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Abstract

This paper surveys the most significant problems of the pension systems of EU11 countries. These nations had to transform their old-age social security systems after replacing a state-socialist economic order with a capitalist one. Stressing common as well as specific features, our paper concludes that no country has yet found the perfect solution, a pension policy-mix that would blend sustainability with efficiency and adequacy. Moreover, the countries surveyed do not seem to improve their policies over time. Instead, several of the errors discussed in the study re-appear in various forms and under various circumstances. Our study sheds light on the most common of these policy errors, and offers a common framework for evaluating pension systems along the most important qualitative dimensions.

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Nyugdíjak az átmeneti gazdaságokban: EU11 1990–2015

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Összefoglaló

Cikkünk az EU11 országok nyugdíjrendszereinek legfontosabb problémáit tekinti át. Miután az államszocialista gazdasági rendszerüket felcserélték egy kapitalista rendszerrel, e nemzeteknek át kellett alakítaniuk időskori nyugdíjrendszereiket is. Egyaránt hangsúlyozva a közös és a sajátos vonásokat, cikkünk arra a következtetésre jut, hogy még egyik érintett ország sem találta meg a tökéletes megoldást, azaz egy olyan nyugdíjrendszert, amely a fenntarthatóságot a hatékonysággal és a megfelelőséggel ötvözné. Sőt, ezek az országok az elmúlt évtizedekben képtelenek voltak nyugdíjrendszereik működését javítani. Ehelyett a tanulmányban említett hibák időről időre különböző formában és körülmények között újra megjelentek. Vizsgálatunk megvilágítja ezeket a hibákat, és közös keretet ajánl a nyugdíjrendszerek minőségének kiértékelésére.

Tárgyszavak: posztszocialista országok, nyugdíjreform, politikai fenntarthatóság, gazdasági fenntarthatóság, nyugdíjmegfelelőség, nyugdíjprivatizáció

JEL kódok: H11, H55

Introduction

After 1990, the nations of the former state-socialist bloc, in particular the eleven Eastern Europe-an post-socialist nations that pursued fast integration into the European Union (EU), were confronted with the formidable task of a concomitant transformation, from state-socialism to a market economy, and from authoritarianism to political democracy. As a result, their pension systems, designed to fit a centrally planned and distorted economy, had to be adapted to new circumstances. Depending on a large variety of economic and political conditions and limitations, each of the EU11 countries had to re-think the details of their retirement policies.[1] The experience of the region demonstrates the diversity of responses policy-makers can adopt when confronted with significant reform pressure. Different EU11 countries introduced a variety of reforms at different periods, largely depending on previous pension policy arrangements and economic and political tensions. Focusing on the 25 years of post-socialist reform experience in the EU11 nations, this study shall discuss the best and worst practices in pension policy-making, and offer a common framework for evaluating the quality of pension systems.

Since the introduction of social insurance in the late 19th century, which included both health and retirement arrangements, most of the now EU11 countries were leaning towards the Bismarckian rather than the Beveridgean philosophy in their pension-policy design (Inglot, 2008). In most cases, the benefit amounts were, in one form or another, derived from past contributions, but the link between these two variables was often considerably weaker than what a defined contribution (DC) or points system would require. While the pension systems of the state-socialist economies needed a thorough reform, they had one undeniable advantage: unlike many of the Western pension schemes, by the 1970s, they comprised the entire population.[2]

During the Soviet-type development, these countries learned very little about the actual functioning of Western European market economies. Thus, when the transition started, the politicians and experts of EU11 nations relied on the know-how of foreign advisors, mainly from the World Bank (WB) and the International Monetary Fund (IMF), and to a much lesser extent also from the International Labour Organisation (ILO). Some challenges, such as the indexation and valorisation of pensions could be successfully tackled using advice from international policy advocates

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[1] The EU11 countries are as follows (in English alphabetical order): Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic and Slovenia.
[2] This specific feature of state-socialist pension systems was a result of the official full-employment policy of the ruling communist parties. Pensions, as well as a number of other social transfers of financial and non-financial nature, were organized and administered under the presumption that everyone was employed (Baxandall, 1994; Eichhorst & Hemerijck, 2008). This was not anymore the case in the new market economies in the 1990s, which also led to significant tensions.

