Disappointing Performance of Pension Privatization in Eastern Europe

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Abstract: In order for the carve-out pension privatization to improve long-term pension sustainability two crucial preconditions have to be fulfilled - 1) second pillar returns should be tangibly higher than GDP growth and 2) second pillar pension funds should not predominantly invest in domestic government bonds. Over the last 15 years none of the Eastern European countries has succeeded in fulfilling these preconditions. Not only second pillar returns were lower and more volatile than PAYG returns, but pension privatization also failed to produce anticipated side-effect benefits such as improved national saving, economic growth and immunity to political interferences. Recent economic crisis provides an opportunity to assess whether second pillar weaknesses can be successfully resolved or should reform reversals be contemplated to avoid a suboptimal pension system design. In any case, pension sustainability in Eastern Europe will inevitably depend on appropriate parametric PAYG reforms, as is the case in Western European countries that have not resorted to pension privatization.

Keywords: pension privatization, PAYG vs. funded rates of return, national saving

JEL Classification: H55, H63, E62

1. Introduction

Eastern European countries started transitioning from centrally-planned to free-market economies in the early nineties. During the transition process the financial position of public pension systems became severely strained. Maturing of public pension schemes, demographic aging and lack of appropriate parametric reforms during the eighties have been exerting significant pressures on the expenditure side. On the revenue side public pension systems suffered from the decline in (formal) employment which was very severe in the early transition years. The demise of the central-planning paradigm and inefficient public provision of goods and services in other areas of the economy gave rise to a belief that public provision and Pay-As-You-Go financing were the primary causes of the financial distress in the pension system. This belief was reinforced by the influential *Averting the Old Age Crisis* study published by the World Bank in 1994.

Around the turning of the millennium many Eastern European countries thus undertook bold reforms efforts which included iconoclastic pension privatization – partial termination of existing public PAYG pension schemes and introduction of mandatory private pension funds (MPFs) in their place, the so called *second pension pillar*. This reform approach was expected to enable future beneficiaries higher returns on their pension savings since rates of return on capital are in general higher than GDP growth. Furthermore, the reform efforts were fueled by high expectations of significant side-effect benefits from pension privatization - increased rate of national saving, acceleration of economic growth, reduction of unregistered informal employment and making national pension systems less susceptible to political interference. However, the international professional public at the time was strongly divided regarding the plausibility of aforementioned economic benefits of pension privatization, with authors like Beatie and McGillivray (1995), Stiglitz and Orszag (2001) and Barr (2000) challenging the positive pension privatization outcomes suggested by the World Bank (1994). While arguments in favor of pension privatization prevailed in Eastern Europe, arguments against prevailed in Western Europe despite the fact that Bismarck-style earnings-related public pension systems were prevalent in both parts of the continent.

In this paper we analyze initial reform results and experiences from Eastern European countries 15 years after the start of pension privatization trend. We show that most of the reform expectations have thus far remained unfulfilled. Pension privatization failed to produce anticipated side-effect benefits such as improved national saving, economic growth and immunity to political interferences. Most disappointingly, the returns of MPFs were lower and more volatile than PAYG returns in most Eastern European countries, even before the occurrence of global financial crisis in 2008. Besides known pension privatization weaknesses, such as high operating costs and inadequate organization of the payout phase, we identify the prevalence of domestic government bonds in second pillar portfolios as a major structural deficiency of pension privatization in Eastern Europe.

Faced with the absence of positive economic effects and the need to finance significant transitional deficits, few Eastern European countries have recently decided to partially or

completely reverse pension privatization reforms. Concerns have been raised that reform reversals represent short-sighted and irresponsible policies that deteriorate long-term pension sustainability. However, we show that poor second pillar performance makes it possible for reform reversals to improve short-term fiscal position without necessarily deteriorating long-term sustainability. Recent economic crisis should not be considered a major driver behind reform reversals but merely a catalyst that highlighted and exacerbated existing pension privatization structural deficiencies that need to be decisively addressed in order to avoid maintaining a suboptimal pension system design throughout the 21st century.

This paper is organized as follows: in Section 2 we briefly describe pension privatization dynamics in Eastern Europe and in Section 3 we briefly review known weaknesses of the pension privatization approach. In section 4 we show that realized MPFs' returns were lower and more volatile than PAYG returns while second pillar portfolios in many countries are dominated by inefficient investments in government bonds. Econometric analysis in Section 5 shows that pension privatization failed to produce statistically significant improvements in national saving and economic growth, while Section 6 shows that political aspects of national pension systems seem to have deteriorated after pension privatization had been implemented. In Section 7 we argue that concerns over recent reforms reversals have not been backed with solid economic analysis. In Section 8 we draw preliminary policy lessons from reform experiences in Eastern Europe while concluding remarks are presented in Section 9. Appendix A contains annual data on realized second pillar returns that could be used for more elaborate future research, provided differences and inconsistencies with the data presented in recent World Bank documents in Appendix B are successfully resolved.

2. Description of Pension Privatization in Eastern Europe

Due to almost universal coverage of public pension schemes, complete termination of existing PAYG systems, as was done in Chile in 1981, would imply tremendous transition costs that no country in Eastern Europe could have afforded. Reforming countries thus opted for scaling down of existing PAYG systems and partial pension privatization approach whereby one quarter to one third of existing PAYG contribution was diverted from public pension system to newly created MPFs based on full funding and individual accounts. Multi-pillar architecture was also expected to provide better diversification of retirement income sources than the exclusive reliance on MPFs as in Chile (World Bank, 1994).[1]

It should be stressed that MPFs were introduced in Eastern Europe under fundamentally different circumstances than in Denmark or Australia for example. Both Denmark and Australia were running Beveridge-style public pension schemes designed to enable poverty prevention in old age. Introduction of MPFs in these countries was implemented

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[1] World Bank recommended a three-pillar pension reform approach: pillar one being public defined-benefit PAYG pension system, pillar two being mandatory private fully funded defined-contribution pension funds and pillar three consisting of voluntary private retirement saving arrangements.

by legislating additional pension contributions on top of existing tax wedges on labor, the so called *add-on approach*. Rather modest public pension schemes focused on poverty prevention allowed enough fiscal space for additional contribution levies to be imposed without creating excessively high overall burden on labor incomes. However, Eastern European countries were running Bismark-style earnings-related pension systems focused on income replacement in retirement. These rather generous public pension systems did not leave enough fiscal space for additional private pension contributions to be charged on top of the existing tax wedges on labor. Instead, existing PAYG pension contributions had to be partially diverted from the first public pillar to the newly created private second pillar, the so called *carve-out approach*. Crucial difference between these two approaches is that the carve-out approach creates a huge revenue shortfall in the public PAYG system. This revenue shortfall or *transitional deficit* has to be financed over the next four to five decades until corresponding accrued PAYG liabilities, the so called *implicit pension debt*, are serviced in full. In this paper we will use the term *pension privatization* to exclusively denote the carve-out approach to introducing MPFs.

