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Reforming Pensions in Europe: Economic Fundamentals and Political Factors

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Reforming Pensions in Europe: Economic Fundamentals and Political Factors

Abstract

This paper analyzes pension reforms in Europe and their determinants. As pension reforms are intrinsically difficult to define and pinpoint, we introduce an alternative measure of pension reforms by comparing long-term forecasts of pension expenditures for seventeen European countries. The larger the decrease in expected spending on public pensions in 2050 between two base years, the more successful a pension reform the country achieved (after controlling for other factors, such as demography). Our analysis shows that the reform effort varies widely across countries and over time. Indeed, only three countries in the EU managed to reduce their expected spending on pensions in both reference periods.

In the second part of the paper, we analyze factors that may facilitate or hamper pension reform – quality of fiscal institutions, public debt, trade unions' influence, and also demographic factors. Only the measure of trade union power proves to be significant in explaining pension reforms. Other factors, such as quality of fiscal institutions, size of the existing funded pillar, public debt or recent demographic developments, do not seem to play a significant role. However, specific pension system factors – most significantly the lagged change in pension expenditures – are significant and suggest that European governments do reform their pension systems when faced with the threat of escalating pension expenditures.

In conclusion, we propose a hypothesis of “bounded” economic rationale of European governments, as they seem to react to expectations of an increase in pension spending, but they seem to be content with the current spending levels. The appendix gives detailed information on pension reforms in the ten Central and Eastern European countries that became EU members in 2004 and 2007 (EU-10).

JEL Code: D72, H55, P26.

Keywords: pension system, European Union, pension reform, fiscal institutions.

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Introduction

Public pension systems represent the largest expenditure item in almost all developed countries. Countries of the European Union spend 10.6% of their GDP on public pensions on average. Indeed, Austria, Poland, and Italy spend as much as 13–14% of their GDPs on public pension schemes. Moreover, pension expenditures are expected to grow fast as European nations age quickly. The European Union estimates that Portugal may spend 20% of its GDP in 2050 on pensions only. Several countries (Hungary, Belgium, Luxembourg, and Spain) do not lag far behind. Pension systems thus represent a threat to public finance stability and their financing may undermine economic growth and competitiveness across the continent.

The European governments are not ignorant of these trends. Indeed, they regularly introduce “pension reforms.” These reforms diverge widely in their consistency and efficiency. In many countries, reforms have been enacted only to be scrapped or revised substantially after a few years. Indeed, the very term “pension reform” has been compromised, as no clear definition is available and widely accepted.

This paper seeks to categorize pension reforms in the European Union using the alternative measure of a *pension reform index*. We concentrate on the long-term effects of pension reforms as captured by long-term projections of pension system expenditures. A pension reform is deemed to be successful if it lowers future expenditures. The larger the decrease in expected spending on public pensions in 2050, the more successful a pension reform is. As we show, only four countries in the EU managed to reduce their expected spending on pensions in both reference periods.

We also analyze which factors influence pension reforms. As pension reforms have very long-term effects, their determinants are mostly institutional and political. Our econometric analysis shows that a pension reform’s success depends inversely on the power of trade unions and on current pension spending, and positively on the expected increase in expenditures. Other factors, such as quality of fiscal institutions, size of the existing funded pillar, public debt or demographic developments, do not seem to play a significant role. Moreover, we show that governments are not concerned by the level of pension spending, but do care about its projected change.

The paper is organized as follows. We first look at the European pension systems and analyze the main ingredients of the European reforms. The second section then provides a more detailed analysis of the existing pension systems in the new member states of the European Union (EU-10) and the reforms they have implemented so far. The third section provides an analysis of political and institutional factors underpinning pension reforms, namely, the interplay between the institutional structure and key decision-making bodies. Following papers by James and Brooks (2001) and Schludi (2001), we discuss the role of fiscal institutions, public debt, trade union clout and other factors and their conduciveness to pension reforms.

In the fourth section we present the data used and discuss a political economy model of pension reforms in which we study the impact of political, demographic, and institutional factors on fiscal reforms carried out since 1995 in the European Union. The following section discusses the statistical results of our model and provides an economic interpretation of them. The last section then summarizes our paper and proposes some tentative policy recommendations.

I. Pension Systems in Europe and Their Main Characteristics

Pension systems in most European countries are based on the mandatory, quasi-fiscal pay-as-you-go principle. That makes them exposed to the demographic risk of rapidly aging populations. Pension expenditures will rise unless countries take determined action to limit them. This can be done either by changing the pension systems' "parameters", or by undertaking a "radical reform" that changes the fundamental principles of the system. In the former case, governments can increase the (effective) retirement age or lower real pension benefits, or they can combine the two approaches. In a radical reform, the pay-as-you-go system may be (partially) substituted by a system based on accumulation of private savings. While the first approach is politically more feasible and provides less uncertainty, the latter reform may achieve – after a fairly long transition process – more sustainable results.

European countries have adopted a plethora of pension reform attempts, some more successful than others. In order to facilitate European reforms, the EU has established a so-called "open method of coordination" whereby member states share experiences from their pension reforms and, possibly, increase the peer pressure on reluctant reformers. Also, as Holzmann, MacKellar, and Rutkowski (2003) argue, the method of open coordination was originally formulated to prevent discussion about a single pan-European pension reform, which would weaken the national authorities. The first Joint Report on adequate and sustainable pensions was published in 2002. This report did not cover the former communist countries that joined the European Union on May 1, 2004. More inclusive Joint Reports have been published since 2005.

The main results, replicated in tables 1–2, indicate that European pension systems differ substantially. While Italy and Poland spend 14% of their GDPs on public pensions, several countries make do with 6–7% of their GDP (see table 1). The standard retirement age is typically set at 65, but most Europeans retire earlier: an average French male worker retires at 58 and a Slovak female worker at 55 years of age. At the other extreme, Portuguese workers of both sexes work until 66 and Spanish women retire on average two years later than Spanish men (see table 1).

Table 1: Gross public pension expenditures as a share of GDP and effective retirement age, selected EU countries

	Public pension expenditures as % of GDP		Change	Effective retirement age	
	2004	2050	2004–2050	Men	Women
Austria	13.4	12.2	-1.2	59.1	58.1
Belgium	10.4	15.5	5.1	59.3	58.4
Czech Republic	8.5	14	5.6	61.5	58.4
Denmark	9.5	12.8	3.3	64.1	61.4
Estonia	6.7	4.2	-2.5	na	na
Finland	10.7	13.7	3.1	60.5	60.1
France	12.8	14.8	2	58.5	59.2
Germany	11.4	13.1	1.7	61.7	60.7
Hungary	10.4	17.1	6.7	58.9	57.3
Ireland	4.7	11.1	6.4	65.2	64.7
Italy	14.2	14.7	0.4	60.4	60.9
Latvia	6.8	5.6	-1.2	na	na
Lithuania	6.7	8.6	1.8	na	na
Luxembourg	10	17.4	7.4	59.2	61.3
Netherlands	7.7	11.2	3.5	60.2	60.5
Poland	13.9	8	-5.9	61.3	58.0
Portugal	11.1	20.8	9.7	66.2	65.9
Slovakia	7.2	9	1.8	59.2	55.5
Spain	8.6	15.7	7.1	61.1	63.4
Sweden	10.6	11.2	0.6	65.5	62.5
United Kingdom	6.6	8.6	2	63.2	61.4
EU-25 average	10.6	12.8	2.2	na	na

Source: Economic Policy Committee (2006): Age-related public expenditure projections for the EU-25 Member States up to 2050, European Economy, Special Reports.

Table 2 summarizes the generosity of pension systems in European countries as measured by the replacement ratio. The ratio diverges widely: from more than 100% of the previous wage for most Luxembourgers to some 30% of previous income for above-average earners in several countries, including the Czech Republic.

Table 2 also shows the revenue side of European pension systems. The contribution rates are levied on differently defined income, but in all countries the rates are between 20% and 40% of eligible income and are often topped up by general tax revenues (only Denmark finances its entire system from general taxation).

The European pension systems thus vary widely in all aspects. There have been attempts to categorize them into several groups – Bismarckian systems with high contribution rates in most of continental Europe, the Scandinavian model with a high retirement age and generous replacement rates, Anglo-Saxon “Beveridge” models with low benefits, and finally, the southern model with relatively generous benefits. However, our paper is more concerned with pension reforms per se, so we abstain from these qualifications.

Table 2: Contribution rates according to benefit coverage, selected EU countries, 2005

	Net replacement rate for average income	Old age and early retirement (survivors)	Old age and early retirement, disability (survivors)	Broader coverage	Tax financing
Austria	93.2%		22.8%		2.6% of GDP
Belgium	63.1%			37.94%	1/3 of total soc. sec. financing
Czech Republic	58.2%		28%		
Estonia	60.9%		22%		6% of soc.sec. pensions
Denmark	54.1%				Fully financed by taxes
Finland	71.5%		23.9–28.2%		1.7% of GDP
France	68.8%	16.35%			Means-tested minimum pensions
Germany	71.8%		19.5%		27.5% of total pension expenditure
Greece	99.9%		20%		1% of GDP
Hungary	90.5%	26.5%			2.4% of GDP
Ireland	36.6%			12.5–14.75%	Non-contributory benefits by taxes
Italy	88.8%		32.7%		Social assistance pensions by taxes
Latvia	81.8%	20%			6.2% of GDP
Lithuania	71.3%		26%		Special pensions by general taxes
Luxembourg	109.8%		24%		1/3 of contrib. from taxes + 2.5%
Netherlands	84.1%		26.2–33%		
Poland	69.7%		32.52%		3.8% of GDP
Portugal	79.8%			34.75%	Means-tested minimum pensions
Slovakia	60.2%		24%		
Spain	88.3%			28.3%	Means-tested minimum pensions
Sweden	68.2%	20.2%			Means-tested disability and survivors pensions
United Kingdom	47.6%			19.85%	Means-tested pension credits

Source: European Commission (2007) and OECD (2005)

II. Pension Reforms in the EU-10

In this section we briefly present the main characteristics of the pension reforms undertaken in the ten Central and Eastern European countries that became EU members in 2004 and 2007 (the EU-10)¹. A detailed discussion of these countries' pension systems and their reforms is given in Appendix 1.

