

PENSION FUNDS AND FINANCIAL MARKETS: EVIDENCE FROM THE NEW EU MEMBER STATES

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The recently established pension funds in the new EU Member States face investment risks that stem from a challenging macroeconomic environment, including, inter alia, volatile inflation and shallow domestic capital markets. The question arises whether a move to funded pension system in such a volatile economic environment always increases the long-term sustainability of public finances. Against this background, this paper surveys the main challenges for pension systems and public finances in the new EU Member States and provides evidence on pension fund performance in recent years. We conclude that in some of these countries the limited diversification of assets, the impact of high inflation as well as the financial market turmoil may have indeed reduced the positive impact of systemic pension reforms on fiscal sustainability.

1 Introduction

During the 1990s many of the Member States that entered the EU in 2004 or 2007 faced severe problems with the functioning of their statutory pay-as-you-go (PAYG) public pension systems. Particularly the relatively low retirement ages, high replacement rates and rather high social security contribution rates – which provided limited incentives to participate in the system – put the PAYG schemes under pressure as their economies shrank and the informal sector rose. As a consequence, several of these countries started to implement parametric reforms of their PAYG public pension systems in order to contain the rise in pension expenditure, including, inter alia, reductions in replacement rates.¹ At the same time, several of the new EU Member States (NMS) started to introduce a mandatory fully funded component into their pension systems and/or set the framework for a voluntary pension pillar (see Holzmann and Palacios, 2001, and Nickel and Almenberg, 2006). Notwithstanding these parametric and systemic pension reforms, this paper argues that challenges for these countries' age-related public expenditures may remain sizeable, both in the short-to-medium as well as in the long term. First, in the presence of a substantial ageing of the population, in several NMS public pension expenditure-to-GDP ratios are projected to rise partly significantly over the long term, despite already enacted reforms (see European Commission and Economic Policy Committee, 2009). Second, in addition, governments in the NMS may be called upon to step in also for risks associated with the private pension pillar. For example, in the NMS the newly established private pension funds face significant risks related to shallow domestic capital markets, volatile inflation and flexible exchange rates. The economic crisis has shown that funded pension systems are vulnerable to financial market developments. Pensioners who retired recently and who had to buy annuities out of their savings from the private pension pillar tended to suffer losses. Nevertheless, at the current juncture, these losses seem to be contained in the NMS as many of these systems are not yet mature and the amount of accumulated savings in these pension funds is thus limited. This notwithstanding, with increasing maturity of these systems and rising importance of private pension income, risks of losses from the private pension pillar may give rise to calls to governments to step in and ensure sufficient retirement

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¹ See for a survey provided in Cangiano, Cottarelli and Cubeddu (1998).

incomes.² For example, as the experience with the economic crisis shows, Worldbank (2009) argues – though not specifically for the NMS – “Indeed, there are some, primarily, low income workers with lower saving levels who might, even under a phased annuity purchase or withdrawal program, be required to liquidate their diminished accounts in the short term. This group could be assisted through programs that offer a minimum return guarantee, analogous to what has been provided in the banking system in response to the crisis”. They conclude that “A well-designed zero pillar or the incorporation of a minimum pension guarantee into one of the other pillars can mitigate the effects of future economic volatility on the vulnerable elderly and lifetime poor. These systems need to be carefully designed to ensure their affordability and that they do not have negative incentive effects”. Also IMF (2009a) sees private pension related risks for the general government arising from the crisis to stem from “[...] pressures to make up for the losses suffered by pensioners covered by private pension plans”. Thus, to sum up, if the aggregate outcome the individual pensioner receives from both the public PAYG as well as from statutory and voluntary funded private pension systems would be inadequate to ensure a decent standard of living, pressure on governments to top up “insufficient” pensions may tend to rise, posing additional risks to the general government budget, which governments had originally hoped to reduce through the implementation of funded pensions systems.³

Against this background, this paper addresses the risks to public finances associated with a move to funded pension systems in a volatile economic environment as in catching up economies such as the NMS. The analysis covers ten countries, namely Bulgaria, the Czech Republic, Estonia, Latvia, Lithuania, Hungary, Romania, Poland, Slovenia and Slovakia. As a caveat, the analysis is impeded by poor data availability in the area of private pensions. Not only are there often only a few annual observations, given the relatively short period of time since the implementation of these funded systems. In addition, the lack of comparable data across the NMS impedes an in-depth econometric analysis in this field. Against this backdrop, this paper takes stock of the available pension asset data and links it with inflation as well as with the most recent financial market developments. This way it identifies exposures to risks and where government budgets should therefore account for these risks over the medium to long term. The paper finds the risks for public finances not so much to come from potentially strong variation in pensions incomes due to stock market developments as the share of pension funds invested in stocks tends to be comparatively low. In the contrary, it finds that in some of the NMS the limited diversification of assets and especially the relatively high fraction of total assets held in government debt securities limits to some extent the possible positive impact from systemic pension reforms over the long term. In case pension outcomes would render pension incomes insufficient during the catching up process over the medium to long term, this could potentially lead to a stepping in of the government and thus imply a smaller relieve to general government budgets than anticipated. As a consequence, while maintaining multi-pillar pension systems continues to be of paramount importance, a wider diversification of assets and better financial knowledge is decisive.

The paper is structured as follows. Section 2 presents a brief overview of pension systems in the NMS. Section 3 then surveys the pension system related challenges for public finances in the NMS. Section 4 first addresses the severe data limitations in the area of research on private pensions in the NMS. In order to analyse the performance of private pension funds in these countries against the background of inflationary and capital market developments, the paper then surveys the asset structure of private pension funds and aims at identifying the vulnerability of

² At the same time, several NMS weakened the second pillar by, *inter alia*, allowing employees to reduce contributions to the second pillar and increase contributions to the PAYG systems (see for a survey Antolin and Stewart, 2009).

³ Against this background, also the Economic Policy Committee and European Commission (2009) in their regular projections on age-related spending for the EU27 intend to increase their reporting on private pensions.

Table 1

Pension Systems in the New EU Member States

Country	Old-age Pension Scheme PAYG	Funded Pension Scheme		Occupational Pension Scheme (Voluntary Participation)	Minimum Pension/ Social Assistance
		Mandatory Private Pension	Voluntary Private Pension		
Bulgaria	x	x	x	x	x
Czech Republic	x	-	x	-	x
Estonia	x	x	x	-	x
Latvia	x	x	x	-	x
Lithuania	x	voluntary	x	-	x
Hungary	x	x	x	-	x
Poland	x	x and voluntary	x	x	x
Romania	x	x	-	-	x
Slovenia	x	-	x	x	x
Slovakia	x	x and voluntary	x	-	x

Source: European Commission and Economic Policy Committee (2009).

these schemes against the background of the in some instances high inflation over the past years and the 2008-09 stock market developments. Section 5 draws policy conclusions.

2 Overview of pension systems in the NMS

All NMS have a funded pension pillar in combination with the standard old-age PAYG public pension scheme (see Table 1). While all of these countries apart from Romania have a private pension scheme with voluntary participation, not all of these countries have yet implemented a private pension scheme with mandatory participation. In the Czech Republic and Slovenia a mandatory private pension scheme does not exist at all, while in Lithuania, Poland and Slovakia, participation in these schemes is voluntary for some groups. In principle, the younger cohorts are encouraged to participate in the funded schemes, while the older cohorts closer to retirement have more flexibility to decide whether to participate or not. Occupational pension schemes exist only in Bulgaria, Poland and Slovenia. As the last column of Table 1 indicates, in all of the countries analysed here, a minimum pension and/or social assistance scheme exists. Consequently, it could, in principle, have a budgetary impact if pensions received from the first, second and third pillar of the pension system would turn out to be below the levels of either a minimum pension or social assistance, which would in such cases be paid to pensioners.