Table 1 – Dynamics of pension privatization in Eastern Europe

Country	Pillar 2 Inception	Pillar 2 contribution rate, % of wage		
		At Inception	**2007**	**2012**
Hungary	Jan 1998	6.0	8.0	0.0
Poland	Jan 1999	7.3	7.3	2.3
Latvia	Jul 2001	2.0	8.0	2.0
Bulgaria	Apr 2002	2.0	5.0	5.0
Croatia	May 2002	5.0	5.0	5.0
Estonia	Jul 2002	6.0	6.0	6.0
Lithuania	Jun 2004	2.5	5.5	1.5
Slovakia	Apr 2005	9.0	9.0	4.0
Macedonia	Feb 2006	7.4	7.4	7.4
Romania	May 2008	2.0	n.a.	3.5
AVERAGE		**4.9**	**6.8**	**3.7**

Notes: Estonia is the only country which partially relied on the add-on approach – MPFs' contributions totaled 6% of gross wages with 4% being diverted from the PAYG system and 2% representing additional contributions for workers participating in the second pillar. Lithuania implemented a quasi-mandatory second pillar whereby workers were allowed to voluntary opt-in but could not opt-out afterwards.

Since inception, many reforming countries have been progressively increasing the second pillar contribution rate over the years, thus consequently increasing the revenue shortfall in the public PAYG system. This trend lasted until 2008 when the global economic crisis triggered fiscal destabilization of many European countries. Eastern European countries have been hit especially hard by the recent crisis and also had to cope with financing significant pension privatization transitional deficits which in 2010 equaled 1.1% of GDP in Estonia, 1.2% of GDP in Slovakia, 1.4% of GDP in Hungary, 1.7% of GDP in Poland and 2.3% of GDP in Latvia (Egert, 2012). Faced with severely strained public finances, several reforming countries - Poland, Latvia, Lithuania, Estonia and Slovakia - have temporarily or permanently reduced the amount of pension contributions diverted to MPFs. Hungary decided to nationalize MPFs and completely terminate the second pension pillar in 2011.

3. Known weaknesses of pension privatization

Even before pension privatization was implemented in Eastern Europe opponents of this iconoclastic reform approach have been stressing two major problem areas – high administration costs of private pension funds during the accumulation phase and inability of private markets to efficiently provide (inflation indexed) longevity insurance during the payout phase of retirement saving (Beattie and McGillivray, 1995; Barr, 2000; Orszag and Stiglitz, 2001). To date no reforming country in Eastern Europe has been able to adequately regulate the second pillar payout phase and to develop efficient private provision of (inflation indexed) annuity products. First generations of second pillar beneficiaries are thus withdrawing their accumulated savings via *programmed withdrawals* which don't provide any longevity insurance. This represents a major structural deficiency since Diamond and Orszag (2005) highlight the insurance against longevity risk as the major goal of mandatory pension insurance programs.

In the 2007-2008 period MPFs charged contribution fees of about 4% on average and annual management fees averaged 1% of accumulated assets.[2] By 2012 the (unweighted) average contribution fee was reduced to about 2% while annual management fees averaged 0.8%. The recent fee reductions were driven not only by market forces but also by the political discontent over less than satisfactory second pillar performance, as we elaborate bellow. On top of accumulation phase expenses one should add the cost of purchasing (inflation indexed) life annuities at retirement, which could reasonably stand in the 5 to 10% range (European Commission, 2008) if/when Eastern European countries manage to develop adequate private provision of the payout phase. Existing second pillar operating fees thus imply the ultimate reduction of beneficiaries' retirement income by about 20% or more.

Second pillar fees have been persistently high throughout Eastern Europe despite the fact that the organization of MPFs industry significantly differs across countries. Hoping to benefit from fierce competition, early reformers such as Poland and Hungary have been encouraging financial companies to enter the second pillar market. Thus there were 19 MPFs operating in Hungary and 15 operating in Poland in 2007. On the other extreme, late reformer FYR Macedonia was hoping to benefit from economies of scale and has thus licensed only two mandatory private pension funds. Remaining countries are in between, with four MPFs operating in Croatia, six in Estonia and Slovakia, seven in Lithuania, eight in Bulgaria and nine in Latvia in 2007.

Although it was hoped that MPFs would be able to significantly reduce management fees in the medium term after recovering fixed start-up costs, international experiences from other countries are not very encouraging. Contribution fees in Chile averaged 20% in 2004, more than two decades after pension privatization (Arenas De Mesa and Mesa-

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[2] When analyzing private pension funds fees it should be stressed that contribution fees linearly reduce the ultimate value of accumulated savings while annual management fees exponentially reduce retirement savings due to their compounding effect from one year to another. Thus a 1% contribution fee translates into a 1% reduction of accumulated savings at retirement while a 1% annual management fee translates into a 20% reduction in retirement savings over a 40-year saving horizon (Whitehouse, 2001).

Lago, 2006). Similarly, two decades after the introduction of MPFs in Australia annual management fees averaged 1.2% of accumulated assets in 2011 (Rice-Warner Actuaries, 2012). Second pillar operating expenses should be sharply contrasted with PAYG expenses which average about 1% of contributions in most Eastern European countries. Furthermore, public pension reserve funds in developed countries such as Canada or Norway are able to manage pension savings much more efficiently with annual management fees averaging about 0.1% of assets (without any tangible deterioration of investment performance). Significant operating expenses thus represent a major structural weakness of the pension privatization approach. It is unlikely that management costs can be reduced significantly in the medium term, without sacrificing investment performance, since they don't seem to be driven by the fixed start-up costs but by the economically inefficient organization of the second pillar itself (Orszag and Stiglitz, 2001).

4. Performance of mandatory private pension funds in Eastern Europe

The well-known Samuelson-Aaron Theorem provides the framework for comparing performance of PAYG and funded pension systems. Funded pension systems are more efficient and provide higher benefits for the same level of contributions only if the rate of return on accumulated assets is higher than GDP growth (Samuelson, 1958; Aaron, 1966).[3] A major motivation for implementing pension privatization is precisely the fact that (gross) returns on capital are in general tangibly higher than GDP growth.[4] This would imply that fully funded private pension funds are able to provide higher rates of return for their beneficiaries than public PAYG pension systems, *ceteris paribus*. However, three important remarks have to be stressed. First, we should be analyzing net returns after the deduction of operating expenses, and we have seen in the previous section that second pillar operating expenses are much higher than PAYG operating expenses. Second, rate of return comparisons in general need to be adjusted for the underlying risk, and returns on capital are inherently more volatile and more risky than PAYG returns and GDP growth.

Most importantly, the Samuelson-Aaron Theorem provides a Pareto criterion for comparing the performance of PAYG and funded systems only in the case of *blank* pension landscape. This theorem can thus only be applied in countries such as Australia or Denmark where the *add-on approach* was used to introduce MPFs on top of the existing Beveridge-style public pension systems. Samuelson-Aaron criterion is not applicable in the case of *carve-out approach* in Eastern Europe since partial termination of existing Bismarck-style public pension systems creates transitional deficits in order to honor previously accrued PAYG liabilities (the implicit pension debt). It is impossible to implement a Pareto improving carve-out approach since transition generations have to bear the transition costs and be financially worse-off in order for future generations to

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[3] Samuelson-Aaron Theorem actually refers to the growth rate of covered wages, which can be approximated with GDP growth for all practical purposes. For simplicity we ignore the fact that PAYG rate of return is actually slightly higher than GDP growth in aging populations (Settergren and Mikula, 2005).