¹ We will refer to this group of countries – Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia – as the EU-10.

Central European countries² inherited pension systems firmly rooted in their communist past. The main roles of pension systems were to prevent poverty, increase dependence on the government, and manipulate the labor force. These political objectives yielded pension systems with a low retirement age, little variation in pension benefits, and no private pension savings. Such systems hindered these countries' convergence toward richer European countries and, due to fast aging, most pension systems in Central Europe dived into deficits in the mid-1990s, increasing the pressure on governments grappling with worsening fiscal balances.

In the mid-1990s, most Central European countries modernized their pension systems, separated them from the central government budget, increased the retirement age, and made pension benefits more dependent on pension contributions. The Czech Republic implemented such a reform in 1994, complemented by the creation of voluntary private pension funds. The Czech Republic was actually a frontrunner when it launched (voluntary) private pension funds in 1994 and reformed its pension system in 1996 (the retirement age was increased and pensions were linked to lifetime labor income).

However, these “first-wave” pension reforms proved to be insufficient very quickly, as Central European societies faced aging phenomena whereby mortality dropped due to better health care and improved eating (and drinking) habits. At the same time, fertility rates collapsed as women faced both greater opportunities in labor markets and greater uncertainty. The fertility rate fell as low as 1.17 children born per woman in some Central European countries, and old-age pension expenditures are expected to rise rapidly in all countries in the region.

In the late 1990s, Poland and Latvia followed the Swedish example and reformed their pension systems to “notionally defined contributions” (NDC) systems, where contributions are spent as in a classical pay-as-you-go system, but contributors are credited with a notional account where their contributions are indexed by a government-set rule. As Disney (1999) shows, significant differences in indexation and revaluation procedures, transition strategies, and accumulation of special credits unrelated to contributions to notional accounts make NDC systems less transparent.

Several Central European countries implemented “radical” pension reforms inspired by reforms in Latin America, particularly in Chile, and further boosted by an influential 1994 World Bank report on pension reform. That study lent support to a “multi-pillar” model of pension reform combining a public redistributive pension scheme with a private funded pension scheme based on individual accounts. Therefore, structural pension reforms, i.e., reforms introducing private pension savings, were embraced in several countries. Hungary adopted such a “three-pillar” pension system in 1998. Poland followed suit (with an even more comprehensive reform) in 1999, and Estonia and Latvia then implemented reforms in 2001 and 2002, respectively. Croatia and Bulgaria also reformed their pension systems in 2002. The most recent reforms were adopted in Ukraine (2003), Lithuania (2004), and Slovakia (2005). Hungary reformed its system yet again in 2006 – see table 3. In total, seven of the EU-10 have implemented pension reforms based on partial privatization.³ The region has thus become the second hotbed of so-called “structural” pension reforms (Latin America

² Most countries in the region have implemented either “parametric” or “radical” reforms. The parametric reforms are more difficult to define – most countries change their systems almost continuously (Dusek and Kopecsni, 2008). In this paper, we describe reforms that were implemented in the EU-10 countries. For a comprehensive overview of Western European pension reforms, see Immergut et al. (2007).

³ Three other post-communist countries – Croatia, Kazakhstan, and Russia – have implemented similar reforms, but they are not EU members.

being the first). Nevertheless, as the pension system operates in the very long term, the effects of these changes are not yet apparent.

Table 3: Pension reforms in CEE countries

Country	Reform started	Total pension contribution (% of wages)	Contribution to funded pillar (% of wages)	Pension fund assets (% of GDP in 2007)
Bulgaria	2002	27	5	5
Czech Republic		28 (21.5+6.5)	0	5.1
Estonia	2002	22 (20+2)	6 (4+2)	5.0
Hungary	1998, 2006	26.5 (18+8.5)	8	11.2
Latvia	2001, FF increasing until 2010	25.51 (only 20 included in calculation of NDC)	2–10 (2006–2010)	3.0
Lithuania	2004	26 (23.5+2.5)	5.5	1.5 (2006)
Romania	2008	27.5	2–6 (2008–2016)	0
Poland	1999	32.52	7.3	12.4
Slovenia		24.35 (8.85+15.5)	0	2.7 (2006)
Slovakia	2005	24 (17+7)	9	4.2

Source: OECD Global Pension Statistics, European Commission (2006), national ministries.

Pension challenges

As our discussion illustrates, Central European countries have chosen various different approaches to pension reform. The vigorous reformers – namely, Poland, Estonia, and, since 2005, Slovakia – have witnessed much more benign developments in their current pension spending and, more importantly, they may avoid the stark increases in pension expenditures projected for more apathetic countries such as the Czech Republic or Slovenia. For example, public pension expenditures are set to remain stable in Estonia at about 7% of GDP. Expenditures will fall in Poland from 14% of GDP in 2004 to some 9% in 2050. On the other hand, pension expenditures will rise to 17% of GDP in Slovenia and to 15% in the Czech Republic. Hungary demonstrates that an imperfect pension reform coupled with government inconsistency and political maneuvering may even exacerbate the long-term outlook (the most recent reform of 2006 has not yet been incorporated into the projections).

Pension systems do not, however, interact with public budgets only. Their impact is felt throughout the economy, most profoundly in labor and capital markets. Table 2 shows the total contributions to the pension systems in various countries. Beyond any doubt, contribution rates of around 30% of the wage bill render labor less competitive in these countries and increase unemployment. The countries that have implemented pension reforms have channeled part of this burden to private savings, i.e., they have eliminated part of the deadweight loss associated with the apparent tax nature of pension contributions. Also, pension reformers tend to have a larger stock of assets accumulated in pension funds, although the depth of assets is still minuscule. This building up of savings makes domestic

capital markets more efficient and may help countries to limit the current account deficits associated with large capital inflows.

Looking at the EU as a whole, Estonia, Latvia, Sweden, and the UK seem to be best prepared for the aging process, as their spending on pensions is limited. Ireland belongs to this category as well, despite its high forecasted increase in spending. Another group of countries – Denmark, Germany, France, Italy, Lithuania, the Netherlands, Austria, Slovakia, and Finland – have introduced reforms that stabilize their pension expenditures, albeit at a relative high level. The most pressing problems face the Czech Republic, Greece, Spain, Hungary, Portugal, and Slovenia.⁴

III. Political Economy of Pension Reforms

Pension reforms have been highly controversial all across the world. Only in the 1990s, as Chile's pension reform began to be seen as a success, did governments start to consider pension reforms based on partial or full privatization. Two regions stood out as hotbeds of pension reform. Chile inspired many of its Latin American neighbors to implement variations of its reform. The second region to embrace structural pension reforms enthusiastically was Central and Eastern Europe, where governments were struggling with a heritage of socialist egalitarian pension systems with universal coverage, low retirement ages, and disastrous impact on labor markets.

Wherever introduced, pension reforms were met with great political opposition. Different (and often large and influential) interest groups defended the existing public pension and often succeeded in creating a broad coalition of public support for preserving the status quo policy design (see Pierson, 1996). Since pension reform imposes direct costs on beneficiaries of the status quo while offering only distant benefits to a broader constituency of citizens (such as a more financially sustainable pension system) this reform is rarely desired by the median voter (Kitschelt, 2001) and is sometimes labeled a “politically infeasible” policy (Pierson and Weaver, 1993; Pierson, 1994).

Some authors (see Muller, 1999) stress that the diffusion of market-oriented pension reforms in Central Europe was promoted by the World Bank. However, other authors show that the WB was used as a “scapegoat” by reform-minded governments (Rocha et al., 2001). A more important factor seems to have been internal divisions within governments. Most often, as in Poland and Hungary, the finance ministry supported market-oriented pension reforms with a high share of capital-funded provision for old age, while the ministries of labor and social affairs advocated a parametric reform. A similar split is evident between economists (typically for the market-oriented approach) and sociologists and lawyers (typically for gradual reform) in many countries. In some other countries, such as the Czech Republic and Slovakia until 1998, the finance ministry did not support radical pension reform, as high contribution rates and almost universal coverage allowed pension systems to generate surpluses. Indeed, the Czech Finance Ministry shied away from supporting a (modest) reform proposal of the Labor Ministry in 1997.

Another key parameter of pension reforms in Central Europe was trade union position. Trade unions are often the leading player within the pension reform opposition and, depending on their role and power in the country, they often blocked reforms even though their members would probably have benefited from them – see the discussion of the Czech Republic's and Slovenia's reform attempts in Appendix 1. Trade unions seem to be willing to accept changes

⁴ Malta and Luxemburg also face major increases in their pension spending, but they are not discussed in this paper. For a discussion, see European Commission (2006a) and its Technical Annex.

to the system only when they are convinced that without the changes, the pension system may collapse. The Polish and Czech experience illustrates this approach squarely.