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from the West.[3] However, specific problems of transition, such as the collapse of the state-owned sector, were of unprecedented nature, and needed special solutions. This study evaluates the pension-policy pathways undertaken by the former state-socialist countries in response to the challenges of economic transition and demographic ageing. Besides discussing the most visible issues of post-socialist pension-reform policy, we also draw the readers' attention to the less conspicuous design errors in pension systems, which have not yet gained sufficient attention in the scholarly literature.

What are our criteria for evaluating pension systems and their reforms (cf. Barr & Diamond, 2008)? There is a general view that a pension system should ensure *adequacy and economic sustainability*. If there are large groups whose members will not receive adequate pensions, ensuring acceptable income after they have retired, then the system is inadequate.[4] If the system is economically unsustainable, it will sooner or later be corrected by subsequent reforms.

The pension system should also be *equitable* within and among generations. However, *equity* does not necessarily mean that a pension system has to be actuarially fair, like the Polish and Latvian notional DC (for short, NDC) schemes copied from Sweden. We expect that an equitable system deviates from actuarial fairness in a logical way and achieves redistribution from the better paid to the worse paid, not vice versa. The system is intergenerationally equitable if the relative burden of each generation is the same.

The pension system should combine *solidarity and efficiency*. Solidarity demands at least a minimal pension for everybody, even if somebody had not paid contribution during her entire adult lifetime. Efficiency demands rules which make workers interested in working and contributing to the system as much as rational. Efficiency within the pension system is of particular importance in cases when the *full benefit (normal) retirement age* is quickly increased in a limited period, as it occurred in almost all EU11 countries. More specifically, if the deduction for early (pre-statutory) retirement is too small, then increases in the normal retirement age will not lead to increases in the effective retirement age. However, if the deduction is excessive, then the early retirees, forming a large part of the pensioners, may be pushed into poverty (see also Puur, Leppik & Klesment, 2015).

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[3] Following the continental custom, we shall distinguish the indexation of pensions *in payment* and of *initial* pensions throughout the text, and refer to the latter as *valorisation*.

[4] In addition to open adequacy, reflected by the purchasing power of the pension benefit, there is generalized adequacy, reflecting the additional private costs of health and old-age care. Without prejudice to the importance and relevance of this latter concept, our paper emphasizes open adequacy, because of its direct link to the pension system and its better measurability.

The pension system should be *stable and flexible*. Stability means that the basic structure and the important parameter values of the pension system do not change too fast and too frequently; and if they change, their modification is announced in advance. Flexibility is also needed, otherwise delayed changes may eventually lead to the adoption of large, shock-like adjustments once reform pressures cannot be ignored anymore. Such breaks have been common in the pension systems of the EU11 nations, causing non-negligible tensions among the public.

Last, but not least, pension systems should be *well-designed*. As a rule of thumb, good design eans that the social security system is as *simple* as possible, yet not overly simplistic. For example, the simplest possible annual increase of pensions in progress would be a uniform absolute increase, regardless of the previous benefit. However, such a policy is not only unfair and politically sensitive, but, as the recent Slovakian experience has shown, may also lead to unforeseen inequities between successive cohorts of pensioners. Proportional indexation and valorisation is therefore the general rule. Similarly, while reducing the reference period to the last few active years may simplify pension administration, such an approach is overly simplistic. In order to comply with the criterion of equity and efficiency, the entry pensions should depend in a symmetric way on all, not just the last contributions.

This paper will evaluate to what extent EU11 countries followed the basic principles of sound pension policy-making in their pension reforms. While discussing a large variety of different reform episodes, special attention will be given to the privatization of old-age social security, which is one of the few common traits in the pension policy trajectories of the EU11 countries. Between 1994 and 2010, there was a widespread though not unanimous agreement that the problems of the public pension system cannot be solved without *partial funding and privatization* of these state-run systems (supporters: Holzmann, 1994; Palacios & Rocha, 1998; Chlon, Góra & Rutkowski, 1999; critics: Beattie & McGillivray, 1995, Augusztinovics, 1999; Müller, 1999; Simonovits, 1999; Orszag & Stiglitz, 2001; Barr, 2001; Barr & Diamond, 2008).