As Table 2 shows, statutory funded private pension schemes differ significantly across countries. First, the stage of development of these systems differs depending on the year of their

Table 2

Statutory-funded Private Pension Schemes

Country	Year of Introduction	Total Contribution (percent of gross wages)	Share Paid by Employer	Share Paid by Employee
Bulgaria	2002	5	60	40
Estonia	2002	6	67	33
Latvia	2001	4 (in 2007) rising to 10 in 2010	27	73
Hungary	1998	8 (for participants of so-called hybrid system: 2% can be given by employer)	0-(20)	100-(80)
Poland	1999	7.3	0	100
Romania	2004	2 (in 2008) rising to 6 by 2016	0	100
Slovakia	2005	9	100	0

Source: Social Protection Committee (2008).

implementation. For example, Hungary⁴ already introduced its statutory private pension scheme in 1998, while Slovakia implemented it only in 2005. In other words, the Slovak scheme is in this sense less mature than the Hungarian. Second, statutory funded private pension schemes differ both in terms of contribution levels and how these are shared between employers and employees. For example, in Poland and Romania the statutory pension scheme is fully financed by employees, while it is fully financed by employers in Slovakia.⁵

3 Pension system related challenges for public finances in the NMS

The share of public expenditure on pensions in total general government expenditure varies widely across the NMS (see Figure 1). With around 26 per cent of total general government expenditure, this share was largest in Romania in 2008, followed by Bulgaria (22.4 per cent). In contrast, with about 13 per cent, this share was lowest in Hungary.⁶ As Figure 1 also shows, Poland and Latvia have reduced the share of public pension expenditure in total general government

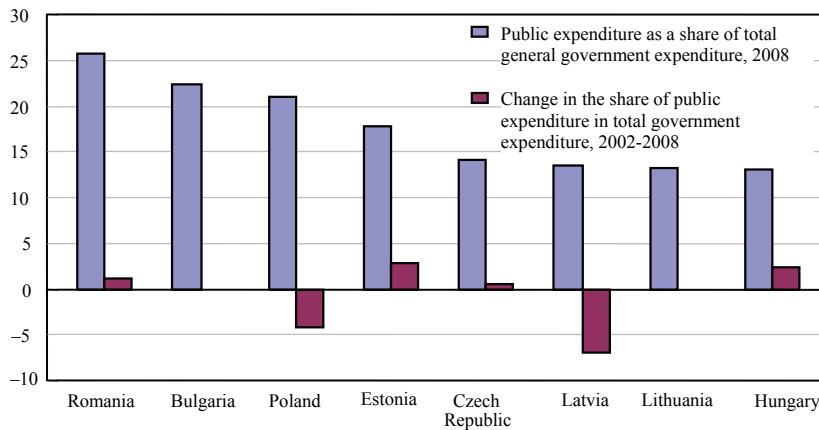
⁴ However, Orbán and Palotai (2005) showed that the Hungarian pension system was even after the pension reform in 1998 unsustainable. In addition, they claim that the returns recorded in the private pension funds fall short of expectations and, on the condition that these low returns persist, the second pillar is projected to provide annuities that do not make up for the reduction in benefits received from the public pillar.

⁵ Dušek and Kopeckni (2008) provide a survey of pension reform measures in Hungary, the Czech Republic and Slovakia and estimated of the policy risk of social security. They conclude that PAYG is not a secure source of retirement income since pension reforms do change the future contributions and benefits in different directions for different workers, and the magnitude of the reductions in social security wealth sometimes exceeds several years' worth of the workers' earnings.

⁶ The size of the share of public pension expenditure in total general government expenditure gives a very first indication of the sensitivity of the latter with respect to shifting to a second pension pillar. In principle, the relief to the general government budget resulting from a shift to a private pension scheme or public occupational scheme outside the government budget should tend to be largest in those countries, in which the public PAYG scheme represents a particularly large share of total general government expenditure. Obviously, the budgetary impact depends on the magnitude of shift towards private pensions. Moreover, also parametric pension reforms such as changes in the retirement age can play a crucial role.

Figure 1

Public Pension Expenditure, 2002-08
(share of total expenditure)



Source: ESCB, ECB calculations.

expenditure between 2002 and 2008, while in the Czech Republic, Estonia, Hungary and Romania this share increased slightly. These changes may reflect systemic and parametric pension reforms as well as shifts in the overall structure of public expenditure, *i.e.*, efforts aimed at cutting back other expenditure.

Looking ahead, multiple challenges for public finances can be identified, depending on the channels through which the structure of the pension system affects public expenditure.

These channels comprise, first, pressure from the public PAYG pensions systems and second, pressure arising from risks associated with the private pension pillar. In what follows, these channels are discussed in more depth.

Turning to the first channel, pressure on PAYG pension schemes and thus public finances in the NMS arise from demographic and macroeconomic developments. Regarding demographics, as Figure 2 shows, the old-age dependency ratio, *i.e.* the ratio of the population aged 65 and above over the population aged 15-64 has increased steadily over 1996-2007 in the NMS. This is due to several factors, for example, improved health care services increasing the life expectancy of the elderly. At the same time, the economic catching-up process opened new career opportunities for the young generations who changed their behavioural patterns (e.g. increased migration abroad, postponed childbearing) which generally reduced the population aged 15-64. Only in Slovakia, the old-age dependency ratio was slightly lower in 2007 than in 1996. However, with the exception of Bulgaria until 2006, the old-age dependency ratios in these countries remained partly significantly below the EU27 average.

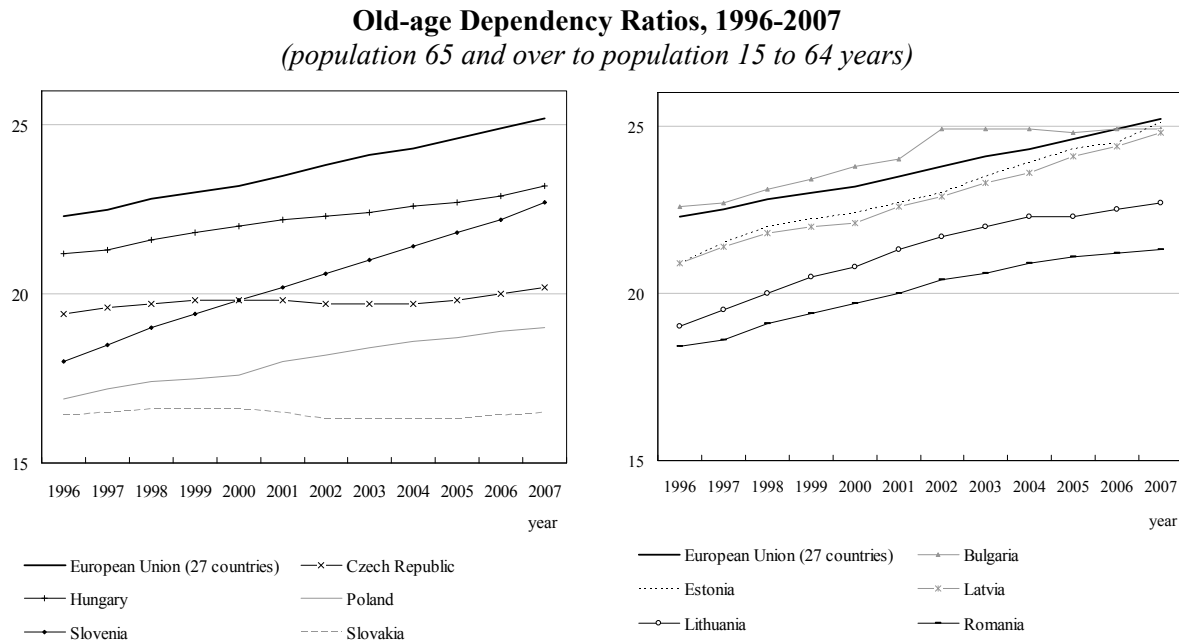
Nevertheless, demographic pressures are projected to rise strongly in the future. As indicated in Figure 3, old-age dependency ratios, which in 2007 were in all NMS below both the EU27 and the euro area average, are projected to be above these levels in 2060. The strongest increases in the old-age dependency ratio are projected for Romania, the Czech Republic⁷ and Lithuania.

Furthermore, developments in employment affect the net position of the public pension systems via revenue collection.⁸ As the accession to the EU brought a growth stimulus to the NMS economies, the large increases in employment that many of the NMS saw boosted revenues in the

⁷ For example, Botman and Tuladhar (2008) claim that given the ageing pressures in the Czech Republic, restoring debt sustainability will require additional reforms and a further increase in the retirement age is desirable, but will not suffice.

⁸ Looking back to the 1990s, in many NMS early retirement was often used as a measure to lower high official unemployment figures. Eligibility rules for retirement were relaxed and older workers close to retirement who lost their jobs often exited the labour force and retired. This rendered the PAYG systems increasingly unsustainable.