[4] Abel et al (1989) empirically show that real-world countries are *dynamically efficient*, i.e. that the return to capital is higher than GDP growth in practice.

potentially benefit from pension privatization.[5] Pension privatization can thus be justified only if society values the welfare of future generations significantly more than the welfare of current generations and if second pillar returns are *significantly* higher than PAYG returns.[6] It is impossible to unambiguously define the margin by which the second pension pillar should outperform GDP growth in order to justify pension privatization since this margin is driven by the hardly quantifiable social preferences. As a rough benchmark, at the time when pension privatization was being implemented, workers in many reforming countries were told that second pillar returns should outperform wage growth by about 2 percentage points on average.[7]

We will analyze second pillar performance by looking at the annual changes in pension funds' *unit values* which measure gross rates of return net of annual management fees. We will also use realized GDP growth rates as proxies for PAYG rates of return. It should be noticed that tracking unit values actually overstates second pillar performance since this approach doesn't take into account contribution fees and annuity purchase fees. We have nonetheless opted for this approach since the inclusion of front-loaded contribution fees could be criticized when conducting performance measurements for periods shorter than the anticipated 40-years of career length. Similarly, we have not included any costs associated with providing adequate longevity and inflation insurance during retirement since no Eastern European country has thus far been able to adequately regulate the second pillar payout phase. Initial performance of second pillar pension funds is summarized in Table 2, while detailed annual data is provided in Appendix A.

Table 2 – Initial performance of second pension pillar in Eastern Europe, in %

Country	Second Pillar Inception	Since inception until end-2007			Since inception until end-2012			Standard deviation	
		2nd pillar	GDP	Diff	2nd pillar	GDP	Diff	2nd pillar	GDP
Hungary	Jan 1998	2.6	3.6	-1.0	1.4	2.4	-0.9	9.3	3.1
Poland	Jan 1999	8.2	4.1	4.1	5.4	3.9	1.5	9.2	1.8
Latvia	Jul 2001	-2.3	9.5	-11.8	-1.5	4.1	-5.7	8.8	8.2
Bulgaria	Apr 2002	4.3	6.3	-2.0	0.3	3.5	-3.3	9.5	3.9
Croatia	May 2002	4.5	4.8	-0.4	2.6	1.6	1.0	7.3	4.1
Estonia	Jul 2002	3.4	8.1	-4.7	-0.2	3.7	-3.9	11.6	7.2
Lithuania	Jun 2004	2.4	8.3	-5.9	-0.1	3.1	-3.1	12.2	7.4
Slovakia	Apr 2005	1.1	8.7	-7.6	-1.2	4.3	-5.6	3.8	4.7
Macedonia	Feb 2006	2.7	5.6	-2.9	1.8	2.9	-1.1	8.2	2.7
Romania	May 2008	n/a	n/a	n/a	5.7	-0.2	5.9	4.5	5.1
AVERAGE		**3.0**	**6.6**	**-3.6**	**1.4**	**2.9**	**-1.5**	**8.4**	**4.8**

Notes: Average performance is based on geometric averaging. Calculations appropriately take into account cases where second pillar inception was in mid-year. Data for Hungary concludes with 2010.

[5] PAYG pension systems represent intergenerational transfer of resources – financial gains of early generations are exactly equal to financial losses of all future generations (Geanakoplos et al, 1998). It is thus impossible to terminate a mature PAYG system in a Pareto improving manner.

[6] The prevalence of PAYG pension systems throughout the 20th century actually implies opposite social values – welfare of current generations has been given preference over the welfare of future generations.

[7] Altiparmakov (2011) uses some standard financial feasibility calculations to show that Serbia should outright dismiss the idea of pension privatization if second pillar net returns cannot be expected, with high certainty, to outperform GDP growth by 1.8 percentage points throughout the 21st century.

Data for the first 15 years of pension privatization in Eastern Europe reveals very disappointing second pillar performance. In all but three countries, Poland, Croatia and Romania, second pillar returns were lower than PAYG returns. Furthermore, Romania has only recently introduced second pillar, after the emergence of global financial crisis, which makes the data for this country statistically unreliable for extrapolating long-term trends or drawing firm conclusion. Also, the Croatian data is somewhat upward biased due to politically motivated inflation of second pillar returns in the inception year.[8] It is especially disappointing that MPFs in Estonia, Latvia, Lithuania and Slovakia posted negative real returns, while the returns in Bulgaria were barely positive.

While realized returns were much lower than expected, we can notice that the volatility of second pillar returns is, in line with expectations, tangibly higher than GDP volatility.[9] This echoes the fact that returns to capital are inherently more volatile and risky thus requiring an appropriate downward risk adjustment when being compared against less volatile PAYG returns (Geanakoplos et al, 1998; Orszag and Stiglitz, 2001). Realized second pillar returns were however so disappointing that they were lower than PAYG returns even without the appropriate downward risk adjustment. It should be noticed that poor second pillar performance is not driven by the global financial crisis since even before the crisis only Polish second pillar funds were able to outperform GDP growth.[10] In order to analyze this issue more carefully we break down MPFs' investment portfolios into four major asset classes.

Table 3 – Portfolio structure of mandatory private pension funds, end-2007

Country	Assets, % of GDP	2nd pillar portfolio structure			
		Gov't bonds	Equities	Bank deposits	Other
Hungary	7.8%	58.5%	32.8%	0.9%	7.9%
Poland	11.9%	59.9%	34.9%	2.9%	2.3%
Latvia	1.6%	33.4%	24.3%	42.1%	0.2%
Bulgaria	2.1%	18.5%	28.3%	16.2%	37.0%
Croatia	6.7%	63.6%	26.7%	2.2%	7.4%
Estonia	4.5%	31.0%	40.0%	8.0%	21.0%
Lithuania	1.7%	29.6%	39.3%	17.5%	13.6%
Slovakia	2.8%	49.6%	15.1%	30.5%	4.8%
Macedonia	0.9%	59.9%	21.6%	18.5%	0.0%

Source: Altiparmakov (2011).
Note: We analyze end-2007 data since later data could be considered biased due to the emergence of global financial crisis. *Other assets* include corporate and municipal bonds, and also "investments abroad" for countries where these investments are treated separately (Bulgaria and Croatia).

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[8] Issuance of government bonds at extraordinarily high discount has artificially inflated second pillar real returns to 15% per annum in the inception year in Croatia (Matkovic et al, 2009). Excluding inception year returns from performance calculations reduces real returns from 2.6% to 2.0% over the 2003-2012 period.

[9] Low volatility of returns in Romania and Slovakia are exceptions. As mentioned, second pillar has been introduced in Romania after the emergence of global financial crisis and cannot be considered representative. Since 2009 MPFs in Slovakia are required to cover, from own capital, any negative nominal returns to retirement savings. This stringent regulation has induced pension funds to mostly invest in low-risk assets with a correspondingly low, even negative, level of real returns.