In the early 1990s, the Polish trade union movement Solidarity was an influential actor fighting for the improvement of pensioners' income by advocating indexation and valorization. Only when the trade unions were transformed into a political party and became a part of government did their role change, and in the late 1990s they supported privatization pension reforms in Poland. In contrast, the Czech trade unions have opposed any change to the pension system. Indeed, the first comprehensive strike after the collapse of communism was organized by the trade unions in 1995 to protest against the raising of the official retirement age. Even though the strike was unsuccessful, it ushered in a highly political approach to pension reform that has dominated the Czech scene ever since.

“Benefit of crises” is another hypothesis, proposed by, among others, Drazen and Grilli (1993). A preceding crisis, for example rising deficits in the pension system or late payments of benefits, may increase the population's acceptance of reforms. A crisis also weakens the opponents of reform and increases the power of pro-reform actors, who often, but not always, include the ministry of finance or the financial industry.

One may speculate that governments tend to reform those pension systems which risk destabilizing public finances the most. If a pension system has a large implicit debt, i.e., the net present liabilities of the system toward either the working or the living, or even all future generations, the government should have incentives to rein in the system to make it less of a risk to the future fiscal balance. However, a high implicit debt makes pension reform less likely, as the government may be scared by the size of the debt, which is, at least partially, made explicit during the reform.⁵

Other set of institutions that might have influenced the pension reforms in Central Europe is their election systems. As Persson (2032) claims, two election systems have distinctive effects on social security systems (and their reforms). In a direct election system with single-member districts, successful candidates concentrate on the tangible effects on their geographically defined constituencies, where old-age voters are in the minority. Once in government, a directly elected government is more exposed to criticism and finds it harder to “avoid blame” by sharing the political costs of a reform with coalition partners or to “obfuscate” changes in the pension system by complex formulae or long transition periods (see Weaver, 1986). On the other hand, a proportional election system favors wide-agenda political parties. Social security and pensions represent a very attractive policy in the proportional system, as such a policy targets the well-defined and single-issue-concentrated voter group of pensioners. In the transition context this effect is even stronger, as there are no private pensions, so all pensioners as well as people close to retirement depend exclusively on public pensions and thus on politicians.

However, the empirics are very inconclusive in this respect in Central Europe. Some countries with strong aspects of the proportional electoral system (the Baltic countries, Hungary) have implemented reforms, while some other “proportionalists” (Slovenia, the Czech Republic) have remained very cautious and have not reformed their systems. Appendix 1 contains a detailed discussion of the main features of the pension systems in the ten Central and Eastern European countries that joined the EU in 2004 and in 2007. We describe the systems' parameters and then turn to the political aspects of the reforms and the future challenges that these pension systems face.

⁵ That has been the argument of the Czech Labor Ministry – one cannot help seeing the irony in the argument: the worse (financially) the system is designated, the more expensive its reform is.

What seems least controversial, though, is the fact that the longer countries wait to initiate necessary pension reforms, the more difficult those reforms will be to implement. Pension reforms require the support of a majority of voters, and reforms that aim at reducing the size of unfunded pension systems are likely to be opposed by the rapidly aging societies in Central Europe.

IV. Model Specification and Data

Our model uses data from the 17 European countries that are both EU and OECD members, so that consistent data are available.⁶ The data set thus does not include the three Baltic countries (Latvia, Lithuania, and Estonia) and Slovenia. While this is clearly a loss, the data available simply do not allow these four to be included. The 17 countries analyzed here have adopted a wide array of pension reforms, from expansion of the scheme in Portugal to partial privatization in Poland, so the sample captures the main pension trends in Europe. The data were assembled from various sources. Most come from the EU's Special Report: European Economy No. 1/2006, which analyzed the impact of aging on public expenditures (European Commission, 2006b), from a European Commission staff working document providing detailed data on 25 EU member countries (European Commission, 2006a), and from the country reports of the Observatoire Social Européen, but national sources were used as well. Earlier data were assembled using OECD datasets and papers from the mid-1990s, for example Roseveare et al. (1996).

Dependent variable: *Pension reform index*

The dependent variable of our model is constructed so as to allow analysis of all EU countries, even though strictly speaking they might not have implemented a “reform” as defined in the previous literature. We measure the pension reform index (PRI) by comparing expenditure on public pension schemes in 2050 as expected in 1995, 1999 and 2005. Thus, pension reform in 1995–1999 is summarized by the change in expectations of pension expenditures in 2050 between these two years. If expectations were lower in 1999 than in 1995, the pension reform resulted in a reduction of pension expenditures.

This measure has some weaknesses, of course. The change in expectations may have been driven by factors other than pension reforms (productivity assumptions, demographic projections). We try to control for demographic assumptions by including a demographic variable in our regression (see below). Other factors are more complex, but we believe that our measure of pension reform efforts still captures governments' efforts as well. Note that it provides a more detailed (and continuous) data set than most binary reform indices. Furthermore, our definition of a pension reform is much more inclusive than those in the previous literature. We do not examine the nature or structure of the reform, whereas, for example, James and Brooks in Holzmann and Siglitz (2001) include only “pension privatization” in their definition. In such a setting, high pension expenditure makes pension privatization less likely, but this is not necessarily the case in our model.

As table 4 reveals, the most vigorous reformers in 1995–1999 were Poland and Italy, which both managed to cut their expected pension expenditures in 2050 by more than 6% of GDP. On the other hand, Ireland witnessed its expectations rise by 6% of GDP.

The same method then is applied to the period 1999–2005: the country that cut its expected pension outlays most in this period was Austria, where expectations of pension expenditure in

⁶ Austria, Belgium, the Czech Republic, Denmark, Germany, France, Hungary, Spain, Ireland, Italy, the Netherlands, Poland, Portugal, Slovakia, Finland, Sweden, and the United Kingdom. Greece had to be eliminated for a lack of data.

2050 fell from 17% of GDP to 12.2% of GDP. In the same period, expectations in Portugal rocketed by 7.6% of GDP!

Table 4 illustrates the pension reform index in the two periods. While Italy and Poland remain the two largest reformers overall, Finland, Spain, and Germany emerge as consistent reformers who cut, albeit modestly, their expected expenditures for 2050 in both periods (their PRIs are positive in both periods). Other countries (Belgium, Austria, the Netherlands, and Portugal) zigzagged between the two periods, cutting in one and expanding in the other. Pension expenditure expectations grew in both periods in Ireland, the UK, and Hungary.

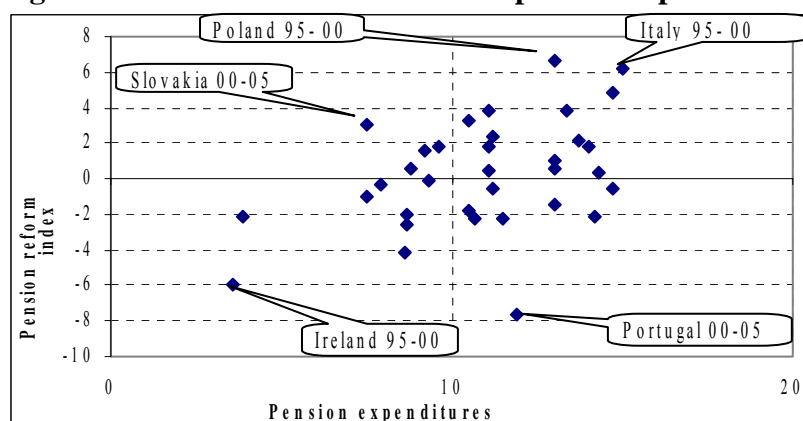
Table 4: Pension Reform Index

	Expenditures as % of GDP in 2050 expected in			Pension reform index	
	1995	1999	2005	1999/1995	2005/1999
Belgium	15.1	13.3	15.5	1.8	-2.2
Czech Republic	12.0	14.6	14.0	-2.6	0.6
Denmark	11.5	13.3	12.8	-1.8	0.5
Germany	17.5	16.9	13.1	0.6	3.8
Greece	24.0	24.8	24.8	-0.8	0.0
Spain	19.1	17.3	15.7	1.8	1.6
France	14.4	15.8	14.8	-1.4	-1.0
Ireland	3.0	9.0	11.1	-6.0	-2.1
Italy	20.3	14.1	14.7	6.2	-0.6
Hungary	15.0	17.0	17.1	-2.0	-0.1
Netherlands	11.4	13.6	11.2	-2.2	2.4
Austria	14.9	17.0	12.2	-2.1	4.8
Poland	15.0	8.3	8.0	6.7	0.3
Portugal	16.5	13.2	20.8	3.3	-7.6
Slovakia	11.0	12.0	9.0	-1.0	3.0
Finland	17.7	15.9	13.7	1.8	2.2
Sweden	14.5	10.7	11.2	3.8	-0.5
UK	4.1	4.4	8.6	-0.3	4.2

Source: Author.

Figure 1 shows the relationship between the PRI and pension expenditures. We observe a complex pattern where pension reform (a positive PRI) is pursued in countries with both high and low expenditures and where pension escalation (a negative PRI) occurs in both the cheap Irish and the expensive Portuguese systems.

Figure 1: Pension reform indices and pension expenditures in the EU-17



Source: Author.

Independent variables

The independent variables used in the model reflect the political economy theory discussed in the previous section. We include variables on trade union power, public debt, quality of fiscal institutions, pension expenditures, and demographic projections. Some other obvious candidates (implicit pension debt) could not be included due to a lack of data.