Figure 2

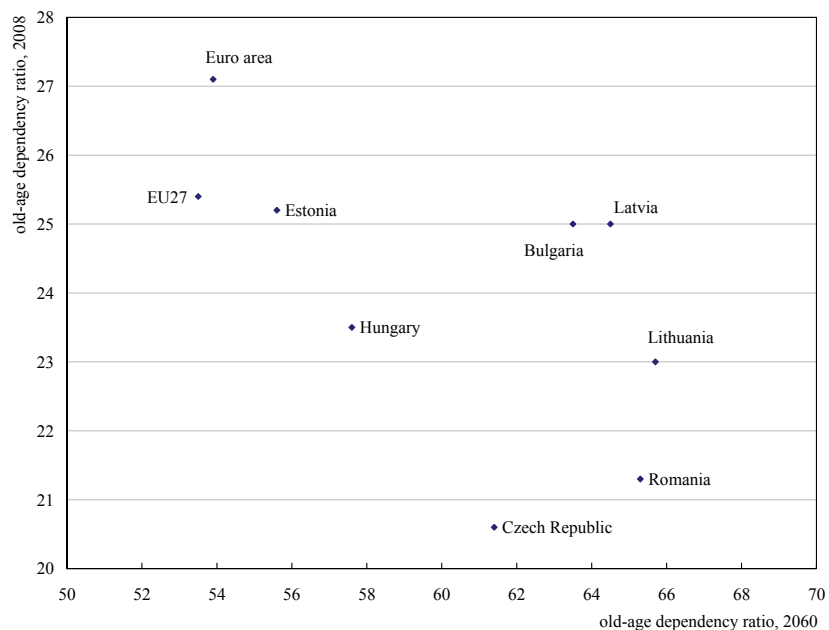


Source: Eurostat, ECB staff calculations.

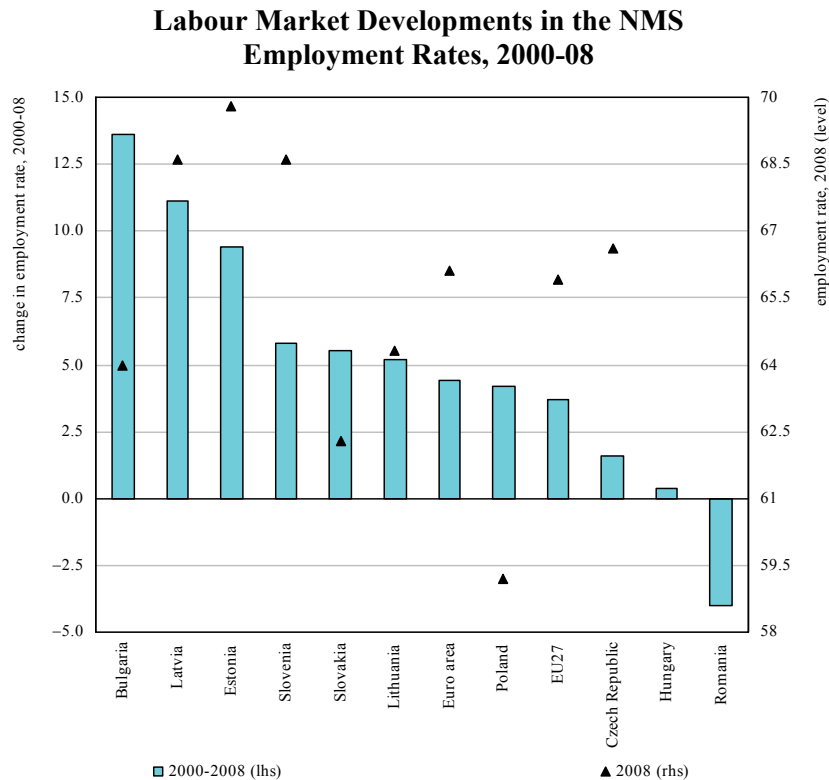
statutory PAYG schemes (as well as in the individual accounts of the private pension schemes). As Figure 4 indicates, with 13.6 percentage points, Bulgaria saw the largest increase in the employment rate between 2000 and 2008, followed by Latvia (11.1 percentage points) and Estonia (9.4 percentage points). Looking forward, the beneficial contribution from strong employment growth is at least partially reversed. Instead, the projected and in part substantial increase in unemployment brought about by the economic

Figure 3

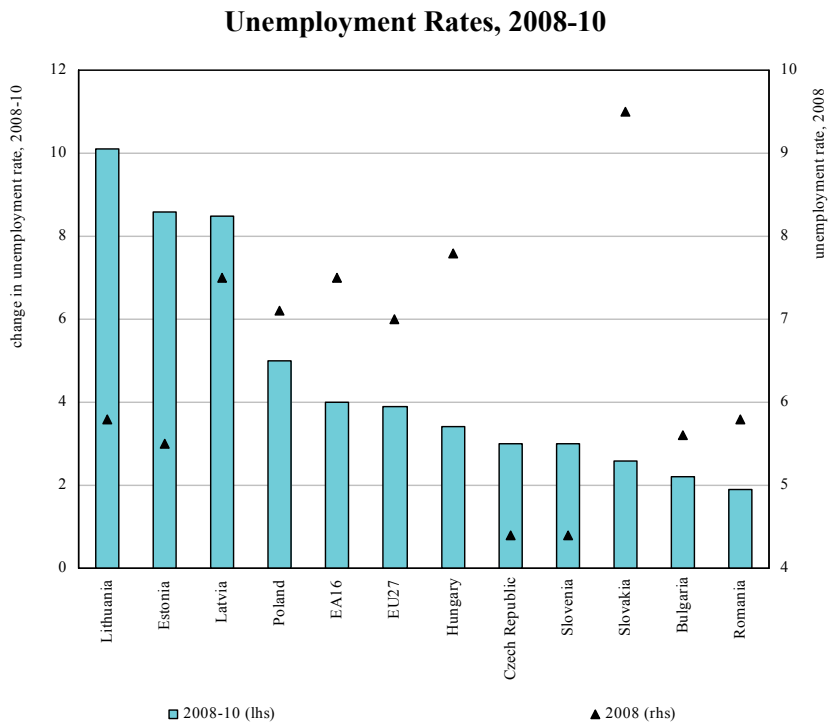
**Demographic Pressures:
Old-age Dependency Ratios in 2007 and 2060**



Source: Economic Policy Committee and European Commission (2008), ECB calculations.

Figure 4

and financial crisis in all of these countries will deteriorate general government revenue in the short-term, putting some stress on public PAYG schemes. In addition, via lower contributions also to private schemes, the rise in unemployment also tends to reduce individual pensions accounts. As Figure 4 shows, the increase in unemployment over 2008-10 is projected to be the strongest in Lithuania (10.1 percentage points), followed by Estonia (8.6 percentage points) and Latvia (8.5 percentage points).



The second channel through which the structure of the pension system affects public finances relates to the risk that governments would need to top up “inadequately” low public and private pensions. The European Commission and Economic Policy Committee (2009) project the developments of benefit ratios and gross average replacement rates from public and private pensions for several of the NMS, the results of which are displayed in Table 3. These long-term projections should be treated with extreme caution given the large uncertainty and poor data

Table 3

Benefit Ratios and Replacement Rates in the NMS, 2007-60
(percent)

Country	Benefit Ratio				Gross Average Replacement Rate			
	Public Pensions		Public and Private Pensions		Public Pensions		Public and Private Pensions	
	2007	2007-60	2007	2007-60	2007	2007-60	2007	2007-60
Bulgaria	44	-20	44	-8	-	-	-	-
Czech Republic	45	-17	-	-	33	-17	33	-17
Estonia	26	-40	26	-18	28	-41	28	9
Latvia	24	-47	24	4	33	-33	33	2
Lithuania	33	-16	33	-2	32	-10	32	15
Hungary	39	-8	39	-3	49	-23	49	-13
Poland	56	-54	56	-44	-	-	-	-
Romania	29	26	29	41	36	-	36	34
Slovenia	41	-6	41	-2	-	-	-	-
Slovakia	45	-27	45	-11	-	-	-	-

Note: The benefit ratio is the average benefit of public/private pensions as a share of economy-wide average wage (gross wages and salaries in relation to employees). The gross average replacement rate is calculated as the average first pension as a share of economy-wide average wage.