This has led to the introduction of mandatory private pension accounts coupled with a partial opt-out from the public pension system (for an overview, see Adascalitei & Domonkos, 2015; Naczyk & Domonkos, 2015). The Great Recession underlined the weaknesses of mandatory funded systems, requiring the re-evaluation of past policy choices.

The structure of the remainder is as follows. The first part of the study discusses the adequacy and the sustainability of the pension systems of EU11 countries. Subsequently, the second part analyses the corresponding intra- and intergenerational equity problems. The third part investigates the harmonization of solidarity and efficiency. The fourth part analyses the stability and the flexibility of the pension systems. This is followed by a discussion of the less conspicuous design problems in EU11 pension system in the fifth part, and detour to the case of pension privatization

in the sixth part of the paper. Finally, we propose a common framework for the analysis of pension systems, summarizing the main dimensions that should be taken into account. We also propose quantitative indicators measuring these properties of a country's pension system.

Adequacy and sustainability

Tables 1a and 1b show the median relative income of the elderly in EU11 countries and the poverty rate, defined as 60 per cent of equivalised median income, among individuals aged 60 or more.[5] As can be seen, some EU11 nations have a rather low relative elderly income (e.g. the Baltics around 0.7). By contrast, in Hungary, Poland and Romania, elderly households have above average income. In some of the EU11 nations, the relative income of older households is reasonably stable over time.

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[5] Note that according to the most recent Labor Force Survey data from 2012, published by the Eurostat (2014), the median age at which pensioners start receiving their old-age pensions remains below 60 in each of the EU11 nations. In Romania, the Slovak Republic and Slovenia, it reaches only 57 years.

Table 1.

Median relative income of elderly (60 and older compared to cohorts aged 15-59) and poverty rate among the 60+ population

Table 1a. Median relative income of elderly[1]

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
EU28							0.92	0.93	0.95	0.96	0.97
BG			0.81	0.80	0.70	0.67	0.79	0.78	0.79	0.80	0.87
CZ		0.86	0.84	0.84	0.81	0.81	0.84	0.85	0.87	0.88	0.87
EE	0.77	0.74	0.71	0.67	0.64	0.68	0.74	0.77	0.73	0.70	0.64
HR							0.81	0.87	0.89	0.92	0.90
HU		1.02	0.96	0.99	1.03	1.04	1.04	1.01	0.99	1.05	1.10
LV		0.76	0.67	0.66	0.58	0.60	0.79	0.87	0.81	0.79	0.75
LT		0.82	0.76	0.71	0.72	0.75	0.95	0.92	0.80	0.81	0.79
PL		1.11	1.09	1.07	0.99	0.93	0.95	0.96	0.98	1.00	1.01
RO				0.8	0.89	0.99	1.02	1.06	1.07	1.09	1.11
SI		0.89	0.87	0.89	0.88	0.88	0.89	0.88	0.89	0.89	0.91
SK		0.89	0.88	0.84	0.81	0.85	0.87	0.89	0.85	0.92	0.93

Table 1b. Elderly poverty rate[2]

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
EU28							15.3	15.5	14.6	14.1	14.0
BG					18.9	22.6	30.3	34.6	28.7	27.8	25.6
CZ		4.5	5.4	4.9	6.7	7.1	6.4	6.5	6.1	5.6	6.5
EE	19.4	19.7	24.0	30.6	35.5	31.0	15.5	13.1	17.6	23.3	30.9
HR							27.5	27.2	24.2	22.0	22.6
HU		6.4	9.1	5.9	4.4	4.9	4.8	6.1	7.7	5.9	6.2
LV		20.8	30.7	34.1	47.2	43.5	18.3	10.9	14.8	17.6	25.7
LT		16.9	20.7	26.7	28.9	23.7	12.0	11.7	19.5	20.3	19.9
PL		8.1	8.3	8.3	11.8	14.2	14.0	14.5	14.0	12.3	12.3
RO				28.1	23.5	19.1	15.7	13.5	14.3	14.8	15.5
SI		18.7	18.3	17.7	19.1	18.2	18.8	19.1	17.3	17.8	15.9
SK		6.3	7.6	7.3	9.0	8.8	6.7	6.2	7.8	6.6	6.6

Notes: BG=Bulgaria, CZ=Czech Republic, EE=Estonia, HR=Croatia, LV=Latvia, PL=Poland, RO=Romania, SI=Slovenia, SK=Slovakia;[1]expressed as a ratio of the median income of those aged 60 or more to the members of the 15-59 age group;[2]expressed in percentages of the relevant age group.
Source: Eurostat [tespn060 and ilc_li02 series], retrieved on February 19, 2016.