Trade union power. Trade unions are, as discussed above, often the principal opponent of reform. Thus, their position and power within the country may influence the pension reform outcome. Two measures of trade union power are used. The first is the *trade union density (TUD)*. The higher the share of the labor force that belongs to a union, the bigger clout the unions have. Data on trade union density are available and vary from 10% in France to 75% in Denmark. As these two numbers already indicate, the density probably poorly reflects the real position of trade unions. That's why we include another variable, *collective bargaining coverage (CBC)*, which may better signal the unions' power. In many EU countries, trade unions negotiate wages for 90% of the labor force, even though their membership is much lower. In Austria, 98% of contracts are covered by trade union bargaining. The Czech Republic represents the other extreme, with only 27% of contracts following trade union bargaining.

Fiscal institutions (FI). The literature on fiscal institutions and their impact on budgetary outcomes is burgeoning. A correct institutional setup is believed to counteract the deficit bias of politicians – see Schuknecht (2004) or Schneider et al. (2007) for a discussion. Proper fiscal institutions should prevent governments from amassing large pension debts and should facilitate restrictive reforms. Buti, Mongay, and von Hagen (2002) discuss fiscal institutions in the “old” EU member countries, while Fabrizio and Mody (2006) provide a comprehensive analysis of fiscal institutions in Central European countries. The highest index of fiscal institutions – 4 – is to be found in Denmark and Belgium. Spain used to have as low as 1.08 in 1997, but improved to 2.28 in 2004. Among the new EU members, Poland has the most robust financial framework (2.72), while the weakest performer is Hungary with an index of 1.37 in 2004. Hungary (together with France and the UK, but they are both at a higher level) witnessed a worsening in its fiscal institutions between 1997 and 2004.

Pension expenditures. Another pension reform factor is pension expenditure, both current and expected. We use two variables to capture the impact of pension expenditures, as their impact is complex. First, current expenditures (*Expenditures*) measure current pension outlays. Second, we use the variable *DExp* to capture the recent change in pension

expenditures. Last, the variable *DE2050* measures the current expectations of pension expenditures in 2050⁷. As discussed above, pension expenditure levels and trends within the EU vary widely. Current expenditures are as high as 14% of GDP in Italy and Poland or as low as 5% in Ireland. By 2050, pension expenditures are expected to rise by as much as 10% of GDP in Portugal or to fall by almost 6% of GDP in Poland.

Pension expenditures may have different effects on pension reform. On the one hand, the higher are expenditures, or the expected rise thereof, the more likely the government may be to introduce a reform. On the other hand, high pension expenditures generate a broader alliance opposing reform. The following section discusses our estimates of the final effects.

Prefunding. This variable measures the extent to which private pensions are entrenched in a given country. The more widespread private pensions are, the less shock a reform of the government pillar represents, as people have other sources to turn to. The Netherlands, Denmark, and Sweden seem to be best prepared in this respect, as some 90% of their workers contribute to a pension fund. The share is as low as 2% in France or 4% in Finland.

Public debt. The level of overall government debt as a percentage of GDP is taken as a measure of the financing constraint. The influence of the public debt on pension reform may be twofold. On the one hand, high debt makes pension reform more pressing, as the government cannot afford a further increase in the debt. On the other hand, high debt makes (structural) pension reform more difficult, as governments find it difficult to finance the necessary transition period. The highest debts among our sample were recorded by Italy (105% of GDP in 2000 and 106% in 2005) and Belgium (103% of GDP in 2000). The lowest debt was recorded by Ireland in 2005 (28% of GDP) and the Czech Republic in 2000 (29% of GDP).

Demographic developments. We measure the dynamics of the demographic situation by comparing old-age ratios projected for the year 2050 in 1995, 2000, and 2005. In most countries, the demographic outlook gradually worsened, as the old-age ratio was increasing. In 1995, Spain expected the share of people older than 64 years of age to be “only” 41% in 2050. Ten years later, the share is expected to reach 66%. Similarly, in 1995 Ireland expected only a 25% share for 2050; now it is 45%. The Belgium, Dutch, and Scandinavian estimates have barely budged.

V. Results of the Model Estimation

Explaining the systematic patterns of pension reforms in the European Union is bound to be imperfect. A pension reform is very complex and is influenced by a host of factors, many of them indigenous and ad-hoc. Moreover, the data are far from comprehensive: we are limited to 17 countries and two periods, i.e., we have only 34 observations when we use panel data regression methods. Any results must therefore be treated carefully. Nevertheless, we believe that our analysis provides some useful insights into the complex political process of pension reform.

Table 5 summarizes four regressions in which we regressed our dependent variable *PRI* – the pension reform index – on combinations of the independent variables. We use two measures

⁷ Note that *DE2050* is not necessarily correlated with the pension reform index *PRI*. The *PRI* measures the change *between* two expectations – the expectation of 2050 pension expenditures in 1995, 1999 or 2005. The *DE2050* measures the change in pension expenditures between the current year and 2050. The correlation between the two series is lower than 0.3.

of the trade unions' position in the process: their density *TUD* and collective bargaining coverage *CBC*. Similarly, we use three definitions of pension system distress. The variable *EXP* measures current pension expenditures, *DE2050* measures the expected change in pension expenditures between the current year and 2050, and finally *DExp* measures the most recent change in current pension expenditures. The table presents four combinations of these two groups of variables.

Table 5: Determining factors of pension reform

	<i>CBC, Exp, DE2050, DExp</i>		<i>CBC, Exp, DE2050</i>		<i>CBC, DE2050 only</i>		<i>TUD, Exp, DE2050</i>	
<i>C</i>	-0.8672		-1.2293		-4.806		-0.7953	
	(3.88)		(3.72)		(3.74)		(3.664)	
<i>FI</i>	1.052		1.3573	***	0.8217		0.8974	
	(0.719)		(0.513)		(0.719)		(0.689)	
<i>Public Debt</i>	0.00138		-0.00375		0.00457		-0.03765	*
	(0.0271)		(0.0229)		(0.0260)		(0.0197)	
<i>CBC</i>	-0.0566	**	-0.05800	***	-0.04825	*		
	(0.0272)		(0.0222)		(0.0253)			
<i>TUD</i>							-0.0177	
							(0.0269)	
<i>Prefunding PF</i>	-0.0264		-0.01369		-0.01673		-0.00834	
	(0.0188)		(0.0106)		(0.0152)		(0.0118)	
<i>Demogr</i>	3.878	*	3.431	*	3.733	*	3.226	*
	(2.24)		(1.97)		(2.29)		(1.177)	
<i>EXP</i>	-0.3931	**	-0.3927	**			-0.4168	***
	(0.166)		(0.193)				(0.197)	
<i>DExp</i>	0.6406						-0.0177	
	(0.512)						(0.0269)	
<i>DE2050</i>	0.5713	***	0.6036	***	0.4722	**	0.5137	***
	(0.150)		(0.178)		(0.222)		(0.185)	
<i>R² within</i>	0.4262		0.4106		0.1564		0.3863	
<i>R² between</i>	0.6973		0.6673		0.5607		0.4914	
<i>R² total</i>	0.5347		0.5032		0.3138		0.4216	
<p><i>Note:</i> The dependent variable is the pension reform index (positive values for increasing expectations of pension expenditures in 2050). <i>FI</i> is the fiscal institutions index. <i>PD</i> is the level of government debt. <i>CBC</i> is the coverage of workers with collective bargaining. <i>TUD</i> is the trade union density. <i>PF</i> is the share of workers with a funded pension. <i>Demogr</i> is the change dependency ratio. <i>Exp</i> is the current level of pension expenditures. <i>DE2050</i> is the increase in pension expenditures by 2050. <i>DExp</i> is the recent change in pension expenditures. Random-effect panel-data estimation with robust standard error type. Standard errors in parentheses. ***, **, and * denote significance at 1 percent, 5 percent, and 10 percent level, respectively.</p>								

Table 5 reveals that several variables do not seem to be significant in any specification of the model: public debt, the share of workers with a funded pension, and the recent change in pension expenditures are all insignificant in all four specifications (except for significance at the 10% level for public debt in the last specification). Similarly, fiscal institutions (i.e., proper management of the budgetary process, limits on legislative budgetary modifications, etc.) do not play a significant role in explaining pension reform occurrences. Their coefficient is significant in one specification only, even though it has the expected sign (the more robust fiscal institutions are, the more successful the pension reform is).

Immediate demographic factors seem to have a limited role in pension reform, as witnessed by the low significance of the demographic variable in our model. It is interesting,

nevertheless, that an increase in the dependency ratio is associated with a cost-cutting pension reform.

The role of trade unions is more complex. While the density of trade union membership is not significant, collective bargaining coverage seems to worsen the public reform outcome, increasing pension expenditures expected in the future. One may speculate that influential trade unions treat pensions as deferred wages, so when negotiating collective contracts, they prevent any reduction in future pension claims.

As expected, the most important variable is expenditure on pensions. The current level of expenditures (*EXP*) makes pension reform less likely. On the other hand, the change in expenditures that is expected in the future is highly conducive to pension reform. This result may indicate that governments do react to expectations of increasing pension expenditures, but they are unmoved by the level of pension expenditures. This would suggest that European countries are close to the “social equilibrium” as far as their pension systems are concerned: they do not want to cut expenditures below the current level, but expectations of higher expenditures nudge them toward pension reform.