Source: European Commission and Economic Policy Committee (2009).

availability. This notwithstanding, the table shows that benefit ratios and replacement rates differ widely among the NMS. Benefit ratios from public pension schemes are highest in Poland and lowest in Latvia and Estonia. In all NMS apart from Romania, where the public pension pillar may still be considered as being in a “built-up” phase, the benefit ratios in public pension schemes are projected to decline – partly significantly. The projected decline in the public pension benefit ratio over 2007-60 is projected to be largest in Poland, Latvia and Estonia and smallest in Slovenia and Hungary. Accounting for income from private pensions, the table shows that the benefit ratio is projected to fall strongly in Poland and to lesser extents in Estonia, Slovakia, Bulgaria, Hungary, Lithuania and Slovenia. As regards gross average replacement rates, for the few NMS for which projections are available, the table points to expected substantial declines in the area of public pensions. Accounting for private pensions, the picture is less clear, as in several countries the gross average replacement rate is projected to rise slightly. Generally, declines in these indicators over time need to be assessed against their starting levels. In this respect, for example, the declines in the public and private benefit ratio in Estonia from a low level in 2007 to the lowest level across this section of countries in 2060 may point to very low pension levels, potentially raising pressure on government budgets in the future.

4 Pension fund performance und risks

This chapter surveys pension fund performance in the new EU Member States and captures

several risks to these systems that have increasingly emerged since their implementation. Many of these risks are not unique to the new EU Member States and apply to other countries as well. These risks include in particular the inflation risk, namely the fact that inflation grows faster than nominal returns on assets, as well as the financial market risk, which is associated with exposure of the pension assets to stock market developments. The global financial and economic crisis in 2008-09 has shown that in particular the financial market risk and the associated melt-down in pension assets worldwide has become a major concern for policy makers.^{9, 10}

Before we provide some evidence on pension fund performance in the NMS, the next section first briefly discusses the available data.

4.1 Data

The availability of homogenous data on pension funds in the NMS is limited. First, as shown above, the 2nd and 3rd pension pillars were introduced only recently in many NMS – the time series have therefore only a few observations. Second, data is only available on an annual basis. Third, while publicly accessible data on pension funds from national sources, such as pension funds associations or supervisors, are often richer and available at higher than annual frequencies, they are not fully comparable across countries.

The main two sources of homogenous data that we use in this paper are from the OECD (the Pension Funds database) and from Eurostat. Both include annual data on pension funds developments. However, the available time series for the countries considered here are short, with the number of observations depending on the indicator chosen. For example, several indicators cover the period 2000 to 2007, while some cover only the years 2003-06. The data cover all pension funds and similar vehicles (*i.e.*, pension funds, book reserve arrangements and pension insurance contracts), thus both mandatory and voluntary schemes that are either occupational or personal.¹¹ The OECD Pension funds database provides a comprehensive set of indicators on pension. However, the OECD database does not cover all NMS, but only its members: the Czech Republic, Hungary, Poland and Slovakia. Data provision for some of the other NMS, while sometimes provided, is rather limited.

The Eurostat database provides a dataset on pension funds performance that in principle covers all NMS, but misses many observations, especially for the period before 2004. This is likely due to the fact that the systemic pension reforms were implemented often only recently and that the pension fund segments of financial markets played a relatively limited role in the financial intermediation in the NMS.

⁹ See also IMF (2009b).

¹⁰ There are various measures of pension funds performance, for example, Amir-Benartzi (1998) examine the correlation between the expected rate of return on pension assets as reported in the financial statements and the composition of the pension portfolio measured as the percent invested in equities. They find that these variables are related, but the relation is rather weak. Impavido and Rocha (2006) investigate the performance of the Hungarian second pillar and claimed that its performance since inception has been mixed. They concentrate on growth, portfolio and investment return, costs and fees. In terms of investment return, they find that government securities accounted for 73 per cent of the portfolio in 2004. They also find that the real rate of return net of fees was negative in some years and the annualized average net real rate return in the 1998-2005 period amounted to only 3.9 per cent p.a., lower than the average real wage growth of 5.3 per cent. Tapia (2008, p. 25) provides estimates of the financial performance of privately managed mandatory and voluntary pension funds in the Czech Republic, Estonia, Hungary, Poland and concludes that the average annual real investment rates of return has been positive for all, ranging from 1.0 per cent in the Czech Republic to 8.8 per cent in Poland, since the implementation of the 2nd or 3rd pillar. In addition, the average annual real investment rates of returns show important fluctuations for the entire period since the pension reform has been in place. The uneven performance could be, according to Tapia (2008), explained partially by the very high proportion of assets held in government bonds (around 60 per cent) and the irregular trends in government securities yields over the past years.

¹¹ For the classification of pension funds see, e.g., OECD (2009), *Private Pensions Outlook 2008*, p. 32.

Table 4

Assets of Pension Funds in 2007
(percent of GDP)

Country	AT	BE	DE	DK	ES	FI	FR	LU	IE
Assets	4.8	4.0	4.1	32.4	7.5	71.0	1.1	1.0	46.6

Country	IT	NL	PT	SE	UK	CZ	HU	PL	SK
Assets	3.3	138.1	13.7	8.9	78.9	4.7	10.9	12.2	4.2

Note: In Denmark, France and Sweden, the significant fraction of pension savings is held in the form of pension insurance contracts which are not reflected in this table.

Source: OECD.

Despite these caveats, the available data nevertheless provide important information regarding pension fund developments in the NMS. However, the small number of observations prevents a more sophisticated empirical analysis. The next section provides some findings based on the available data.

4.2 The size and structure of private pension fund assets

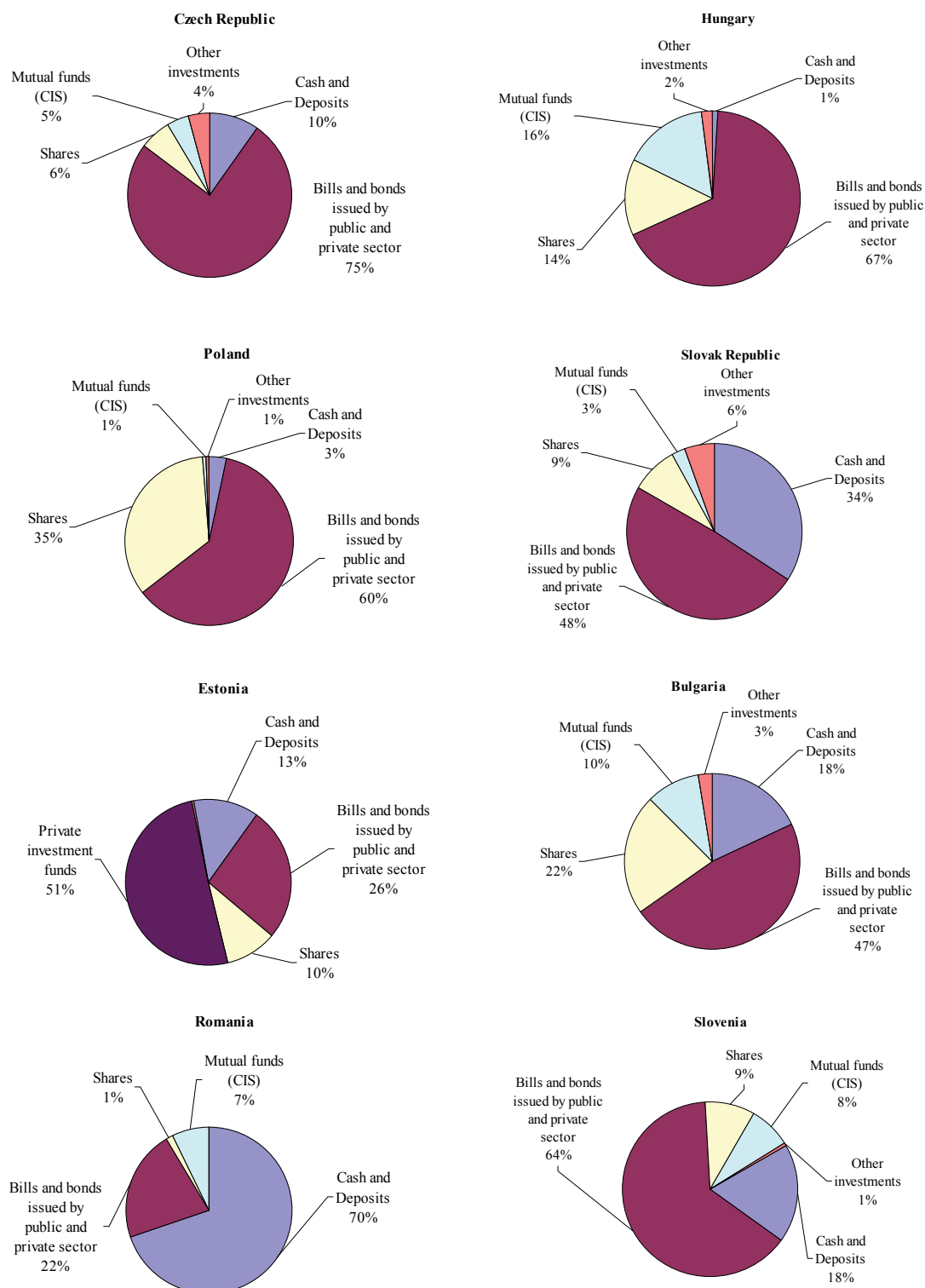
The savings cumulated in the pension funds increased sharply in the NMS, but still remained at low levels when compared to many of the old EU Member States. For example, the pension funds assets as a share of GDP represented only about 4.7 per cent in the Czech Republic in 2007 (2.3 per cent in 2001), 10.8 per cent in Hungary (3.8 per cent in 2001), 12.2 per cent in Poland (2.4 per cent in 2001) and 4.2 per cent in Slovakia (0 per cent in 2001), while they were about 79 per cent in the United Kingdom or 138 per cent in the Netherlands (see Table 4). Consequently, only a limited amount of pension income currently comes from private pensions in these countries. OECD (2009a) finds that compared to the OECD average of 19.5 per cent of retirement income coming from private pensions, this share is 2.9 per cent in Hungary, 1.2 per cent in Poland, 1.1 per cent in Slovakia and 0.7 per cent in the Czech Republic.