[10] Bielecki (2011) shows that second pillar returns net of all fees were actually lower than PAYG returns in Poland over the 1999-2010 period. As mentioned, we will not be deducting front-loaded contribution fees from second pillar returns in this article to avoid any methodological ambiguities.

We can notice that the majority of MPFs' assets have been invested in government bonds, which at the end of 2007 accounted for over 50% of portfolios in Central Europe and about 30% of portfolio values in the Baltic States.[11] Lower investments in government bonds in the Baltic States reflect, *inter alia*, more liberal regulations with respect to investments abroad. On the other hand, Central European countries adopted strict limitations to investing abroad, hoping to use most of the accumulated mandatory retirement saving to finance domestic investments and accelerate economic growth.

Investments in government securities seemed to solve both investment challenges of MPFs and government financing problems. Faced with shallow and undeveloped capital markets in transitioning Eastern European economies on one side and limitations on investments abroad on the other, government bonds represented a natural investment choice for MPFs. At the same time, Eastern European governments have realized that transitional deficits have been seriously underestimated and neglected during the preparatory stage of pension privatization (Drahokoupil and Domonkos, 2012). Faced with the task of financing significant transitional and budget deficits, issuing bonds and borrowing from cash-rich MPFs was a quick-fix solution for government finances. These short-term partial solutions however gave rise to a suboptimal allocation of resources from the overall national perspective.

Government bonds have been for decades representing a crucial pension funds' investment instrument in most developed countries. However, the pension privatization environment in Eastern Europe is not directly comparable with that of developed countries, not the least because participation in private pension funds is voluntary in most developed countries implying different intra- and inter-generational distribution of risks and benefits compared to the mandatory carve-out participation in Eastern Europe. In the context of the carve-out pension privatization, beneficiaries' welfare would have been higher if MPFs' assets invested in government bonds had not been diverted from the PAYG system in the first place. Diverting first pillar PAYG contributions to the second pillar only to have MPFs invest the money back to the government represents a very expensive form of PAYG financing which we refer to as *disguised-PAYG* financing.

Timing of payments and receipts are the same under disguised-PAYG and traditional PAYG financing. However, traditional PAYG financing strictly dominates disguised-PAYG financing due to hefty second pillar management fees. Inferiority of disguised-PAYG financing is most obvious exactly in the case of Poland which runs an NDC first pension pillar.[12] Beneficiaries would have been better off if instead of diverting 7.3 p.p. of PAYG contributions to second pillar - 60% of these contributions remained in the NDC PAYG system and only 40% were transferred to private pension funds (provided second pillar funds kept their non-government portfolio allocations unchanged). In this case beneficiaries could have earned a notional rate of return in the first pillar NDC

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[11] Until mid-2006 second pillar funds in Bulgaria were required to invest at least 50% of assets in government bonds. After the restriction was abolished portfolio allocations were swiftly reshuffled so that government bonds accounted for less than 20% of assets by the end of 2007.
[12] NDC stands for Notional Defined Contribution – a PAYG scheme that mirrors the functioning of private fully-funded defined contribution pension funds.

accounts by about 0.5% per annum higher than what they have been earning in the second pillar DC accounts – due to the absence of second pillar management fees.[13]

It should be stressed that sub-optimality of disguised-PAYG financing is not restricted only to countries running an NDC first pension pillar – it applies to all instance of carve-out pension privatizations since NDC systems, point systems and traditional defined-benefit systems are basically equivalent forms of PAYG financing (Whitehouse, 2001).[14] Disguised-PAYG financing thus represents a major structural deficiency of pension privatization in Eastern Europe which not only reduces beneficiaries' welfare but also increases public debt, an issue we explore in Section 7.[15]

5. Macroeconomic side-effects of pension privatization

Besides improving long-term sustainability, pension privatization was expected to bring significant side-effect economic benefits including increased national saving and accelerated economic growth. In this section we use reduced-form regression models to investigate whether pension privatization was able to produce statistically significant improvements in these two areas.

We use a balanced panel of annual data over the 1998 to 2012 period for 10 Eastern European countries for which comparable macroeconomic data was available from the Eurostat database.[16] Pension privatization is modeled by the percentage points of pension contributions diverted from the PAYG system into the second pillar in any particular year. This allows us to capture the variability of second pillar size over different countries as well as the second pillar variability within the country. Panel regression with fixed country effects was used to estimate second pillar effects.

Table 4 presents results from the national saving regression. GDP growth rate, unemployment rate, inflation and domestic investment (as % of GDP) were used as control variables. Except for the GDP growth rate, all other control variables are found to be statistically significant and broadly in line with expectations – higher inflation rate was found to discourage saving, uncertainty associated with higher unemployment was found to increase (precautionary) saving, while domestic investment was found to be positively correlated with national saving rate in line with Feldstein-Horioka puzzle. The effect of pension privatization on national saving rate was found to be insignificant.

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[13] Annual management fees in Poland stood at 0.54% per annum in the pre-crisis period and have gone down to 0.45% by the end of 2012. Similarly, contribution fees have been reduced from 7% in 2007 to 3.5% of contributions in 2012.

[14] While different forms of PAYG financing are equivalent in economic terms, political aspects might differ, which could result in different distributions of the aging burden across cohorts.

[15] Disguised-PAYG financing could also increase labor market distortions since it replaces pension contributions with tax levies and thus completely breaks the link with potential pension benefits.

[16] Countries included in the panel analysis are Hungary, Poland, Latvia, Estonia, Lithuania, Romania, Bulgaria, Slovakia, Czech Republic and Slovenia.

Table 4 – National saving regression results

Dependent Variable: NATIONAL SAVING
Method: Panel Least Squares
Date: 01/14/14   Time: 00:23
Sample: 1998 2012
Periods included: 15
Cross-sections included: 10
Total panel (balanced) observations: 150

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	13.39954	2.341844	5.721788	0.0000
GROWTH RATE	-0.066835	0.048670	-1.373212	0.1720
UNEMPLOYMENT	0.180773	0.080988	2.232093	0.0273
INFLATION	-0.116444	0.036685	-3.174112	0.0019
INVESTMENT	0.208760	0.069160	3.018500	0.0030
SECOND PILLAR	0.051941	0.102959	0.504481	0.6147

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.651610	Mean dependent var	19.62533
Adjusted R-squared	0.615481	S.D. dependent var	3.954153
S.E. of regression	2.451955	Akaike info criterion	4.726288
Sum squared resid	811.6309	Schwarz criterion	5.027351
Log likelihood	-339.4716	Hannan-Quinn criter.	4.848600
F-statistic	18.03550	Durbin-Watson stat	0.769244
Prob(F-statistic)	0.000000		

The emergence of disguised-PAYG financing no doubt contributed to the absence of positive effects on national saving since debt financing of transitional deficits is unlikely to increase national saving (World Bank, 2014, page 117). However, it should be noticed that national saving increase was also absent in the Baltic States where disguised-PAYG financing was much less pronounced. This indicates that other factors, such as the substitution of voluntary retirement savings with mandatory ones, might have played a role as well. This issue should thus be explored in more detail in the future.