Table 5 further suggests that the model is more successful in explaining different pension reform efforts between the two periods, but that pension reforms in any given period are much more difficult to analyze. This may explain the lack of rigorous estimates of the pension reforms in the European Union: most studies concentrate on a single period of time. Our model uses panel data that cover, in fact, data from 1995 until 2005. By splitting the period into two sub-periods, we might have been able to capture some dynamic effects previously too subtle to be reported.

VI. Conclusions

The pension crisis, as it is often described, neatly illustrates that challenges may be turned into opportunities if governments take early and well designed action. Aging is not something we should try to prevent. What turns aging into a threat is ineffective pension systems created by a series of governments in the past. If pension systems are modernized and their incentives are set straight to stimulate labor market participation and not to encourage inactivity, aging will lose most of its negative connotations.

Our analysis shows that European governments reform their pension systems frequently, but often inconsistently. Pension reforms often fail to counterbalance demographic pressures and do not curtail future pension expenditures. We have also illustrated that several countries in Central and Eastern Europe have undergone major and substantial pension reforms that should streamline their pension systems in the decades to come. The higher willingness of the “new” EU members was probably driven by their inefficient pension systems inherited from past communist regimes.

Our analysis shows, however, that even “old” EU members may enact substantial reforms – witness the Italian or Austrian examples. These reforms, though, remain fragile and are often reversed or diluted soon after their implementation. This may signal strong entrenched interests that will prevent pension reforms from cutting future obligations consistently. Strong trade unions may represent such an entrenched interest group, as they are often the most vocal opponents of pension reforms.

Detailed econometric analysis shows, nevertheless, that pension reforms in the European Union are positively associated with expectations of escalating expenditures in the years to come. As governments fear increasing expenditures, they often do react and do implement reforms that bring expenditure expectations back down. Our analysis indicates, though, that

governments are not concerned with the existing level of pension expenditures, even though they are often high and hamper fiscal management and undermine the long-term economic growth of some European countries.

While there is little new in the finding that policy reforms are path-dependent, this analysis offers a new causal mechanism through which the existing policy design shapes the trajectory of change in policy design: the transitional cost of structural reform. The more expensive is the current pension system, the more expensive is its structural reform. Thus, the large and generous pension systems embedded in many “old” EU countries may prevent radical reforms like those implemented in some “new” EU member countries. As our dataset does not include some more ardent reformers (Estonia, Lithuania) we cannot unambiguously prove this hypothesis, but it remains a possibility and it should be a priority for future research.

References

- Abbott, A., and S. DeViney (1992): The Welfare State as Transnational Event: Evidence from Sequences of Policy Adoption. *Social Science History*, Vol. 16, No. 2, pp. 245–274.
- Barr, N. (2000): Reforming Pensions: Myths, Truths, and Policy Choices. Working Paper No. WP/00/139, IMF, August.
- Börsch-Supan, A. (2003): What Are NDC Pension Systems? What Do They Bring to Reform Strategies? Discussion Paper Series No. 42-03, Mannheim Research Institute for the Economics of Aging (MEA), Mannheim.
- Buti, M., J. von Hagen, and C. M. Mongay (2002): *The Behavior of Fiscal Authorities – Stabilisation, Growth, and Institutions*. London: Palgrave.
- Chawla, M., G. Betcherman, and A. Banerji (2007): From Red to Gray – The Third Transition of Aging Populations in Eastern Europe and the Former Soviet Union. The World Bank, Washington, DC.
- Chlon-Dominczak, A., and M. Gora (2003): The NDC System in Poland – Assessment After 5 Years. Paper presented at the World Bank and RFV Conference on NDC Pensions, Sandhamn, Sweden, September 29–30.
- Commission of the European Communities (2004): The Social Situation in the European Union 2004. Commission Staff Working Paper SEC (2004) 636 (Brussels).
- Dang, T-T., P. Antolin, and H. Oxley (2001): Fiscal Implications of Ageing Projections of Age-related Spending. OECD Economic Department Working Paper No. 305, Paris, OECD.
- Disney, R., and E. Whitehouse (1999): Pension Plan and Retirement Incentives. Pension Reform Primer Series, Social Protection Discussion Paper No. 9924, World Bank, Washington, DC.
- Drazen, A., and V. Grilli (1993): The Benefit of Crises for Economic Reforms. *American Economic Review*, Vol. 83, Iss. 3, pp. 598–607.
- Dusek, L., and J. Kopeckni (2008): Policy Risk in Action: Pension Reforms and Social Security Wealth in Hungary, Czech Republic, and Slovakia. *Czech Journal of Economics and Finance*, Vol. 58, Iss. 7–8, pp. 329–358.
- European Commission (2003): Public Finances in EMU 2003. Brussels: European Commission.
- European Commission (2004): Joint Report on Social Inclusion 2004. Commission Staff Working Document.
- European Commission (2006): European Economy – The Impact of Ageing on Public Expenditure: Projections for the EU25 Member States. Special Report No. 1/2006.
- European Commission (2007): Joint Report on Social Protection and Social Inclusion 2007. Commission Staff Working Document.
- Fabrizio, S., and A. Mody (2006): Can Budget Institutions Counteract Political Indiscipline? *Economic Policy*, Vol. 21, No. 48, pp. 689–739.
- Feldstein, M., and H. Siebert, eds. (2002): *Social Security Reform in Europe*. NBER, University of Chicago Press.

- Galasso, V., and P. Profeta (2004): Lessons for an Ageing Society: The Political Sustainability of Social Security Systems. *Economic Policy*, Vol. 19, No. 38, pp. 63–115.
- Holzmann, R. (1997): Pension Reform, Financial Market Development, and Growth: Preliminary Evidence from Chile. *International Monetary Fund Staff Papers*, Vol. 44, No. 2, pp. 149–178.
- Holzmann, R., L. MacKellar, and J. Repansek (2008): Pension Reform in Southeastern Europe. The World Bank, Washington, DC.
- Holzmann, R., L. MacKellar, and M. Rutkowski (2003): Accelerating the European Pension Reform Agenda: Need, Progress, and Conceptual Underpinnings. In *Pension Reform in Europe: Process and Progress*, ed. R. Holzmann, M. Orenstein, and M. Rutkowski, Washington DC: World Bank.
- Holzmann, R., M. Orenstein, and M. Rutkowski, eds. (2003): Pension Reform in Europe: Process and Progress. Washington, DC: World Bank.
- Holzmann, R., and J. E. Stiglitz, eds. (2001): New Ideas About Old Age Security: Toward Sustainable Pension Systems in the 21st Century. Washington, DC: World Bank.
- Immergut, E., K. M. Anerson, and I. Schultze (2007): *The Handbook of West European Pension Politics*. Oxford University Press, Oxford, UK.
- Kitschelt, H. (2001): *Partisan Competition and Welfare State Retrenchment: When Do Politicians Choose Unpopular Policies?* Oxford University Press, Oxford, UK.
- MacKenzie, G. A., P. R. Gerson, A. Cuevas, and P. S. Heller (2003): Pension Reform and the Fiscal Policy Stance. *Public Budgeting and Finance*, Vol. 23, No. 1, pp. 115–127.
- Müller, K. (2002): Between State and Market: Czech and Slovene Pension Reform in Comparison. In *Pension Reform in Central and Eastern Europe, Vol. 2: Restructuring of Public Pension Schemes: Case Studies of the Czech Republic and Slovenia*, ed. E. Fultz, pp. 113–146. Budapest: International Labour Office.
- Müller, K. (2003): *Privatising Old-Age Security: Latin America and Eastern Europe Compared*. Cheltenham, UK: Edward Elgar.
- Müller, K., A. Ryll, and H.-J. Wagener (1999): *Transformation of Social Security: Pensions in Central-Eastern Europe*. Springer.
- Organization for Economic Cooperation and Development (OECD) (2004): Pension Reform in the Baltic Countries. Private Pensions Series No. 5, OECD, Paris.
- Organization for Economic Cooperation and Development (OECD) (2005): Pensions at a Glance: Public Policies Across OECD Countries. OECD, Paris.
- Orszag, P. R., and J. E. Stiglitz (2001): Rethinking Pension Reform: Ten Myths about Social Security Systems. In *New Ideas About Old Age Security*, ed. R. Holzmann and J. E. Stiglitz, pp. 17–56. Washington, DC: World Bank.
- Persson, T. (2003): Do Political Institutions Shape Economic Policy? *Econometrica*, Vol. 70, Iss. 3, pp. 883–905.
- Pierson, P. (1994): *Dismantling the Welfare State? Reagan, Thatcher and the Politics of Retrenchment*. Cambridge University Press, Cambridge, UK.