The impact of inflation and financial market developments on pension fund performance is determined by the structure of pension fund portfolios. Private pension fund assets consist of (1) bills and bonds issued by the public and the private sector, (2) mutual funds, (3) shares, (4) cash and deposits as well as (5) other investment (e.g. mutual funds). The distribution of private pension fund assets across these categories varies widely across countries, reflecting, inter alia, differing risk aversion, existing country-specific investment regulations and available investment opportunities in domestic capital markets.

As they should secure income for their members in their post-retirement period, pension funds in the NMS have often (but not always) opted for investing rather conservatively. As indicated by Figure 5, in 2007, the share of pension fund assets invested in cash and deposits, associated with low returns and low risks, varies from 70 per cent in Romania to 1 per cent in Hungary. In contrast, the share of pension funds assets invested in shares, which are associated with sizeable risks against the background of stock market volatility (that, from the historical perspective of developed economies, paid off in higher yields in the long run), range from 35 per cent in Poland to 1 per cent in Romania. Finally, as Figure 5 also shows, apart from Estonia

Figure 5

Structure of Pension Funds Assets as of 2007



Source: OECD.

and Romania, bills and bonds issued by the public and the private sector formed the largest share of private pension assets in 2007. The majority of these debt securities were issued by the public sector (at the central government or municipal level). The corporate sector is mainly financed through loans from the banking sector in the NMS; and only a limited number of larger financial and non-financial private corporations issue corporate bonds. This limits to a certain degree the domestic investment opportunities for pension funds.

The large share of bills and bonds issued by the public sector indicates that these pension fund assets are an important source of financing for the government. Against the background of the 2008-09 crisis and the arising financing problems for the government, in Hungary, for example, the private pension schemes have been obliged to invest a larger share of their funds in government bills and bonds. On the one hand, investment in debt securities issued by the public sector increases in principle the security of pension funds' investments due to a generally lower sovereign default risk when compared to the default risk of the financial and non-financial corporate sector. On the other hand, if government bonds represent a large fraction of total pension funds assets, it is questionable whether pension funds improve the overall efficiency of resource allocation. In the extreme case, if pension funds invested 100 per cent of their total assets in government debt securities they would act in principle as the first PAYG pillar; however, likely at higher administrative costs. One can assume that such a system would be more costly than a typical PAYG with implicit liabilities, due to administrative and other costs related to pension funds' maintenance, marketing, remunerations of pension funds' managers and owners.

According to Eurostat data, the geographical structure of pension fund investments differed substantially in 2006 and 2007 (the latest data available). For example, 100 per cent of pension funds' total assets were invested domestically in Poland in 2006 and Slovakia in 2007, while it was about 80 per cent in Bulgaria and the Czech Republic in 2007. On the contrary, this ratio was only 16 per cent in Lithuania in 2007.

The currency breakdown shows that a high share of investment is denominated in euro. This is particularly the case for the ERM-II countries and countries with a currency board exchange rate regime. In this respect, the share of pension fund assets denominated in euros was about 70 per cent of total investments in Lithuania, 46 per cent in Latvia and 38 per cent in Bulgaria in 2007. On the contrary, euro-denominated investment was only about 6 per cent in the Czech Republic in the same period.¹²

The limited diversification of assets in some of the New EU Member States, as shown in Figure 5, and especially the relatively high fraction of total assets held in government debt securities limit to some extent the possible positive impact from systemic pension reforms. If pension savings are allocated mainly into public sector debt securities, and if one assumes that the public sector is allocating financial resources generally less efficiently than the private sector, the funded pension pillars do not contribute to a higher economic efficiency via a better allocation of available resources. All in all, if the funded pillar is mandatory and used mainly to finance government deficits via purchasing government bonds, one can consider the pension funds' contributions as a special form of taxes, rather than voluntary savings.

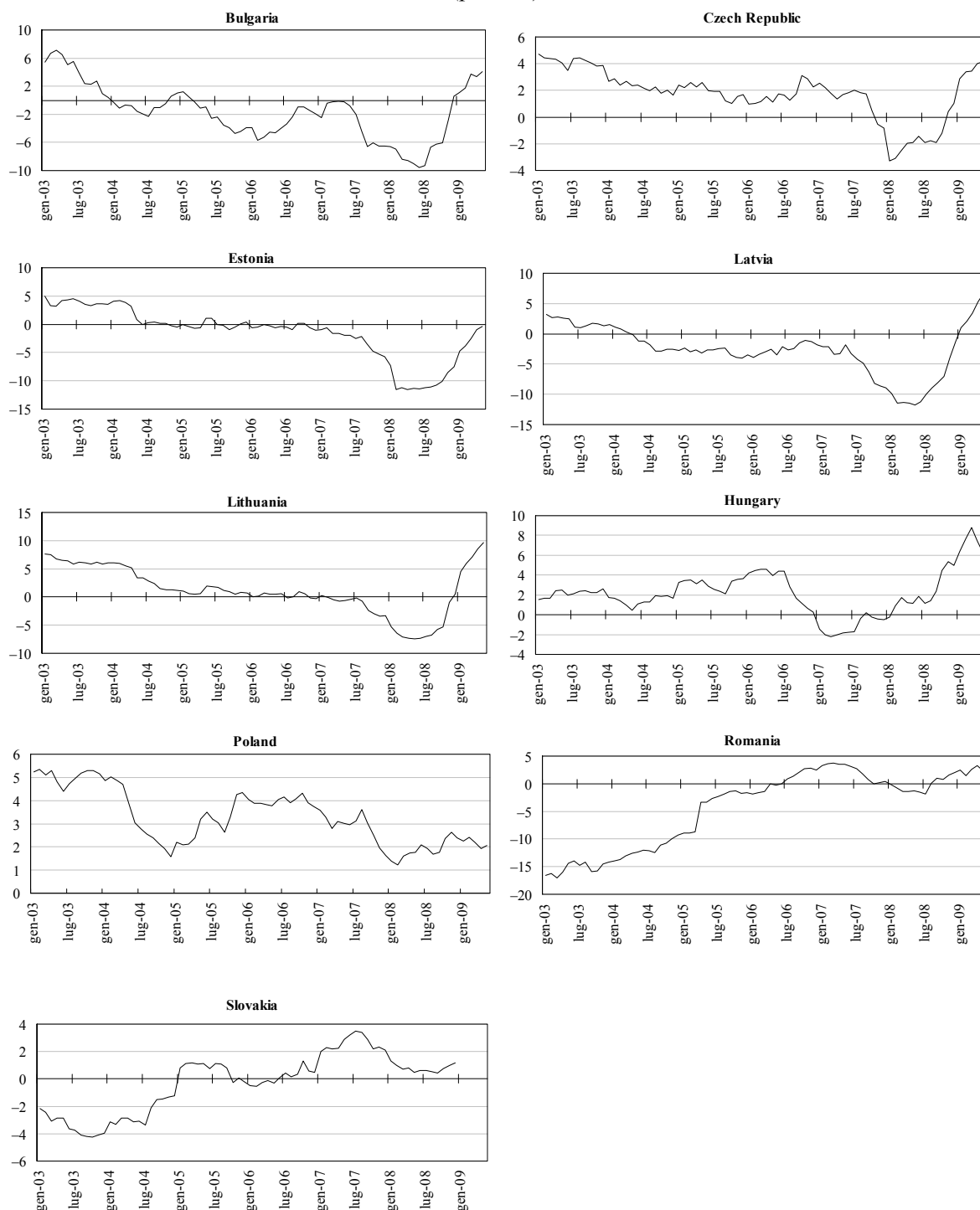
4.3 *The exposure to inflation risk: some indications*