Dragutinovic-Mitrovic and Ivancev (2010) analyze growth performance of Eastern European countries in the second decade of transition and find statistically significant effects of macroeconomic stabilization policies (captured by the rate of inflation), public sector reforms (captured by the share of government expenditures in GDP) and foreign trade liberalization (captured by the share of imports and exports in GDP). We extend their model with the second pillar explanatory variable – Table 5. All the control variables are found to be statistically significant and in line with expectations. The effect of pension privatization on economic growth was found to be negative and statistically significant. Testing alternative regression specifications can produce one or two specifications with a statistically insignificant effect of pension privatization. However, no regression specification has been found to suggest statistically significant positive effects of pension privatization. Thus, we can conclude that the absence of positive effects of pension privatization on economic growth is a fairly robust empirical result.

Table 5 – Economic growth regression results

Dependent Variable: GDP GROWTH RATE
Method: Panel Least Squares
Date: 01/13/14   Time: 19:22
Sample: 1998 2012
Periods included: 15
Cross-sections included: 10
Total panel (balanced) observations: 150

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	21.06608	5.213733	4.040499	0.0001
EU-15 GROWTH	1.248551	0.125435	9.953757	0.0000
INVESTMENT	0.256400	0.061817	4.147699	0.0001
FOREIGN TRADE	0.034820	0.015427	2.257061	0.0256
GOVT EXPENDITURES	-0.685004	0.089087	-7.689171	0.0000
INFLATION	-0.099223	0.039630	-2.503746	0.0135
SECOND PILLAR	-0.292287	0.104752	-2.790270	0.0060

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.715471	Mean dependent var	3.520627
Adjusted R-squared	0.683620	S.D. dependent var	4.550892
S.E. of regression	2.559770	Akaike info criterion	4.818250
Sum squared resid	878.0244	Schwarz criterion	5.139384
Log likelihood	-345.3687	Hannan-Quinn criter.	4.948716
F-statistic	22.46353	Durbin-Watson stat	1.290991
Prob(F-statistic)	0.000000		

Empirical analysis in this section suggests the absence of macroeconomic improvements associated with pension privatization in Eastern Europe. This conclusion is in line with earlier findings of the World Bank Independent Evaluations Group (2006) that secondary objectives of pension privatization "have remained largely unmet". The absence of side-effect benefits further added to the discontent over disappointing second pillar performance, thus reinforcing the likelihood of reform reversals.

6. Political aspects of pension privatization

Proponents of pension privatization have been arguing that MPFs would be insulated from fiscally irresponsible political influences which were seen as a contributing factor to insolvency of PAYG schemes in many countries (World Bank, 1994). On the other hand, opponents of pension privatization were stressing that retirement income provision presents such a crucial segment of modern societies that making it immune to political interferences was highly unrealistic (Orszag and Stiglitz, 2001; Barr, 2000). In fact, even in the case of the ground-breaking complete pension privatization in Chile the pension system failed to be immune from political interference. Inability of MPFs to provide adequate protection against old-age poverty created social discontent and political pressures that in 2008 lead to the introduction of non-contributory tax-financed social

pensions. Partial pension privatization efforts in Eastern Europe have proven to be even more susceptible to political interference.

Carve-out pension privatization in Eastern Europe was marked with fierce political debates (Mueller, 2003). Second pillar thus never gained cross-party consensus or broad-based support from social partners. Interestingly enough, when disappointing results started to emerge, it was not only political parties that have opposed pension privatization but also parties that championed second pillar introduction – that started to express the discontent and to contemplate reform reversal plans.

In Croatia it was the right-wing HDZ party that initiated and pushed strong for pension privatization in the late nineties. Nonetheless, the prime-minister and minister of finance from HDZ party were the first to declare "second pillar a failure" and introduce reform reversal plans onto political agenda in early 2009. Their initiative met strong and well organized resistance from the local financial community. Faced with the possibility of suffering sizeable political damage, HDZ party backed down from the reform reversal initiative even before a productive critical assessment of pension privatization results could be initiated.

Similarly, it was a right-wing PO party that championed pension privatization in Poland in the late nineties. However, faced with the problems of disguised-PAYG financing and increasing public debt, PO party initiated critical assessment of second pillar performance in 2011. Although faced with strong resistance, PO party kept its course and after fierce professional and political debates implemented significant reform reversals in 2013. Amendments to second pillar regulations were aimed at eliminating the disguised-PAYG financing - second pillar contribution rate has been reduced from 7.3% to 2.9% of wages, mandatory private pension funds were forbidden to invest in government securities and outstanding government bonds were transferred from second pillar to the first NDC pillar, effectively reducing the public debt by about 9% of GDP.

Right-wing FIDESZ party has been a long-time opponent of pension privatization in Hungary. When it took power in 2009 it started contemplating possible reform reversal plans. Disguised-PAYG financing was an issue in Hungary as well, with over 60% of second pillar assets being invested in government bonds. Furthermore, private insurers were unsuccessful at providing adequate (inflation-wage-indexed) annuity contracts for the first generations of second pillar retirees. In 2010 FIDESZ government decided to nationalize MPFs and effectively terminate the second pillar. However, the most radical reform reversal in Eastern Europe did not face major political resistance since the opposition Socialist party, which introduced MPFs in 1998, was itself contemplating possible reform reversal plans to address the disappointing second pillar performance.

Left-wing SMER party has been opposing pension privatization efforts all along in Slovakia. When it took power in 2008, SMER party tried to reduce the amount of contributions diverted to MPFs which amounted to 9% of wages and was the highest second pillar contribution rate in Eastern Europe at the time. Faced with strong resistance from the local financial community and right-wing parties which introduced MPFs in

2005, SMER government had to settle with the alternative reform plan – second pillar contributors were given a limited opportunity to opt-out, the cap on management fees was significantly reduced from 0.7% to 0.3% of assets and MPFs were required to guarantee non-negative nominal returns to beneficiaries. This represents one of the best examples of a counterproductive political debate surrounding reform reversal plans. In particular, common citizens can hardly be expected to rationally decide whether they should opt-out or remain in the second pension pillar, especially given significant policy uncertainty regarding future prospects of the Slovakian pension system. The combination of low management fees and non-negative returns guarantee resulted in extremely conservative investment portfolios which generated negative real returns. After a land-slide election victory in 2012, SMER party implemented its original reform reversal plan and reduced second pillar contribution rate from 9 to 4% of wages.

All Baltic States have temporarily or permanently reduced second pillar contribution rates during the recent economic crisis. Estonia had temporarily reduced the contribution rate from 6% to 2% in 2009, but has increased it back to 6% by 2012. Lithuania has reduced the second pillar contribution rate from 5.5% to 2% in 2009 and is considering a combination of carve-out and add-on approaches to financing second pillar in the coming years. Latvia has reduced the second pillar contribution rate from 8% to 2% in 2009 and plans to increase second pillar allocations in the coming years, after public finances are stabilized. Political turbulences regarding second pillar retrenchment seem to have been more modest in the Baltic States. Nonetheless, reform disputes were present as, for example, Lithuanian Constitutional Court was asked to forbid the decrease of second pillar contributions.