- Pierson, P. (1996): *The New Politics of the Welfare State*. Oxford University Press, Oxford, UK.
- Pierson, P., and R. K. Weaver (1993): Imposing Losses in Pension Policy. In: Weaver and Bockman: Do Institutions Matter? pp. 110–150. Brookings Institutions, Washington, DC.
- Rocha, R. De Rezende, and D. Vittas (2001): Pension Reform in Hungary: A Preliminary Assessment. World Bank Policy Research Working Paper No. 2631.
- Roseveare, D., W. Liebfriz, D. Fore, and E. Wurzel (1996): Ageing Populations, Pension Systems and Government Budgets: Simulations for 20 OECD Countries. OECD Economic Department Working Paper No. 168.
- Schimmelpfennig, A. (2000): Pension Reform, Private Saving, and the Current Account in a Small Open Economy. International Monetary Fund Working Paper 00/171, Washington, DC.
- Schludi, M. (2001): Pension Reform in European Social Insurance Countries. In European Union Studies Association (EUSA), 2001, p. 59, Madison, Wisconsin.
- Schneider, O., J. Zápal, and P. Hedbávný (2007): A Fiscal Rule that Has Teeth: A Suggestion for a Fiscal Sustainability Council Underpinned by the Financial Markets. AUCO-Czech Economic Review, Vol. 1, pp. 32–53.
- Schuknecht, L. (2004): EU Fiscal Rules, Issues and Lessons from Political Economy. ECB Working Paper No. 421.
- Snelbecker, D. (2000): Pension Reforms in Economies with Large Informal Sectors. <http://info.worldbank.org/etools/docs/library/77666/june2000/pdfreadings/informal.pdf>
- Übelmesser, S. (2004): Political Feasibility of Pension Reforms. *Topics in Economic Analysis & Policy*, Vol. 4, No. 1: article 20.
- United Nations (2004): World Population to 2300. New York.
- Wagner, H. (2005): Pension Reform in the New EU Member States – Will a Three-Pillar Pension System Work? *Eastern European Economics*, Vol. 43, No. 4, pp. 27–51.
- Weaver, R. K. (1986): The Politics of Blame Avoidance. *Journal of Public Policy*, Vol. 6, Iss. 4, pp. 371–398.
- World Bank (1994): Averting the Old Age Crisis: Policies to Protect the Old and Promote Growth. Washington, DC.
- World Bank (1999): Retirement: Can Pension Reform Reverse the Trend to Earlier Retirement? Pension Reform Primer, Briefing, Washington, DC.
- World Bank (2006): Pension Reforms and the Development of Pension Systems – An Evaluation of World Bank Assistance. Washington, DC.

Appendix 1: Pension Reforms in the EU-8: Detailed Analysis

In this section we discuss the main features of the pension systems in the ten Central and Eastern European countries that joined the EU in 2004 and in 2007. We first describe the systems' parameters and then turn to the political aspects of the reforms and the future challenges that these pension systems face.

A. BULGARIA

Bulgaria, which entered the EU in 2007, has the highest share of people older than 65 in its population (17% according to the 2004 World Bank Development Record). The Bulgarian pension system suffered from rising expenditures (10% of GDP in 1993) and from a falling real value of pensions, which lost more than 50% of their value in the early 1990s. Early retirement was common and the contribution rate may have been as high as 52% of wages (Palmer, 2007). Almost 2 million workers stopped contributing to the system between 1993 and 2003 (some 45% of labor force participants).

The system was thoroughly reformed in 2000. The reform was motivated by a deep crisis in 1996–1997, when Bulgaria experienced a sharp increase in poverty and unemployment. The present pension system is based on four pillars. The **first (state and mandatory) pillar** consists of a means-tested social pension for those who do not qualify for the PAYG pension. To qualify for the PAYG pension the sum of the person's age and the number of years of participation in the pension system must be more than 100 for men and 91 for women (rising to 94 by 2010). If this requirement is not met, the retirement age is 65 for both sexes. In 2002, the contribution rate was decreased to 27% and in 2007 it was 8.05% of gross wages for employees and 14.95% for employers.

There are still two categories of workers: some 150,000 workers are in the privileged Category 1 with faster accumulation of claims and more lenient early retirement rules. Special categories of workers should be phased out by 2010.

PAYG benefits are some 40% of the average wage and are not taxed. Pensions are indexed annually by a coefficient equal to 75% of inflation + 25% of wage growth.

The second pillar is mandatory for all workers born later than 1960. The pillar is privately managed and consists of individual financial accounts organized in occupational or universal pension funds. Furthermore, the pillar provides privately managed occupational plans for persons covered by special privileges under the old system. The contribution rate was originally 2% and was gradually increased to 5% in 2007 paid exclusively by employers (the contribution rate is 12% for workers in the privileged category 1). It is expected that the second pillar will provide benefits roughly equal to 20% of the wage. Coverage of the second pillar increased from 30% of the labor force in 2002 to 70% in 2007 (a further 15% of the labor force is covered by voluntary pillars), but assets are still quite low – around 5% of GDP in 2007.

The third pillar is voluntary and not subsidized by the government. The government expects that the pillar will provide benefits of some 10% of wages. The fourth pillar was introduced in 2007. It comprises voluntary occupational pensions and is similar to those in Western countries and is still in its infancy.

The Bulgarian pension reform was introduced after a severe economic crisis and as a part of a major reform package. Political economy aspects were thus subdued and did not re-emerge until 2007, when the new government stopped the rebalancing of employee-employer contributions for the first pillar.

B. CZECH REPUBLIC

The present pension system was introduced through a series of new measures, most notably the *Pension Insurance Act* of 1996. The reformed system follows the *conservative-corporatist* model implemented within the Bismarckian family. It is based on the key role of the public pillar, supplemented by voluntary supplementary schemes.

The 1996 reform increased the retirement age to 63 years for men (to be reached in 2016) and 63 for women without children (to be reached in 2019). Early retirement is possible 3 years earlier. In 2004, the government raised the contribution rate to 28% of the wage bill, with no ceiling on higher salaries. A ceiling of three times the national average wage was introduced in 2007.

The **first (public and mandatory) pillar** consists of two sub-clusters – a flat-rate basic amount equal for all pensions, and an earnings-related portion financed through social contributions and related to employment. Contribution credits have been introduced for periods of unemployment, years of study, parental leave, etc. Indexation is related to prices and 1/3 of salaries. Benefits are calculated in line with the pay-as-you-go mechanism and financed through contributions paid by employees and by employers (the largest part) and through state compensatory contributions. The retirement age is flexible subject to at least 25 years of contributions. Minimum pensions are not defined, while social assistance benefits have the role of a basic safety net for people in need. This net consists of *state social support* and social assistance benefits.

The **supplementary (private and voluntary) pillar** then comprises fully funded pension funds. It is run by private institutions. This supplementary pillar is regulated by the Czech National Bank. Moreover, the government tops up private contributions to funds. Further individual private and voluntary schemes consist of individual savings in the form of life insurance and administered by insurance companies. Supplementary schemes cover more than 2.5 million people (around 50% of the total labor force). In 2007, pension fund assets amounted to 5% of GDP.

The Czech Republic faces a steep increase in financial expenditure on pension programs, even though in the recent past they have gained a financial equilibrium that in the 1990s allowed a decrease in social contributions. The lack of structural reform makes the Czech system extremely exposed to demographic risks, as funded pensions remain insignificant.

The politics of pension reform in the Czech Republic have been dominated by diverging interests. Since the mid-1990s, the financial sector has assembled a very feeble campaign advocating pension system reform. These claims have been supported by liberal economists from academia and the government and by demographics experts predicting a massive worsening of the demographic parameters underlying the pension system. These concerns, however, have been more than counterbalanced by strong opposition from trade unions and by the passivity of the Labor Ministry, which has never adopted any substantial reform agenda. Trade unions have argued that reforms would undermine the principle of universal social insurance. In addition, the Czech Republic, with its relatively low levels of external debt, has been less subject to the influence of international financial organizations, which favor privatization strategies (see Müller, 2002).

C. ESTONIA

Estonia reformed its pension system in 1999–2001. The present pension system is based on three main pillars. The **first (state and mandatory) pillar** consists of a residence-based

national pension and an employment-related old-age pension. The basic national entitlement is a flat-rate benefit based on residence. It is granted to persons who do not have the right to old-age benefits and is financed through general taxation. National pensions at the same time represent the basic part of *employment-related benefit*. This entitlement covers the active part of the population, is based on social contributions paid by employers and the self-employed, and uses the defined-benefit method. Early retirement is available only for certain occupational groups (e.g. miners, mariners, etc.).

State pensions represent about 80% of the total net disposable income of retired people. As a consequence of all these features, the first pillar is strongly redistributive. In 2001, total public pension spending was 6.9% of GDP, but pensions in Estonia are not taxable. The retirement age is officially 63 for both men (this target age was reached in 2001) and women (target to be reached in 2016), but early retirement is possible three years prior to the official retirement age. The average net replacement rate of old-age pensions in the second half of the 1990s was around 40–45% (gross replacement rate 32–36%). The contribution rate is 24% of the wage bill (22% paid by firms, 2% by employees). Only employers' contributions remain in the PAYG system; employees finance the funded pillar.

The second (public/private and mandatory) pillar comprises supplementary funded pensions introduced in 2002. They will start to pay benefits in 2009. Hence, their implementation is still in progress and will be completed in the next 20 years. Participation is obligatory for workers born after 1983. By 2005, more than 75% of the labor force had joined the system. The supplementary pillar is run by private institutions: fund managers affiliated to banks, insurance companies, and investment banks. The second pillar is financed through a 2% contribution by employees, supplemented by a further 4% contribution by the state. It is thus based on a mix of the “carve-out” and “top-up” methods. The *Guarantee Fund* covers losses incurred by scheme participants (but not investment risks). The second tier is expected to represent 9% of the average pensioner's income in 2009, increasing to 24% in 2020 and 43% in 2030. In 2007, assets from the funded part of the mandatory pillar amounted to 5% of GDP.

The **supplementary, voluntary, and private pillars** were introduced in 1998 and then revised in 2002. They are implemented through pension insurance policies offered by licensed private insurance companies, or through units of pension funds managed by private managers. Important tax incentives were adopted by the state to favor their development.