For an assessment of the inflation risk, Figure 6 depicts the estimates of real yields on long-term year government bonds between January 2003 and May 2009. They indicate that in several of the NMS, the catching-up process observed over the last decade was associated with

¹² In Estonia and Poland, it was 60 and 0 per cent, respectively, in 2006.

Figure 6

Real Yields on Long-term Government Bonds (percent)



Note: The real interest rates were calculated as a difference between the (observed) nominal yields on ten year government bond yields and the HICP annual rate of change. Latest observation: May 2009 (Slovakia: December 2009), monthly data.

Source: ECB.

partly high rates of inflation that lowered the investment real yields. In these Figures, the real yields were approximated by the difference between the nominal yields on ten year government bonds (or a similar instrument if no government bond was available) and the annual rate of change in the harmonised index of consumer prices (HICP). In some of the countries, the historical real yields from investments into government bonds were close to zero or even negative for protracted periods of time. For example, in Bulgaria and Latvia, past investments in government bonds were generally generating losses in real terms so that the contribution of these investments to the accumulation of pension assets tended to be negligible. However, the ongoing economic contraction brought inflation down. At the same time, the nominal interest yields on government bonds increased due to several factor including e.g. worsened fiscal outlook, pushing real yield further up.

Also other forms of investment are exposed to inflation risk. In particular, holdings of cash or investment in financial instruments with a fixed interest rate (such as bank deposits) were eroding in real terms in the inflationary environment.

Against this background, the question can be posed whether a move to funded pension systems in catching-up economies is helpful in the long-term. The Balassa-Samuelson hypothesis would lead to the conclusion that price levels in less productive economies will increase as the productivity increases to equalize with productivity levels in more developed economies. As a consequence, the catching-up process is often accompanied by a higher inflation (or a currency appreciation). The instability of prices creates difficult conditions for all savers, pension funds included. For example, the double digit inflation rates in the Baltic countries have damaged significantly the real value of savings accumulated until 2008. If the funded pension pillars were supposed to reduce the burden of the PAYG pillar in the future, low and stable inflation together with a savings-friendly environment is required in order to accumulate sufficient savings under the funded pillars with a positive real return.

In principle, establishing funded pension pillars before providing a stable (low-inflationary) macroeconomic environment brings about the risk that funded pillars may loose credibility and thus not attract sufficient voluntary savings in the future. In addition, if the real value of savings would be destroyed by high inflation, the establishment of pension funds does not improve the long-term sustainability of public finances.

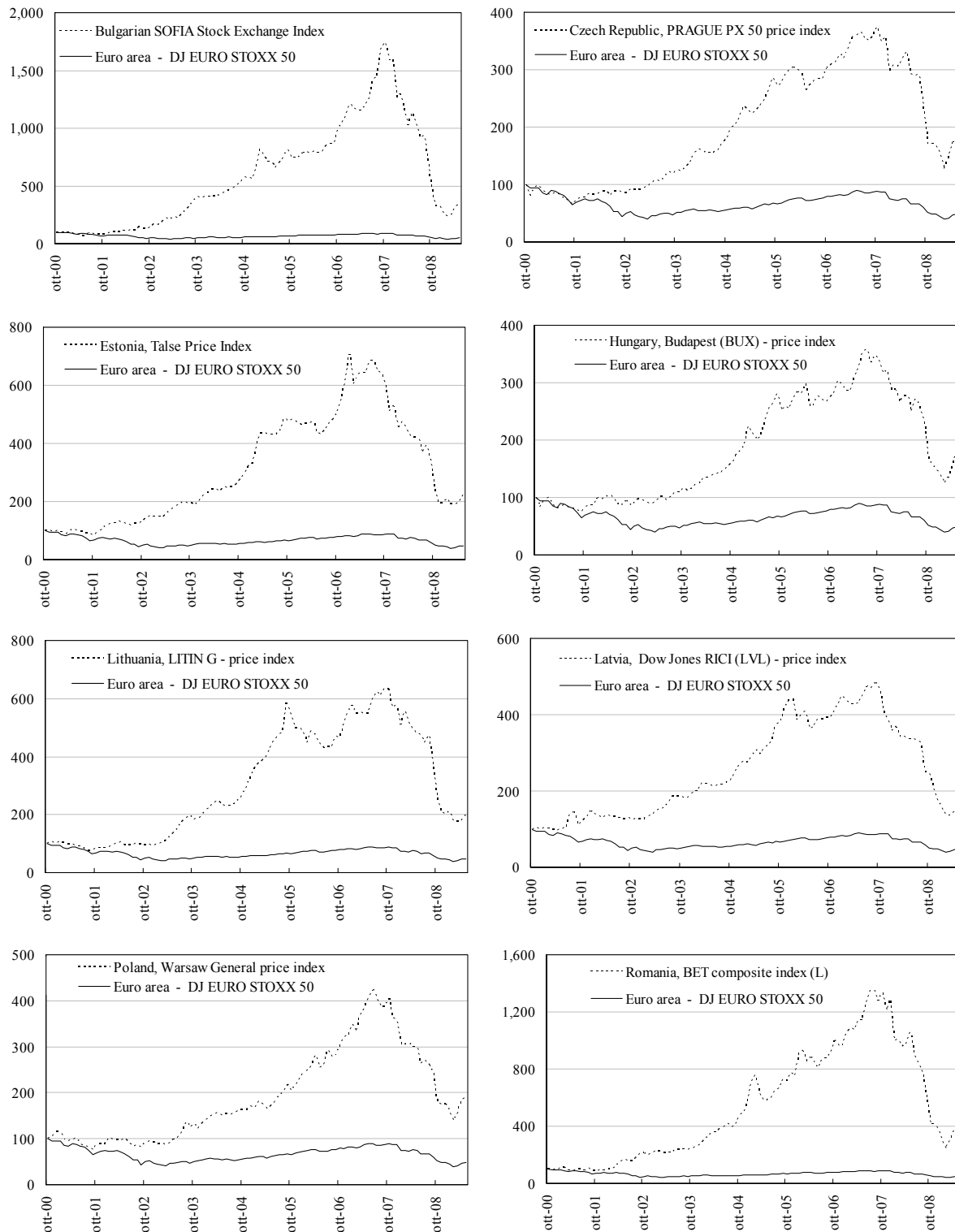
4.4 The exposure to the global financial crisis: some early indications

The OECD (2009b, p. 16) estimates that the total investment loss worldwide of private pension plans due to the 2008 turmoil in financial markets was around USD 5 trillion (out of which USD 3.3 trillion in the United States). According to OECD (2009b, p. 15), pension funds in the OECD countries experienced a negative return of about 20 per cent in nominal terms between January and October 2008 (22 per cent in real terms), amounting to a loss of about USD 3.3 trillion. Against this background, the question may be posed how the economic crisis has affected the NMS, bearing in mind that, as indicated above, the pension funds segment is still rather small in the NMS.