Czech Republic did not introduce second pillar before the emergence of the global financial crisis and has instead focused on the development of the voluntary private pension fund industry (third pillar). Contrary to regional reform reversal trends, center-right government introduced second pension pillar in early 2013.[17] In doing so, the center-right government overruled presidential veto and dismissed opposition Social-Democrats threats to dismantle the second pillar after winning the elections. In early 2014, the new government lead by Social-Democrats has taken actions to dismantle the second pension pillar by 2016.

It seems that pension privatization in Eastern Europe was anything but immune to political interference and disputes. In fact, it might have degraded the quality of public and political discussions regarding pension system sustainability by introducing one more actor into the political arena – second pillar management companies. While protecting their legitimate profit interest, second pillar funds have often been opposing reform measures that would likely improve the welfare of all citizens – such as the elimination of disguised-PAYG financing in Poland.

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[17] Second pension pillar in the Czech Republic is quasi-mandatory and is comprised of 3% *carve-out* contributions and additional 2% *add-on* contributions for workers which decide to opt-in.

7. Concerns over reform reversals

Several international institutions, including the World Bank and OECD, have raised concerns over recent reform reversals in Eastern Europe, most notably in Poland and Hungary. The concern is that reform reversals represent short-sighted policies that improve short-term fiscal position at the cost of deteriorating long-term pension sustainability. In particular, World Bank (2014, page 145) states that reversing pension privatization "addresses the short-term problem at the cost of significantly worsening the long-term fiscal situation, reducing the future pensions of individuals, or a combination of both". In this section we evaluate the validity of these concerns and investigate the arguments behind them.

When analyzing second pillar retrenchment in Poland, OECD notes that "the increased role of the public pay-as-you-go system in a context of rapid population ageing may further lower future replacement rates" (OECD, 2014, page 18). However, it seems unlikely that terminating suboptimal second pillar disguised-PAYG financing and replacing it with first pillar NDC PAYG financing would result in lower future replacement rates. In fact, the elimination of hefty second pillar management fees should improve pension system sustainability without reducing future entitlements, or equivalently, pension entitlements could be improved without deteriorating long-term sustainability.[18] OECD concerns are based on the OECD Working Paper (Egert, 2012) which makes alternative simulations 200 years into the future and identifies that Polish reform reversal might lead to the deterioration of pension system sustainability in some (pessimistic) scenarios. However, it seems ill-advised to base the assessment on inherently unreliable 200-year long projections when the crucial information on Polish reform reversal is already available at hand.[19] If disguised-PAYG financing is indeed inferior to traditional PAYG financing, as we have been suggesting in this paper, then Polish reform reversal can not lead to the deterioration of pension system sustainability under any simulation scenario.

World Bank (2014, page 146) states that the "asymmetry in the treatment of explicit and implicit debt is at the heart of the incentives for reversing pension reforms". It should be noted that the asymmetrical treatment is well deserved due to significant differences between these two and the fact that implicit pension debt is likely to be more easily manageable than explicit public debt (Franco, 1995; Franco et al, 2006). Nonetheless, even if implicit and explicit debt were treated equally within the SGP framework, disguised-PAYG financing would still be dominated by NDC PAYG financing due to the absence of hefty management fees. Thus, incentives for eliminating disguised-PAYG financing go beyond statistical treatment of implicit and explicit debt and rest on the possibility to increase pension benefits without deteriorating long-term sustainability.

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[18] Eliminating disguised-PAYG financing allows Polish workers to earn notional interest on their NDC accounts equal to (interest on government bonds + second pillar management fees) without deteriorating pension system sustainability.

[19] The reliability of demographic projections significantly deteriorates for projection periods over 50 years, not to mention that economic and financial projections' reliability deteriorates even faster.

Disguised-PAYG financing was a major issue in Hungary as well since more than 60% of second pillar assets were invested in government bonds. Hungary however opted for a more radical reform reversal whereby not only disguised-PAYG financing was eliminated but second pension pillar was terminated altogether. Complete pension privatization reversal has several potential advantages over partial reversal aimed only at eliminating disguised-PAYG financing.

Under reasonable assumptions, workers should save (at least) 20% of their wages during the working career in order to afford adequate consumption smoothing in retirement. A very small second pillar with a contribution rate of only about 3% provides rather poor diversification of retirement income against the public PAYG system. Furthermore, pension fund business is a fixed cost per account business (Schwartz, 2011), which means that second pillar fees could become even higher and eat up more retirement savings as second pillar contributions get smaller. Also, complete nationalization solves the second pillar payout phase problem which Eastern European countries were unable to adequately solve using private market instruments. In fact, recent reforms in Poland prescribe that the government will become responsible for paying out second pillar savings in order to allow adequate inflation and longevity insurance.[20] The final argument in favor of complete reform reversal is the fact that second pillar returns in Hungary, as in most Eastern European countries, were lower and more volatile than PAYG returns.

Latvia and Lithuania have permanently reduced second pillar contribution rates in recent years. The disguised-PAYG financing is not a major issue in the Baltic States, although it is present to some extent in Latvia. The most troublesome aspect of Latvian and Lithuanian second pillars are the disappointing returns which were not only lower than PAYG returns, but were in fact negative in real terms. Latvian real returns are especially troublesome since they were significantly in the negative territory even before the global financial crisis. Negative real rates of return can not possibly produce decent replacement rates which were anticipated at the time of pension privatization. Thus, reducing the second pillar contribution rate and relying more heavily on the first NDC pillar makes sense in Latvia given the extremely poor performance of mandatory private DC funds.[21] Although Lithuanian PAYG pillar is not NDC but traditional defined benefit, a similar argument for downsizing second pillar can be made in Lithuania as well due to the disappointing performance of MPFs.

The recent economic crisis can best be described as a catalyst, not necessarily a major driver, behind reform reversals. At the time when pension privatizations were being implemented the issues of financing multi-decade transitional deficits and critically assessing known weaknesses of this reform approach were not properly addressed. The recent economic crisis merely brought these unresolved structural problems to the forefront (Fultz, 2012).

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[20] A similar solution had been contemplated in Hungary before MPFs were nationalized.

[21] A the time of pension privatization in Latvia it was planned that both first pillar NDC and second pillar DC contribution rates should equal 10%. Recent changes envisage a 14% contribution rate for the NDC pillar and 6% long-term contribution rate for the second pillar.

The World Bank (2014, page 144) states that pension privatization "solves a long-term fiscal problem, but it also creates discomfort during the transition, often requiring additional fiscal efforts for at least a couple of decades". However, in order for pension privatization to improve pension sustainability in the long-term two crucial preconditions have to be met – 1) disguised-PAYG financing should not dominate second pillar operations and 2) second pillar returns should be tangibly higher than GDP growth. No country in Eastern Europe has thus far been successful at fulfilling these two preconditions. Failure to fulfill them would mean that pension privatization would deteriorate short-term fiscal position without improving long-term pension sustainability. In this case reform reversals can improve short-term fiscal balances without necessarily deteriorating long-term sustainability.