Given that the Estonian government plans to keep an average replacement rate of 40%, the main challenge is to reach such a level in the future without placing financial strains on the first public pillar. The Estonian government assumes that half of the pension will be financed through the funded system.

The political economy of the reform in Estonia has been relatively conflict-free. The reform maintains some aspects of the peculiarities of the socialist system, namely, a high flat-rate basic component that increases the system's solidarity and vertical redistribution.

D. HUNGARY

The present pension system was introduced in 1998. The new legislation replaced the old architecture with a multi-pillar one for all workers. For those who got pension rights under the old system, participation in the second tier is optional, while it is mandatory for newcomers to the labor market.

The **first (public and mandatory) pillar** maintains the defined-benefit principles. The contribution rate is 26.5% of the wage bill, and indexation relates partly to price growth and partly to wage growth. The retirement age is fixed at 62 for both men (since 2000) and women (since 2009). From 2013, pension benefits will be gradually lowered. New mechanisms to calculate the pension amount will be introduced (e.g. calculation of the pension base from gross instead of net salaries, lower accrual rates, etc.). Means-tested benefits are provided to people in need who do not have a sufficient contribution record.

The second (public/private and mandatory) pillar consists of supplementary funded pensions based on the fully-funded method of financing. Contributions (8% of wages) are collected and managed by private institutions. Benefits are indexed following the same rules adopted for the first tier. Pension funds officially take the form of mutual savings associations whose members are co-owners of the fund. Pension funds are supervised by the State Financial Supervisory Authority, which issues fund licenses. The supplementary tier covers around 2 million people, representing 50% of the economically active population.

Mandatory pension programs are then supplemented by **voluntary schemes**, which were already well developed by the late 1990s. Contributions to the voluntary and private programs give the right to pensions being paid as a lump sum or an annuity. Together, the mandatory and voluntary funded programs cover more than 80% of the labor force. In 2007, Hungarian funds managed assets equaling 11% of GDP.

Hungary witnessed perhaps the most dramatic *political discussion* of its pension reform. The (socialist) government created the multi-pillar system in 1997. This was later scaled down by the next (conservative) government in 1998–1999, but 2003 saw another turn that increased the role of the funded pillar again. These frequent changes and other inconsistencies have undermined the Hungarian pension system's credibility. In this respect, it is open to speculation whether the reduction of the pension replacement rate introduced by the 1998 reform, which should limit the future deficit (through a combination of an increase in the legal retirement age and a change in the benefits formula), will be implemented or modified.

E. LATVIA

The present pension system was introduced through a pension reform adopted in 1996, which resembles the revised Swedish model. The pension system is based on three main pillars.

The first (public and mandatory) pillar consists of earnings-related pensions with a notionally defined contribution (NDC) provision. It is financed by a 20% contribution rate. Coverage is not universal but related to employment, and it contains no guarantee of a subsistence pension for everybody. People with no or insufficient contributions are covered by social assistance schemes (in particular through social maintenance benefits). The retirement age at the beginning of the 1990s was 60 years for both men and women (with the option of early retirement for women) and was later increased to 62 for both sexes (reached in 2003 for men and in 2008 for women). Early retirement is possible 2 years prior to the minimum retirement age (only 80% of the pension is paid). Latvia uses progressive indexation of pensions whereby lower pensions are indexed by the CPI plus 50% of real wage growth, pensions around the median are indexed by the CPI only, and the highest 1.5% of pensions are not indexed at all.

The second pillar is mandatory for all workers born after 1971. The contribution rate was 2% in 2001–2006 and is scheduled to reach 10% of the wage bill in 2010. This supplementary tier is both regulated and administered by the *State Social Insurance Agency*, while until 2003 decisions about the investment of assets were taken by the asset manager, i.e., the *State*

Treasury. Since then, participants have been able to choose between state and private asset managers. At retirement, the insured person can either convert the capital into annuities provided by life insurance companies, or add it to the PAYG scheme. In 2008, the second-tier assets amounted to 3% of GDP.

The **third voluntary and private pillar** is represented by supplementary funded pensions. They are run by private institutions and can be open and/or closed-end funds (the latter based on collective agreements). According to the national accounts, the level of assets in 2003 was particularly low (0.3% of GDP).

Pension reform in Latvia was facilitated by the severe 1995 economic crisis, which highlighted the economic shortcomings of the previous system. However, the government's plans were successfully blocked and postponed by the Latvian trade unions. The government sought to increase support for the pension reform by providing higher pensions to specific groups, such as the police, the army, children of those killed in 1991 by the Soviet Army, and, amusingly, those parliamentarians who voted for Latvia's independence in 1990. Moreover, Latvia faces the fastest decrease in population among the EU-27: by 2050, its population is expected to fall by 20%. This will be accompanied by a relatively modest rise in the old age dependency ratio from 23% in 2004 to 55% in 2050.

F. LITHUANIA

The present pension system was introduced in December 2002 and reformed again in 2004. The system has two pillars – PAYG and funded.

The **first (state and mandatory) PAYG pillar** was overhauled in 1995 and is financed by a 26% contribution rate. The social insurance benefit consists of two parts: a flat-rate basic part for the insured who have paid contributions for the mandatory insurance period, and a supplementary part only for those who have made contributions while working under a labor contract. The average net replacement rate is 40% (for workers with 30 years of contributions), with a large redistributive impact. The retirement age is 62 years and 6 months for men and 60 years for women. Early retirement is available for the long-term unemployed only. The government, however, provides two different types of minimum social pensions financed through the state budget. At 5.3% in 2000, public pension spending in Lithuania was among the lowest in the enlarged EU.

The **second pillar** is mandatory and funded, represented by supplementary funded pensions introduced in 2004. Originally, 2.5% of the wage could be shifted to pension funds (and/or life insurance companies), but the rate was gradually increased to 5.5% by 2007. Purchasing an annuity upon retirement is mandatory for all but very small pensions, which can be withdrawn as a lump sum. Total assets under management reached 1.5% of GDP in 2006. In late 2008, the Lithuanian government proposed to scale back the contribution to 3%.

The additional **voluntary and private pillars** are represented by voluntary accumulation for old age in pension funds or with insurance companies. Its growth is favored by tax incentives.

The expected future financial strains on the pension budget comprise the combined effect of the present high-level contributions and low-level benefits provided by the basic pillar, which would need to be increased in the near future to improve the adequacy of public pensions. In fact, 36% of old-age benefits are below the relative poverty level.

Politically, Lithuania represents a cautious reformer along the lines of the Czech Republic. The main features of the former Soviet-based system were maintained throughout the 1990s and only the 2002 reform established voluntary pension funds. A further reform enacted in

2004 introduced a strengthened funded pillar. Latvia's demographic outlook is similar to Lithuania's: the population is shrinking and will decrease by as much as 16% by 2050, but due to low life expectancy the old age dependency ratio will rise to only 45% and pension expenditures will not grow significantly.

G. POLAND

The present pension system is characterized by the coexistence of the old pension system inherited from the communist period and the new one adopted in Poland in 1999. For present pensioners (still covered by the old system) the public pension scheme is the major source of income after retirement. The system combines an NDC pillar topped up with a minimum pension and a funded pillar. The system is financed by a contribution rate of 19.52% (12.22% to finance the NDC pensions and 7.3% for the funded scheme) of the wage bill plus 13% for disability. The ceiling is 250% of the national average wage. The state, however, pays 90% of the farmers' pension scheme (1.8% of GDP).

The **first (public and mandatory) pillar** consists of minimum pensions paid on condition that the insured person has achieved a certain number of years of service (25 for men and 20 for women), and NDC benefits. The retirement age remains gender-specific and is 65 for men and 60 for women. Early retirement possibilities were abolished.

The **second (public/private and mandatory) pillar** comprises supplementary funded pensions taking the form of provident funds. Employees have the right to choose the fund in which to invest their contributions under the supervision of the state. Pension contributions (paid only by employees) give the right to an annuity after retirement. According to projections, the share of the funded tier in total old-age mandatory pensions should be about 40% of the total pension for people who have contributed their whole career. In 2003, the assets from the second tier amounted to 5.5% of GDP.

The **third pillar** is private, individual and/or occupational, and voluntary. Given the relative high replacement rate granted by the first two tiers in the mandatory pillar, these last ones are not well developed.

Demographic trends are for the moment less alarming in Poland than in the rest of Europe. High fertility rates in both the past and the present have allowed old-age dependency to be reduced by a relative young population. Nevertheless, the government expects to finance a transitory deficit of the system well into the 2030s. Combined with the expensive pension system for farmers, this requires relative high contribution rates of 32.5% of wages and a government subsidy of as much as 3% of GDP.

The Polish pension reform of 1999 was established with the aid of an inclusive, wide-based group of experts headed by a World Bank expert. The reform was even supported by the trade unions and still maintained crucial components such as an increase in the retirement age and a switch to an NDC system within the first pillar. The only significant group that avoided the reform was Polish farmers, which remain under a specific system.

H. ROMANIA

Romania reformed its pension system very late, in 2005. The reform aimed at stabilizing the financial balance of the system, eliminating extensive non-contributive claims, and at introducing a privately managed fully funded pillar.

The reform of the **first pillar** aimed at increasing the real value of pensions. It increases the retirement age gradually to 65 for men and 60 for women and changes the benefit formula, based on a scoring system which takes into account the actual revenues for the entire period of service. The reform also tightened the rules for indemnity pensions and reduced the contribution rate for employers from 22% in 2005 to 19.75% in 2006 and further to 19.50% in 2007 and 18% in 2008.