Figure 7 shows how the stock markets in the NMS developed between October 2000 and May 2009. In particular, the stock market indices in Bulgaria and Romania had grown substantially faster since August 2007 than what would have been in line with economic fundamentals. By February 2009, the NMS stock market indices dropped to about 20-45 per cent of their values in August 2007, but since then started to recover somewhat, in particularly in Hungary, Poland and the Czech Republic. All in all, the global financial market turmoil has negatively influenced the stock markets in all NMS and many of the stock market indices returned down to levels observed before 2003.

Figure 7

Stock Market Indices
(October 2000 = 100 per cent)



Note: Monthly data. Latest observation: May 2009.

Source: Datastream.

As many of the pension funds profited from the substantial increase in stock prices in the past, the decline in stock prices implies losses for the stock holders in the short term. Figure 8 shows that particularly pension funds in Poland and Bulgaria would tend to be affected due to the relatively larger shares of stock in their portfolios. In the Czech Republic, Estonia and partly also Hungary, the adverse impacts of the economic crisis and the related stock market deterioration on pension fund assets were to some extent limited by a

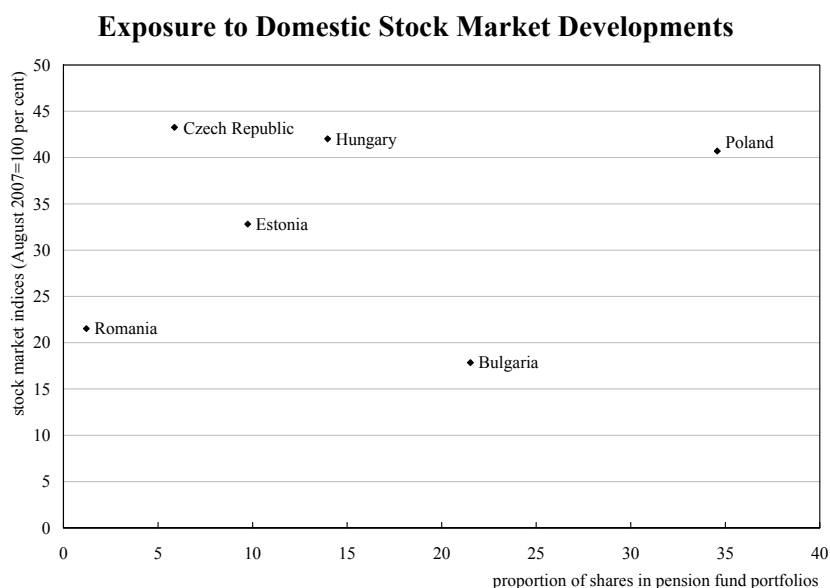
relatively modest representation of stocks in pension fund portfolios (less than 10 per cent, respectively 15 per cent of total assets).

Consequently, indeed, also pension funds in the NMS faced significant losses stemming from the ongoing crisis. However, due to their relative short history, the absolute amounts of assets cumulated in the pension funds are rather limited in the NMS. Also, the NMS pension funds' exposure to stock markets is, except Poland and Bulgaria, rather limited. At the same time, pension funds that invested previously mostly in bonds may have benefited from the flight-to-quality that tends to lead to a higher demand for bonds associated with low risk. The higher demand tended to increase the prices of these bonds compared to other assets and thus may have mitigated to some degree the negative impact of the crisis on pension fund portfolios. This notwithstanding, many foreign investors pulled out of the NMS financial markets so that the liquidity of these markets declined significantly.

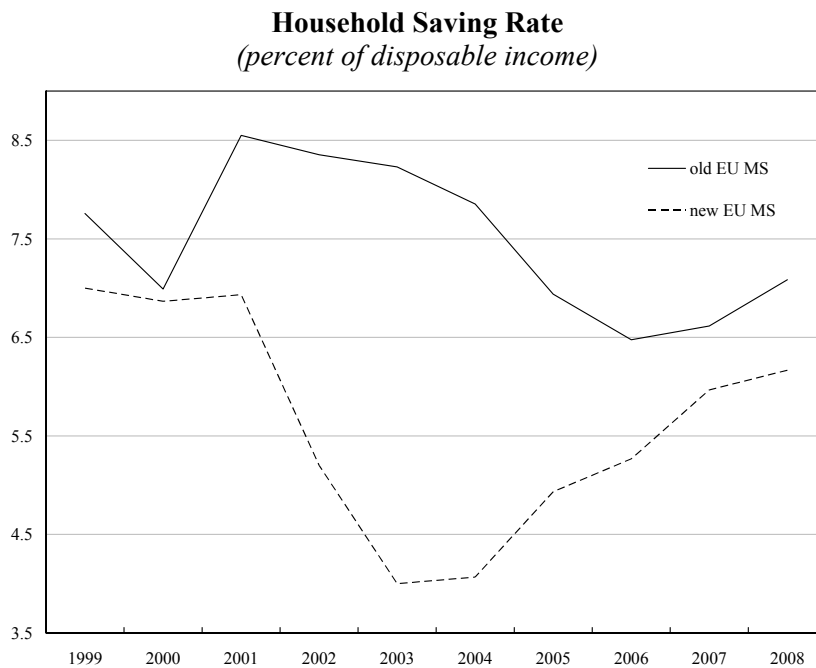
4.5 Convergence of New Member States to the old EU Member State levels

This section outlines developments in household savings, profitability of pension funds and funds' contribution rates in order to highlight differences or common trends in the NMS and the old EU Member States. To overcome the problem of missing observations at the country level in the NMS, we pooled available data on relevant macroeconomic, financial and pension fund variables. Figures in this section show an aggregated view on how the household savings rate evolved over time in these two groups of countries. In this respect, Figure 9 indicates that the household savings rate has on average been higher in the old Member States. In the NMS, the household savings rate was between 4 and 7 per cent of disposable household income – it declined from levels broadly comparable with the old Member States in 2001 to just about 4 per cent in 2003 and 2004 and since then it started to rise to about 6 per cent in 2008. On the contrary, in the old Member States, the household savings rate was on average between 6.5 and 8.5 per cent in the period from 1999 to 2008.

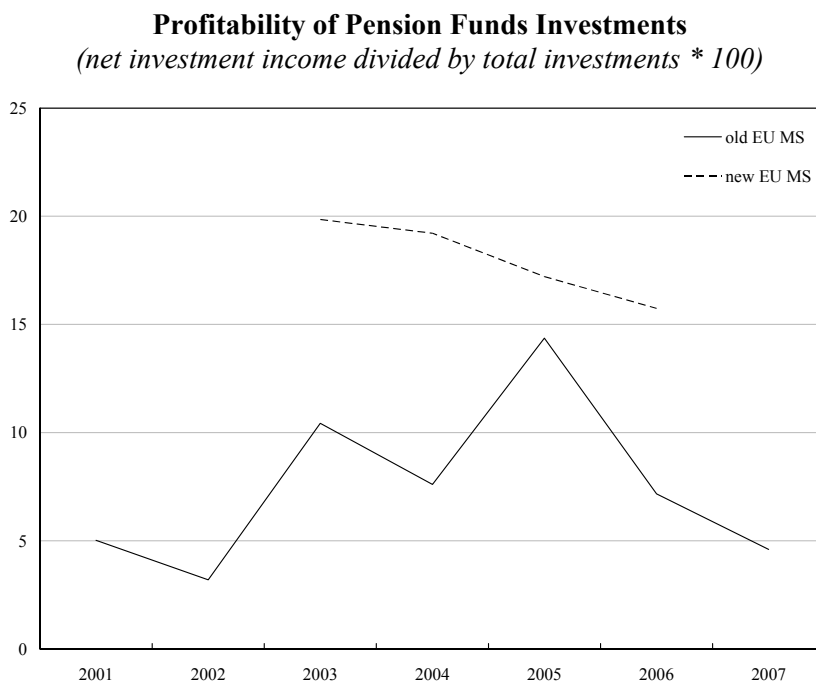
Figure 8



Source: Datastream, OECD.

Figure 9

Source: OECD, own calculations.

Figure 10

Source: OECD, own calculations.

Figure 10 shows a declining trend in the nominal yields of pension funds between 2003 and 2006 in the NMS. The nominal yields of pension funds were higher in the NMS than in the old EU Member States; they declined from about 20 per cent in 2003 to about 16 per cent in 2006 in the NMS, while they fluctuated in the old Member States. The explanation of higher returns in the NMS may be higher inflation and more profitable investment opportunities in the NMS, e.g. related to their lower GDP per capita.