In Slovenia, for instance, it oscillated between 0.87 and 0.91 during the entire period observed. However, in countries such as Latvia, Lithuania and Romania, the indicator evolved along a much more turbulent path. While an in-depth analysis is beyond the scope of this study, both extreme values and extreme oscillation may indicate important flaws within the pension system. Differences in the elderly poverty rate across time are somewhat less significant than in the case of relative elderly household income. However, cross-country differences are very large. The Czech and Slovak Republics have an elderly poverty rate well below ten per cent, while the minimalistic Bal-

tic welfare states, Estonia and Latvia in particular, appear to have great difficulty addressing old-age poverty.

Turning to the other side of the coin, sustainability is best judged by the contribution rate or by the ratio of public pension expenditures to the GDP. There is a general idea that a pension-to-GDP ratio above 15 per cent or a contribution rate above 20–25 per cent is excessive.[6] Table 2 shows the share of old-age, disability and survivors' pension in the GDP. Several EU11 countries spend well beyond 10 percent of their GDP on pensions, although none of them reaches the 15-percent threshold.[7] Before making dare observations, note that in some countries the content of the category changed from one year to the next. The drop of the share from 10.8 in 2011 to 9.3 in 2012 in Hungary is a case in point.[8]

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[6] Note that the economically illogical breakdown of the total contribution rate into employee and employer rates modifies even this apparently unequivocal index. In EU11, the employee's contribution rate was much lower than the employer's rate, inflating their sum with respect to another country, where the two rates are the same. For example, in Latvia, these rates are zero for the employee and 20 per cent for the employer, respectively. If we increase the underlying gross wage by 10 per cent, and work with equal rates of 10 and 10 per cent, then the new rates diminish to $10/1.1 \approx 9.09$ per cent and their sum is 18.18 per cent.

[7] It is noteworthy that, as late as 2008, the Greek projection that estimated a 25-per cent pension-to-GDP ratio by 2060 was broadly accepted without raising much concern from the international policy-making community.

[8] There was a malevolent change in the Hungarian statistic from 2011 to 2012: transfers to disabled persons were reclassified so that they do not fall into the category of pensions, unless the person has reached retirement age. In this latter case, disability benefits were reclassified as old-age pensions.

Table 2.

Share of pension expenditure on GDP (in % of GDP).

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU28					11.3	12.3	12.3	12.3	12.5	
BG		7.3	7.0	6.4	6.7	8.3	8.8	8.2	8.1	8.6
CZ	7.6	7.7	7.7	7.6	7.8	8.7	8.8	9.2	9.4	9.3
EE	6.0	5.8	5.9	5.7	6.9	8.9	8.7	7.8	7.6	7.5
HR					9.3	10.4	10.6	10.4	10.6	10.9
HU	9.2	9.6	9.8	10.3	10.8	10.9	10.7	10.8	9.3	9.4
LV	6.6	6.0	5.7	4.9	5.7	8.3	10.1	8.7	8.3	8.2
LT	6.7	6.5	6.3	6.5	7.3	9.5	8.4	7.6	7.6	7.2
PL	13.1	12.5	12.4	11.4	11.5	12.2	11.6	11.2	10.9	
RO	6.1	6.2	6.0	6.4	7.5	9.2	9.3	9.1	8.7	8.3
SI	10.3	10.2	10.1	9.6	9.5	10.7	11.0	11.2	11.4	11.7
SK	7.2	7.3	7.2	7.1	7.0	8.3	8.2	8.1	8.3	8.5

Notes: For country abbreviations, see Notes to Table 1.
Source: Eurostat [spr_exp_pens series], data refer to the share of early, old-age, survivors' and disability pensions, retrieved on February 19, 2016.