Reform reversals in any area are never popular or easy decisions. In our case, reform reversals "might well damage social trust in the pension system" (OECD, 2014, page 18). However, it would ill-advised to bear the burden of transitional deficits for 40 years or more only then to realize that pension privatization has not improved pension system sustainability. Critical evaluations of pension privatization strengths and weaknesses seem to have been absent in many Eastern European countries at the time when this reform approach was being implemented. The recent economic crisis might have created a good incentive to correct this and undertake thorough assessment based on 15 years of data and reform experiences from Eastern Europe. If major structural deficiencies identified in this paper are unlikely to be successfully resolved, reforming countries would be well advised to consider reform reversals instead of maintaining suboptimal pension system design throughout the 21st century.

8. Policy lessons

The problems of disguised-PAYG financing and low second pillar returns bellow GDP growth have already been documented in the literature, for example Impavido and Rocha (2006) in the case of Hungary. However, these were mostly considered as isolated cases or exceptions to the general trend of impressive second pillar performance. In fact, World Bank (2009) incorrectly asserts that MPFs in Eastern Europe were able to outperform GDP growth before the global financial crisis.[22] As we shown, only Polish second pillar was able to outperform GDP growth before the emergence of global financial crisis, largely due to the disguised-PAYG financing. At the end of 2012 government debt securities accounted for 65% of second pillar assets in Croatia and Macedonia and 75% in Romania. The problem of disguised-PAYG financing is less pronounced in other countries where the main concern is the low level of second pillar returns – negative real returns in the Baltic States and Slovakia and barely positive real returns in Bulgaria.

Less than satisfactory second pillar returns have lead many countries to amend investment regulations and consider more liberal limits to investments abroad, expansion

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[22] Appendix B describes data inconsistencies in recent World Bank documents that describe second pillar performance in Eastern Europe.

of alternative risk-return portfolios and introduction of life-cycle investment strategies. However, from national point of view, the most important aspect of second pillar portfolios that should be addressed is the presence of suboptimal disguised-PAYG financing. Baltic States, where disguised-PAYG financing is not a major issue, should reconsider the organization of MPFs operations since second pillars in these countries are posting negative real returns while charging highest management fees in Eastern Europe which stood at 1.5% of assets in Latvia and Estonia and 1% in Lithuania in 2012.

Groundbreaking pension privatization in Chile was preceded with draconian austerity measures that produced surplus of 8% of GDP in the non-pension part of the public sector (Arenas De Mesa and Mesa-Lago, 2006). This huge surplus allowed for non-debt financing of transitional deficits and precluded the domination of disguised-PAYG financing. However, other reforming countries were mostly unsuccessful at implementing appropriate austerity measures to support pension privatization "resulting to a large extent on a debt-financed transition and relatively large issues of Government bonds, which ended up in the portfolios of pension funds" (Impavido and Rocha, 2006, page 8).

Lack of political support for strict and long lasting austerity measures required to preclude the emergence of disguised-PAYG financing severely undermines the feasibility of carve-out pension privatization. A "modest second pillar, financed by about 3 percentage points diverted from the first pillar, seems to be a maximum that is politically feasible in Central-Eastern European countries" (Drahokoupil and Domonkos, 2012). However, we have mentioned that such a modest second pillar would represent a poor diversification of retirement provision and would likely be inefficient due to relatively high management costs. If current generations are not willing to make a sacrifice big enough to enable the creation of a meaningful second pension pillar, then one should consider alternative reform approaches.

Eastern European countries that have managed to significantly improve the quality of public governance since the start of the transition process could consider establishing a public pension reserve fund in line with best international practices. Well organized public pension reserve funds enable the minimization of management costs even at the relatively low level of annual funding commitments. This reform approach could be an appealing alternative to maintaining a next to meaningless second pillar in Poland with the contribution rate set at only 2.9% after the most recent changes. Given its longer investment horizon, a potential public reserve fund would also better protect beneficiaries from the risk of volatile returns, which can be expected to be considerable given the reformed portfolio structure of the Polish second pillar.[23] Countries with less than satisfactory quality of public governance could consider the option of public debt repayment, which represents an alternative form of intergenerational transfer from current to future generations.[24] Similar to pension pre-funding, public debt repayment

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[23] Poland already has a Demographic Reserve Fund that could be modernized to allow efficient management of funds currently diverted to the second pillar. This would transform the existing PAYG NDC system into a partially funded NDC system, similar to that in Sweden.

[24] Iglesias and Palacios (2000) show that establishing a public pension reserve fund is ill-advised in countries with poor quality of public governance.

would ease fiscal pressures on future generations of workers when demographic pressures escalate.[25]

In any case, disappointing second pillar performance indicates that pension sustainability in Eastern Europe, like in most Western European countries that have not resorted to carve-out pension privatization – will inevitably crucially depend on the appropriate parametric PAYG reforms. Adequately designed PAYG reforms could also contribute to increasing national saving – by reducing government deficits and creating incentives for workers to make additional voluntary retirement savings to compensate for lower PAYG benefits.

Voluntary retirement saving mechanisms should however be strictly complementary to the public pension system. Allowing workers to voluntarily choose between public PAYG provision and private second pillar seems ill-advised since common citizens neither have technical expertise nor relevant information to make a rational welfare-maximizing decision in this case. For example, many older workers which voluntarily joined Hungarian second pillar in 1998 would have been better off remaining in the PAYG system alone since their second pillar savings were not enough to compensate them for the lost PAYG benefits.

9. Concluding remarks

In order for the carve-out pension privatization to improve long-term pension sustainability two crucial preconditions have to be fulfilled - 1) disguised-PAYG financing should not dominate second pillar operations and 2) second pillar returns should be tangibly higher than GDP growth. None of the Eastern European countries have thus far succeeded in fulfilling these preconditions. Not fulfilling those means that pension sustainability will not improve even if countries are able to successfully finance 40 or 50 years of transitional deficits. In this scenario reform reversals improve short-term fiscal position without necessarily deteriorating long-term sustainability.

Not only second pillar returns were lower and more volatile than PAYG returns, but pension privatization also failed to produce anticipated side-effect benefits. Reforming countries failed to achieve any statistically significant improvements in national saving or economic growth. Instead of improving political aspects of national pension systems, pension privatization efforts seem to have degraded them. Similarly to most Western European countries that have not resorted to carve-out pension privatization, pension sustainability in Eastern Europe will inevitably have to rely on the appropriate parametric changes and PAYG reforms in the coming years.

Critical assessments of pension privatization strengths and weaknesses seem to have been absent in many Eastern European countries when this reform approach was being implemented around the turning of the millennium. Recent economic crisis unrevealed

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[25] With the exception of Estonia and Bulgaria, public debt share in GDP stands at about 40% or more in Eastern European countries.

one crucial aspect that was not properly addressed at the time – the recognition of the need to finance substantial transitional deficits over the period of 40 years or more. Recent economic crisis also created an opportunity to use the available data and experiences from Eastern Europe to conduct a detailed critical assessment of other pension privatization problem areas. If identified second pillar weaknesses are unlikely to be successfully resolved it seems reasonable to consider reform reversal plans instead of maintaining a suboptimal pension system design throughout the 21st century.