The second pillar, introduced in 2008, consists of privately-managed obligatory pensions. Initially, the 2% share of social contributions payable by employees under 35 will be channeled to privately-managed pension funds. For workers between 35 and 45, this contribution is optional. The contribution rate is set to increase gradually over a period of 8 years, until it reaches 6%.

Pension funds are supervised by the *Private Pension System Supervising Commission* and participants maintain individual accounts which give them ownership of the net assets. Pensions are payable at the retirement age from the first pillar and must be annuitized. Each pension fund will have to attract at least 50,000 people. Those persons who fail to sign up with a fund manager within the deadline will be automatically assigned to fund managers based on a formula.

The third pillar, stipulating private occupational schemes, came into effect on January 1, 2005; but was never implemented. Instead, these funds were converted into individual optional pension schemes in 2007. Contributions are tax-deductible (up to a limit) and may be matched (tax-free) by employers.

Romania implemented its pension reform while being accepted as an EU member (Romania joined the EU in January 2007). EU accession motivated the main stated goal of the reform: to increase labor participation, especially among older workers. Only 40% of the labor force between 55 and 64 works in Romania, and the participation rate is as low as 14% for workers above 65 years of age. This low participation was driven by lax early retirement rules, which were significantly tightened in the reform. Moreover, some 1 million farmers do not contribute to the system, along with an estimated 1–2 million workers in the shadow economy.

The reform was long delayed and was amended more than 20 times in the Parliament. All political parties accepted the reform only hesitantly and as an EU package. Public support, given the reform's bad timing, has been lukewarm so far.

I. SLOVAKIA

Slovakia shared its pension system with the Czech Republic, from which it separated in 1993, but reformed it substantially in 2005 by introducing a three-pillar architecture. The new system affects new entrants to the labor market, while for already active people the new system is optional.

The **first pillar** is mandatory and public. It is financed by a contribution rate of 9% of wages (a further 9% goes to the second pillar and 6% goes to disability benefits). The total contribution rate is 24% (firms pay 17% and employees pay 7%). Social pensions have been abolished and elderly people in need receive social assistance benefits. Early retirement has been reintroduced: benefits are reduced by 0.5% for every month of missed contributions until the legal retirement age is reached. A reserve fund was introduced to guarantee future pensions (it is financed by contributions paid by voluntarily insured persons and the self-employed). Old-age benefits are provided on the basis of a minimum contribution period of

10 years (previously 25 years) with a legal retirement age of 62 for women (to be reached in 2015) and 62 for men (in 2007).

The **second pillar** is mandatory, fundamentally private, and fully funded. Financial resources come from splitting the total contributions originally paid to the first pillar. Under the 2005 legislation, the second-tier contribution rate is set at 9% of wages. The new legislation includes a relative rate of return guarantee: the value of the funds' assets is not allowed to fall below a certain limit. It is not possible to increase contributions to the second pillar above the fixed contribution rate. Transition costs related to the introduction of the second tier will be partially covered by the privatized share of the Slovak Gas Company.

The **third pillar** is voluntary, fully funded, and private. It is organized by funded schemes implemented through occupational funds, pension insurance, life insurance, and special kinds of bank savings accounts. While the mandatory pillar is expected to provide between 50 and 60% of gross replacement rates, the voluntary one is expected to provide between 20 and 25%.

The Slovak reform was a part of a radical reform program of the centre-right coalition that was elected in 2002. The coalition pushed several major reforms through the Parliament (a flat tax, pension reform, health care reform), preventing the opposition from organizing effectively against it. The government lost the 2006 election, partly due to its unpopular reforms, but the new left-wing government has not eliminated the reformed system. It has, however, allowed workers to return from the reformed system to the fully PAYG system (this was originally possible only for one year, but has now been extended permanently). The centre-left has also complained that the pension system balance is to worsen as contributions are channeled into the new private pillar. One can argue that the centre-right coalition tied the hands of its successor in creating very challenging fiscal conditions in the short term that do not allow any slack in fiscal performance unrelated to the pension reform.

J. SLOVENIA

The pension system in Slovenia was first reformed in 1992, while the second *Pension and Disability Insurance Act* was approved in 1999 (and amended again in 2001). The present pension system is Bismarckian. It is a comprehensive system, covering all the employed and the self-employed, and is based mainly on public provisions, but consists also of a second and third pillar (albeit less developed than in other European countries). Social insurance programs are combined with social assistance provisions providing public coverage for people in need.

The **first (public and mandatory) pillar** consists of an earnings-related scheme financed through social contributions and related to employment. The contribution rate is 24.35% (firms pay 8.85%, employees pay 15.5%, no ceiling, no floor), but covers only 68% of all pension expenditures. The rest is financed from the state budget. The minimum contribution period is 15 years. Moreover, pensioners with low incomes or incomplete contributions can apply for a pension income supplement. Social assistance is then given to people in need through a *national pension*, which is still a means-tested benefit. The retirement age changed in 2000: each year now adds a 1.5% pension accrual. The retirement age increases to 61 for women (to be reached in 2029) and 63 for men (in 2009). Early retirement is possible from 58 (men) and 56 (women). The effective retirement ages are low (59 for men, 56 for women). Indexation is related to wages instead of prices (at least in principle), but the ratio of the average pension to the average net wage fell from 76% in 1995 to 70% in 2004.

The **second (private and voluntary) pillar** comprises supplementary pension funds. Schemes must be approved by the *Ministry of Labor, Family and Social Affairs*. Supplementary mutual funds must be regulated by the *Securities Market Agency*. For public sector employees, a mandatory scheme was created in 2003. As a consequence of very favorable tax incentives, supplementary pensions are expected to grow in the coming years. In 2000, the second pillar covered 11% of all insured persons in the first mandatory pillar; by 2005 this share had reached 51%. In 2006, collective voluntary occupational schemes had total assets of 2.7% of GDP.

The **third pillar is private and voluntary**, consisting of individual savings in the form of life insurance, and is administered by insurance companies. Premiums paid to this third pillar are subject to tax relief.

Slovenia can be regarded as an example of a gradualist approach to reform. It is still lagging behind, though it started earlier with bold plans. A government white paper of November 1997 contained radical proposals for a fundamental restructuring of the pension system: a large downsizing of the first (public) pillar, and the introduction of a mandatory, privately funded second pillar. These reform proposals were strongly influenced by measures championed by the World Bank. However, because of strong opposition from various groups – trade unions, opposition parties, and certain influential economists – the proposals were watered down considerably and the government maintains a crucial role in the pension system. The Slovenian system is one of the most in danger of escalating expenditures, as the dependency ratio explodes from 21% in 2004 to almost 60% in 2050. The system still allows very generous early retirement, increasing the pressure on public finances.

Appendix 2: Pension Reforms in the EU-8: Data

Pension reforms in the EU-8

	Year of reform	1 st pillar	Retirement age (F/M)	Indexation	Contribution rate (% of wages)	Deficit (% of pension exp.)	2 nd pillar	Contribution to 2 nd pillar (% of wages)	Assets in 2 nd pillar (% of GDP, 2004)
CZ	1996	DB	61/63	Prices/wages	28%	0%	Vol.	n.a.	3.6%
Estonia	2002	DB	63/63	Prices/wages	24%	2%	Mand.	6%	2.8%
Hungary	1997	DB	62/62	Prices/wages	26.5%	26%	Mand.	8%	4.0%
Latvia	2001	DB	62/62	Prices/wages	20%	0%	Mand.	10%	0.3%
Lithuania	2004	DB	60/62.5	Wages	26%	0%	Mand.	5.5%	0.3%
Poland	1999	NDC	60/65	Prices/wages	32.5%	45%	Mand.	7.3%	7.1%
Slovakia	2005	DC	62/62	Wages	24%	10%	Mand.	9%	n.a.
Slovenia	2000	DB	61/63	Wages	24.35%	15%	Vol.	n.a.	1.4%

Fiscal institutions in the EU-8

	Preparation stage (2006 for Slovakia and CZ)			Authorization stage (ditto)			Implementation stage		
	1997	2003	Change	1997	2003	Change	1997	2003	Change
CZ	1.00	1.75	+0.75	2.67	2.34	-0.33	2.67	2.67	0
Estonia	2.25	2.25	0	2.00	2.34	+0.33	3.67	3.67	0
Hungary	1.50	1.50	0	1.33	1.33	0	2.00	1.33	-0.67
Latvia	2.50	2.50	0	0.67	0.67	0	3.67	3.67	0
Lithuania	1.00	1.75	+0.75	1.67	1.67	0	3.67	3.00	-0.67
Poland	1.50	2.25	+0.75	1.00	3.00	+2.00	3.00	3.00	0
Slovakia	0.75	2.25	+1.50	1.34	1.67	+0.33	2.34	3.33	+1.00
Slovenia	2.75	2.75	0	2.33	2.33	0	2.67	2.67	0

	Overall index (2006 for Slovakia and CZ)		
	1997	2003	Change
CZ	2.09	2.33	+0.24
Estonia	2.61	2.72	+0.09
Hungary	2.00	1.50	-0.50
Latvia	2.26	2.26	0
Lithuania	2.09	2.12	+0.03
Poland	1.82	2.72	+0.90
Slovakia	1.46	2.75	+1.29
Slovenia	2.56	2.56	0

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