Moreover, differences in the tax treatment of pensions also hinder cross-country comparison. In countries such as Romania and Slovenia, pensions are taxable income. In the Czech and Slovak Republics, they constitute a net category. One should know the ratio of net to gross pension before making international comparisons. Hoping that these problems are not too important, available data demonstrate that the level of pension expenditure compared to the GDP is steadily rising throughout the region, but it still remains below the EU28 average. Croatia, Poland and Slovenia represent cases, where pension expenditure has already exceeded 10 per cent of the GDP. However, other countries, especially Estonia and Latvia have very limited spending on pensions in comparison to the European average.

Table 3 shows the ratio of the pension expenditures to the general government revenue across countries and years. It should be noted that, in several EU11 nations, pensions represent a transfer amounting to about a third of the government revenue. This was the case in Poland throughout the 2000s, but figures for Croatia, Romania and Slovenia are not far below this threshold. This figure has been steadily increasing in most countries, with the notable exception of Hungary, where the ratio of government expenditure to the GDP was always highest.

Table 3.

Share of pension expenditure in general government revenue

(in % of government revenue)

	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU28				26.4	28.8	28.8	28.4	28.5	
BG	19.4	19.7	16.7	17.3	23.3	26.3	25.6	23.9	23.4
CZ	19.8	19.9	19.3	20.5	22.8	23.0	22.9	23.1	22.6
EE	16.7	16.0	15.5	18.7	20.2	21.4	20.2	19.5	19.7
HR				22.3	24.9	25.7	25.5	25.5	25.8
HU	23.0	23.2	22.9	23.9	23.5	23.8	24.3	20.1	20.1
LV	17.8	16.1	14.8	17.1	24.2	28.0	24.3	22.9	22.7
LT	19.2	18.5	18.9	20.9	26.5	23.9	22.6	23.0	21.9
PL	30.9	30.1	27.6	28.1	32.2	30.6	28.8	27.9	
RO	19.1	18.1	18.1	22.5	29.3	28.3	26.8	26.0	25.1
SI	23.3	23.5	22.8	22.3	25.2	25.3	25.8	25.6	25.8
SK	20.0	20.6	20.7	20.4	23.1	23.9	22.3	23.0	22.1

Notes: For country abbreviations, see Notes to Table 1.
Source: Eurostat [spr_exp_pens and gov_10a_main series], data retrieved on 8 March, 2016.

We end this part of the discussion with a repetition from the Introduction: if the system is unsustainable, it will be amended by subsequent reforms.[9] This imperative is the underlying reason behind the "permanent reform" (Simonovits, 2008) of the pension system observed in several EU11 countries.

Intra- and intergenerational equity

Intragenerational equity, i.e. equity among members of the same generation, deserves attention both in pension financing and pension benefits. The general rule for pension financing should be the proportionality of payroll taxes levied on covered income.[10] While this is mostly respected throughout the region, there are important details that elicit discussion among policy-makers. Such discussions revolve around social-security contribution breaks for employers who employ

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[9] For example, when Hungary applied for conditional loans from the World Bank and the IMF and the EU in October 2008, the government had to scrap the 13th month pensions introduced between 2002 and 2006.

[10] Covered earnings refer to income included in the base for calculating pension benefits and contributions. Most commonly, the two are the same, even if the replacement rate of individuals with diverging incomes may differ.

disadvantaged jobseekers, as well as the treatment of very high income through setting a cap on the contribution base.

A particularly high tax wedge on labour income has been argued to decrease employment, especially in nations with strong trade unions (Nickell & Layard, 1999; Daveri & Tabellini, 2000). Empirical evidence in line with this statement has been produced using data both from post-socialist countries (Rutkowski & Walewski, 2009; Góra et al., 2006), as well as from other political-economic contexts (Daveri & Tabellini, 2000; Bassanini & Duval 2006). However, the debate on the consequences of a high tax wedge on employment has most commonly emphasized its negative impact on low-skill workers, who appear to be harder hit by the policy than their highly educated counterparts. Policy-makers have reacted by introducing specific exemptions from social security contributions and income tax for low-income workers. The most prominent example of the recent years has been the Slovak Republic, which introduced in 2013 a social-security contribution relief for employers that hire long-term unemployed for a relatively low wage. The policy, initially targeted at low-skilled workers has been reshaped in 2015 to better address the needs of the least developed geographical regions of the country.