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Appendix A – Second pension pillar performance in Eastern Europe, until end-2012

		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Hungary	Nominal Returns	15.7	17.1	7.9	8.0	7.4	3.4	16.3	13.0	4.5	7.0	-20.0	23.7	7.6	n/a	n/a
	Real Returns	4.9	5.3	-2.0	1.1	2.5	-2.2	10.2	9.4	-1.9	-0.4	-22.7	17.2	2.8	n/a	n/a
	GDP Growth	4.1	3.2	4.2	3.8	4.5	3.8	4.6	4.1	3.9	0.1	0.7	-6.7	1.2	1.7	-1.7
Poland	Nominal Returns		15.1	13.0	5.7	15.3	10.9	14.2	15.0	16.4	6.2	-14.2	13.7	11.2	-4.7	16.3
	Real Returns		4.8	4.2	2.0	14.4	9.1	9.4	14.2	14.8	2.1	-16.9	9.9	7.9	-8.9	13.6
	GDP Growth		4.5	4.3	1.2	1.4	3.9	5.3	3.6	6.2	6.8	5.1	1.6	3.9	4.3	2.0
Latvia	Nominal Returns				4.9	6.3	0.3	3.8	6.7	2.8	2.5	-11.5	12.3	7.6	-2.0	9.0
	Real Returns				1.7	4.7	-3.1	-3.4	-0.3	-3.7	-10.1	-19.8	13.9	5.1	-5.6	7.3
	GDP Growth				7.3	7.2	7.6	8.9	10.1	11.2	9.6	-3.3	-17.7	-0.9	5.5	5.6
Bulgaria	Nominal Returns					14.1	11.0	11.8	7.6	7.3	15.4	-20.1	7.9	5.0	-0.4	7.5
	Real Returns					9.9	5.1	7.5	0.2	1.2	3.4	-25.5	6.2	0.5	-2.4	4.6
	GDP Growth					4.7	5.5	6.7	6.4	6.5	6.4	6.2	-5.5	0.4	1.8	0.8
Croatia	Nominal Returns					17.1	5.1	7.4	7.1	5.7	6.8	-12.5	8.7	8.6	0.5	12.3
	Real Returns					15.0	3.3	4.5	3.3	3.6	0.9	-14.9	6.7	6.6	-1.5	7.3
	GDP Growth					4.9	5.4	4.1	4.3	4.9	5.1	2.1	-6.9	-2.3	0.0	-2.0
Estonia	Nominal Returns					2.6	7.6	9.9	13.1	7.2	6.2	-24.3	12.7	9.7	-4.5	9.5
	Real Returns					0.0	6.5	4.7	9.2	2.0	-3.1	-29.2	14.6	4.1	-8.3	5.5
	GDP Growth					7.9	7.8	6.3	8.9	10.1	7.5	-4.2	-14.1	3.3	8.3	3.2
Lithuania	Nominal Returns							11.6	10.6	5.3	3.8	-19.7	17.3	8.8	-2.9	11.2
	Real Returns							8.5	7.4	0.8	-4.1	-26.0	15.9	5.0	-6.1	8.0
	GDP Growth							7.4	7.8	7.8	9.8	2.9	-14.8	1.5	5.9	3.6
Slovakia	Nominal Returns								4.5	4.6	3.7	-6.7	0.6	1.2	1.5	3.8
	Real Returns								0.8	1.1	1.3	-9.8	0.5	-0.1	-3.0	0.4
	GDP Growth								6.7	8.3	10.5	5.8	-4.9	4.4	3.2	2.0
Macedonia	Nominal Returns									6.7	8.7	-9.9	14.3	7.2	1.9	8.5
	Real Returns									3.5	2.0	-13.4	16.2	4.1	-0.9	3.6
	GDP Growth									5.0	6.2	5.0	-0.9	2.9	2.9	-0.3
Romania	Nominal Returns											10.6	17.7	15.1	3.1	10.5
	Real Returns											4.1	12.4	6.6	0.0	5.3
	GDP Growth											7.3	-6.6	-1.1	2.2	0.3

Notes: Inflation and GDP data has been taken from the IMF World Economic Database, April 2013 edition. Data on nominal returns of second pillar pension funds have been taken from official national authorities' websites: http://www.knf.gov.pl (Poland), http://www.fktk.lv (Latvia), http://www.fsc.bg (Bulgaria), http://www.hanfa.hr (Croatia), http://www.pensionikeskus.ee (Estonia), http://www.lb.lt (Lithuania), http://www.adss.sk (Slovakia),   http://www.mapas.gov.mk (FYR Macedonia), http://www.csspp.ro (Romania). Data for Hungary in the 1998-2007 period is based on Impavido and Rocha (2006, Table 11) and World Bank (2009), while the data for 2008-2010 period is taken from the official website http://www.pszaf.hu.

Appendix B – Inconsistencies in the World Bank data on Second pillar performance

Table B1 shows that second pillar returns in this article are tangibly different from World Bank estimates. Differences of 0.1% to 0.2% can be explained with rounding errors or slightly different inflation data. However, the presence of more significant differences requires more detailed analysis and explanation. We can observe that different World Bank documents present significantly different real returns for the same countries over the same time periods. Transparent presentation and detailed analysis of second pillar returns is thus a crucial precondition for adequate evaluation of recent reform reversals.

Table B1 – Second pillar real return estimates, from World Bank (2009, Table 2, Page 7), Rudolph (2012, Slide 2), World Bank (2014, Table 4.4, Page 137) and this article, in %

Country	Since inception or 2002-2007				Since inception or 2002-2012	
	World Bank (2009)	Rudolph (2012)	World Bank (2014)	This article	World Bank (2014)	This article
Bulgaria	3.2	4.4	4.0	4.3	0.5	0.3
Croatia	n/a	4.8	5.0	4.5	3.2	2.6
Estonia	4.9	5.5	3.1	3.4	0.1	-0.2
Latvia	n/a	-3.5	-2.0	-2.7	-1.3	-1.8
Lithuania	5.7	5.7	3.2	2.4	0.8	-0.1
Macedonia, FYR	n/a	2.5	2.6	2.7	2.4	1.8
Poland	n/a	10.7	10.8	10.6	6.4	5.8
Slovakia	0.9	0.6	0.8	1.1	-1.2	-1.2

World Bank (2009, Table 2, Page 7) implies that most of the second pillars in Eastern Europe were able to outperform GDP growth before the global financial crisis. However, World Bank real return estimates shown bellow are actually significantly lower than GDP growth in all countries but Poland since IMF WEO database indicates that GDP growth over the relevant time periods was 6.3% in Bulgaria, 8.1% in Estonia, 3.6% in Hungary, 9.5% in Latvia, 8.3% in Lithuania, 4.1% in Poland and 8.7% in Slovakia. This important issue needs to be clarified since it has a strong bearing on future pension reforms.

Table 2: Rate of Return of Pension Funds since Inception till end 2007
(in real terms and as differential over GDP growth)

	Year of Inception	Real Rate of Return	RoR over GDP growth
Bulgaria	2002	3.2	0.5
Estonia	2002	4.9	0.6
Hungary	1998	2.6	0.6
Latvia	2001	-3.5	-0.3
Lithuania	2004	5.7	0.7
Poland	1999	8.9	2.2
Slovakia	2005	0.9	0.1

Sources: World Bank staff using data from national sources