Employees' and employers' contributions to pension funds have been rising sharply in the NMS since 2003; however, their level remained below that in the old Member States in 2007, reaching only 1.2 per cent of GDP while it was about 1.7 per cent of GDP in the old Member States. This, together with the lower households saving rate shown in Figure 9, could potentially be an indication that the population in the NMS is not accumulating sufficient savings for the post-retirement period.

All in all, the NMS seem to be catching up with the savings patterns observed in the old Member States. Both the household savings rate

and contributions to pension funds are at lower levels in the NMS, but are converging to the levels observable in the old Member States.

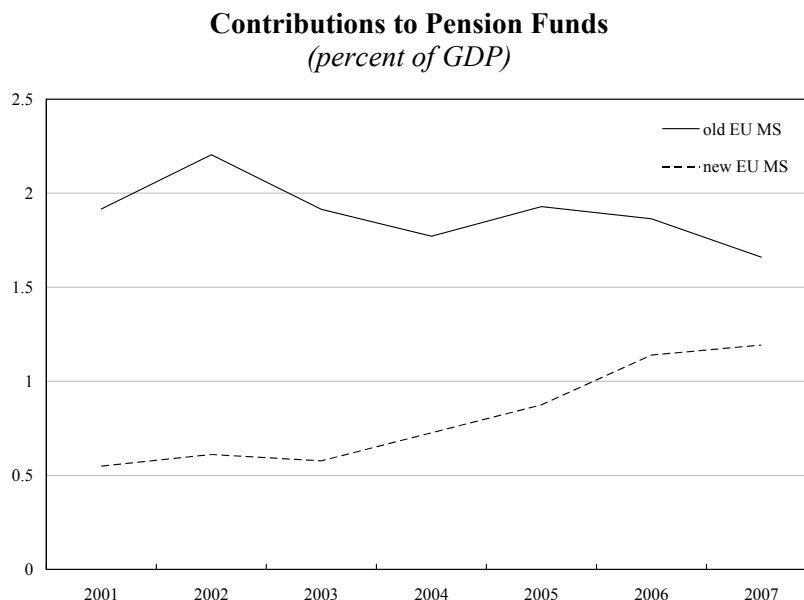
5 Conclusion

By way of a stock-taking exercise, this paper is an attempt to assess the multi-pillar pension systems and the associated budgetary risks in the new EU Member States. We find that the assets of pension funds are not well diversified in all countries that we consider here. In fact, to a large extent the pension funds in some of the

NMS are invested in government bills and bonds. On the one hand, this increases in principle the security of pension funds' investments due to a generally lower sovereign default risk when compared to the default risk of the financial and non-financial corporate sector. On the other hand, if government bonds represent a large fraction of total pension funds assets, pension funds are in fact mimicking the first pension pillar. In addition, we find that pension fund assets have been subject to inflation risk, with real yields on government bonds having turned negative for several years for some of the NMS. This implies that the real value of the assets has been vanishing and the return has been lower, increasing the risk to the government that the future pensioners might not be able to sustain a living on the (meagre) return of their assets. This problem may be compounded by the effects of the ongoing global financial and economic crisis. We find that, indeed, pension funds in the NMS (as well as elsewhere) also faced significant losses stemming from the crisis. However, mainly due to their relative short history, the absolute amounts of assets cumulated in the pension funds have been rather limited in the NMS. Also, the NMS pension funds' exposure to stock markets was, except for Poland and Bulgaria, rather low. On the other hand, the relatively newly established funded pension schemes in the NMS face generally a higher risk of losing credibility than schemes established earlier in the old Member States that already have a solid track record. A severe underperformance relative to previous expectations may hamper a further development of this financial segment in the NMS.

The adverse impacts of inflation and financial market volatility on the performance of pension funds that has been witnessed in recent years in several NMS underlines the fact that the problems concerning the sustainability of pension systems are not solved, yet. Of course, any assessment of this kind must distinguish between persons, who would now lose in such an environment (e.g. pensioners that need to buy annuities out of melt-down private pensions funds) or young persons, who, in times of deteriorating stock markets, buy equities cheaply at depressed prices and may profit from the increase of their prices in the future (see, for this argument, OECD,

Figure 11



Source: OECD.

2009b). However, notwithstanding this argument, the witnessed volatility of financial markets and the impact of inflation give rise to the question who would pay the pension if pension funds fail to deliver what they were set out to deliver.

In addition, the available option of different investment strategies of pension funds that imply different risks call for an increased financial education of the population. Sufficient financial knowledge is necessary to enable responsible and qualified decisions about risks to future pension income. Only sufficiently educated pension savers are able to identify possible risks related to a particular investment strategy.

This basic stocktaking exercise has shown that the assessment of long-term sustainability of public finances in the presence of an increasing importance of private pension systems is important. A proper empirical assessment, however, requires first an improvement in the data situation in this area. From a policy point of view, portfolio and risk diversification remain an issue as does capturing the role of minimum pensions and social assistance.

REFERENCES

- Afonso, A., L. Agnello, D. Furceri and R. Sousa (2009), "Assessing Long-term Fiscal Developments – A New Approach", ECB, Working Paper, No. 1032.
- Antolin, P. and F. Stewart (2009), "Private Pensions and Policy Responses to the Financial and Economic Crisis", OECD, Working Paper on Insurance and Private Pensions, No. 36, Paris.
- Botman, D. and A. Tuladhar (2008), "Tax and Pension Reform in the Czech Republic – Implications for Growth and Debt Sustainability", IMF, Working Paper, No. 125.
- Cangiano, M., C. Cottarelli and L. Cubeddu (1998), "Pension Developments and Reforms in Transition Economies", IMF, Working Paper, No. 151, Washington (D.C.).
- Dušek, L. and J. Kopecksi (2006), "Policy Risk in Action: Pension Reforms and Social Security Wealth in Hungary, Czech Republic, and Slovakia", The Pensions Institute, Discussion Paper, No. PI-0812, London.
- European Commission and Economic Policy Committee (2008), *The 2009 Ageing Report: Underlying Assumptions and Projections Methodologies*, European Economy.
- (2009), *The 2009 Ageing Report – Economic and Budgetary Projections for the EU-27 Member States (2008-60)*, European Economy, No. 2/2009.
- Holzmann, R. and R. Palacios (2001), "Individual Accounts as Social Insurance: A World Bank Perspective", The World Bank, Discussion Paper, No. 114.
- IMF (2009a), "Fiscal Implications of the Global Economic and Financial Crisis", IMF staff position note, SPN/09/13, Washington (D.C.), June.
- (2009b), "Fiscal Policy for the Crisis", IMF staff position note, December 2008, Washington (D.C.).
- Impavido, G. and R. Rocha (2006), "Competition and Performance in the Hungarian Second Pillar", The World Bank, Policy Research, Working Paper, No. 3876.
- Maddaloni, A., A. Musso, P.C. Rother, M. Ward-Warmedinger and T. Westermann (2006), "Macroeconomic Implications of Demographic Developments in the Euro Area", ECB, Occasional Paper, No. 51.
- Nickel, C. and J. Almenberg (2006), "Ageing, Pension Reforms and Capital Market Development in Transition Countries", EBRD.
- Nickel, C., P.C. Rother and A. Theophilopoulou (2008), "Population Ageing and Public Pension Reforms in a Small Open Economy", ECB, Working Paper, No. 863.
- OECD (2009a), *Pensions at a Glance 2009*, Paris.
- (2009b), *Private Pension Outlook 2008*, Paris.
- Orbán, G. and D. Palotai (2005), "The Sustainability of the Hungarian Pension System: A Reassessment", MNB, Occasional Paper, No. 40.
- Rother, P.C., M. Catenaro and G. Schwab (2002), "Ageing and Pensions in the Euro Area Survey and Projection Results".
- Social Protection Committee (2008), "Privately-managed Funded Pension Provision and Their Contribution to Adequate and Sustainable Pensions".
- Verbic, M. (2008), "The Ageing Population and the Associated Challenges of the Slovenian Pension System", Institute for Economic Research, Ljubljana.

World Bank (2009), “The Financial Crisis and Mandatory Pension Systems in Developing Countries”, World Bank, Human Development Network, Washington (D.C.), available at: http://siteresources.worldbank.org/INTPENSIONS/Resources/395443-1121194657824/PRPNote-Financial_Crisis_12-10-2008.pdf

