Pensions	Law on pensions, Ministry of Labour and Social Policy	Act Nr. 461/2003 on Social Insurance, Proposal of the amendment to the Act Nr. 461/2003 on Social Insurance.	Försäkringskassan: "Orange report. Annual Report of the Swedish Pension System 2006", Försäkringskassan: "Regelbok för Socialförsäkringen. 2007	Department for Work and Pensions: Security in retirement - towards a new pension system, p. 88-92, State Pensions Act 2007.
2.13.	Social Insurance Code	State Pension Insurance Act	A.Simonovits; J.Szucs	Law On State Pensions	T. Medaiskis	Law on pensions	Act Nr. 274/1994 on Social Insurance Agency, Act Nr. 461/2003 on Social Insurance	A. Kruse	M. Zeeb
2.14.	National Social Security Institute	Statistics Estonia; Estonian National Social Insurance Board; expert's calculations	A.Simonovits; J.Szucs	State Social Insurance Agency, expert's calculations	Department of Statistics	ZUS	Social Insurance Agency, INEKO	Expert's calculations using: Försäkringskassan: "Det ekonomiska utfallet inom pensionssystemet de senaste 10 åren." Promemoria, 2007-06-01, SCB: "Inkomstfördelningsunders	-

									ökningen 2005." Statistiska meddelanden. HE 21 SM 0701.
2.15 and 2.16	Social Insurance Code; Labour Code	Funded Pensions Act; Estonian National Social Insurance Board, Social Tax Act	A.Simonovits; J.Szucs	Law On State Social Insurance, Law On Maternity and Sickness Insurance, Law On State Funded Pensions, Law On Unemployment Insurance	State Social Insurance Act	Law on social insurance; Law on pensions;	Act Nr. 274/1994 on Social Insurance Agency, Act Nr. 461/2003 on Social Insurance, Act Nr. 43/2004 on Old-Age Savings, Proposal of the amendment to the Act Nr. 461/2003 on Social Insurance	Försäkringskassan: "Orange report. Annual Report of the Swedish Pension System 2006", Försäkringskassan: "Regelbok för Socialförsäkringen. 2007	Pension Commission: Second Report (November 2005) and Final Report (April 2006). Department for Work and Pensions: Security in retirement: towards a new pension system, May 2006. DWP: Security in retirement - towards a new pension system. Summary of responses to the consultation, October 2006; Pensions Act 2007 Social Security (Credits) Regulations 1975; Job Seekers Act 1995.
2.17.	G. Shopov.	Funded Pensions Act	A.Simonovits; J.Szucs	J. Muizniece	T. Medaiskis	M. Zukowski	P. Golias	A. Kruse	M. Zeeb
2.18.	National Social Security Institute	Eurostat database	Eurostat database	J. Muizniece	Department of Statistics, expert's calculations	*M. Zukowski*	Statistical Office	Statistics, Sweden. Population statistics.	Interim Life Tables 2003-2005 (period life expectancy), Office for National Statistics
2.19.	-	-	-	-	-	P. Golias based on INEKO pension calculator, Act Nr. 100/1988 on Social Security, Act Nr. 461/2003 on Social Insurance	Regeringskansliet: The Swedish National Strategy Report; July 2005	M. Zeeb
2.20.	G. Shopov	L. Leppik, A.Võrk	A.Simonovits; J.Szucs	J. Muizniece	T. Medaiskis	-	-	-	-

2.21, 2.24.	Social Insurance Code	Funded Pensions Act	Government decree 282/2001, Law 82/1997	Law On State Funded Pensions	Law on the Supplementary Voluntary Accumulation of Pensions NoVIII-1212; Pension Accumulation Law No IX-1691, Lithuanian Association of Financial Analysts: www.finansai.lt	Law on pension funds, Ordinance of the Minister of Finance, Ordinance of the Council of Ministers	Act Nr. 43/2004 on Old-Age Savings	A. Kruse	Pension Commission: Second Report, M.Zeeb
2.22.	-	Estonian Central Register of Securities	-	J. Muizniece	Law on the Supplementary Voluntary Accumulation of Pensions NoVIII-1212; Pension Accumulation Law No IX-1691;	-	Act Nr. 43/2004 on Old-Age Savings	PPM; https://secure.ppm.nu/tpp/investmentadvisor/7:1;:1:1;200937;:	-
2.23.	-	Estonian Central Register of Securities	-	J. Muizniece	T. Medaiskis	-	Expert's calculations based on data from the Social Insurance Agency	PPM, Rapport 1:2007. Pensionsspararna 2006.	-
2.25.	Social Insurance Code	Funded Pensions Act; Decree of the Minister of Finance from 15 January 2002, Pensionikeskus www.pensionikeskus.ee	A.Simonovits; J.Szucs, Law 82/1997	State Social Insurance Agency	Reports of the Securities Commission and Insurance Supervision Commission	Law on pension funds	Act Nr. 43/2004 on Old-Age Savings	A. Kruse	-