The treatment of very high earnings also deserves attention. To date, most EU11 countries have a maximum amount of covered income determined in their social security legislation. These range from the relatively low cap of 2.5 times the national average wage in Poland to up to five times the national average wage in the Slovak Republic. Estonia and Hungary (since 2013) represent exceptions, as there is no maximum contribution base and no maximum pension defined in the social-security legislation (Social Security Agency, 2014).

Intragenerational equity in pension financing requires the assessment of not only the pension system, but also of personal income taxation (PIT). A PIT system that is stable in the long run and fair is a necessary condition for intragenerational equity in social security. Each of the countries analysed uses payroll taxes, i.e. social security contributions, to finance pensions, but the revenue collected through this channel is rarely sufficient to cover pension outlays. The social-security deficit is therefore covered from the general budget. This means that the effective pension contribution rate of workers, especially of those who carry a higher tax burden, is higher than their social security contributions alone.

Turning from pension financing to pension benefits, intragenerational equity requires the presence of a pension scheme that provides reasonable benefits even for workers whose contribution base was below average throughout their career. In effect, most OECD countries have a pension system where the replacement rate of low earners is somewhat higher than that of better earners. As Table 4 demonstrates, the EU11 constitute a very heterogeneous group in this respect. On the one hand, the Czech Republic has an extremely redistributive old-age pension system,

where past contributions have a very limited impact on the level of monthly pensions (see Potůček & Rudolfová, 2015).[11] By contrast, Hungary represents a case, where virtually no decline in the replacement rate is observable for the income levels analysed.

Data on the tax wedge, defined as the tax and social security payments levied on wage income, also show considerable differences. While the Czech and Slovak Republics and Slovenia are countries where the tax burden is shifted towards high-income workers, the Hungarian tax system is proportional.

Table 4.

Tax wedge and pension replacement rate of selected EU11 countries in 2014

Table 4a. Tax wedge (income tax and social security contributions)

	Percent of the average wage (AW)			Comparison[1]
	50	100	167	
EU28	20.8	29.6	34.7	1.67
CZ	15.0	23.0	26.3	1.75
EE	16.7	19.6	20.8	1.25
HU	34.5	34.5	34.5	1.00
PL	21.0	23.8	25.0	1.19
SK	16.0	22.9	25.7	1.61
SI	22.9	33.2	37.7	1.64

Table 4b. Old-age pension replacement rate

	Percent of the average wage (AW)			Comparison[1]
	50	100	150	
EU28	80.7	70.9	66.4	0.82
CZ	93.1	63.8	51.9	0.56
EE	76.1	59.8	53.5	0.70
HU	89.6	89.6	89.6	1.00
PL	54.0	52.8	52.4	0.97
SK	84.0	80.6	79.4	0.95
SI	57.6	57.4	55.1	0.96

Notes[1]tax wedge and replacement rate of above average earners expressed as a multiple of the tax wedge and replacement rate of below-average earners.
Source: replacement rate: OECD Pensions at a Glance dataset, tax wedge: Eurostat [earn_nt_taxrate series], data retrieved on 15 April, 2016.

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[11] The redistributive nature of the Czech public pension system was contested at the Czech constitutional court in 2007, which declared the low replacement rate the system provided for high-income individuals unconstitutional. The court's judgment, published in 2010, was followed by a minor reform of the system slightly decreasing its redistributiveness (Potůček & Rudolfová, 2015).

Although lower replacement rates or a higher tax wedge for better earning workers may dissuade some tax payers from contributing to the social security system, there are strong arguments in favour of these policies. Income-related divergence in life expectancy is one of the most important among them. Intragenerational (in)equity is often present in the form of large differences in life expectancy and disutility of labour among low and high earners. There is growing evidence, both in Western and Eastern Europe, that longer-lived workers self-select into delayed retirement, whereas shorter-lived individuals opt more often for early retirement (Kühntopf, 2010; Kühntopf & Tivig, 2014; Simonovits; 2015). A pension system relying solely on standard actuarial adjustments and mortality tables generated by national statistical agencies cannot account for such behaviour among workers close to retirement.

Given the significant degree of uncertainty about the future, assessing intergenerational equity is in many ways even more challenging than evaluating intragenerational equity. Generational Accounting (GA), a method developed by Auerbach, Gokhale and Kotlikoff (1992, 1994), which tries to quantify burden-sharing among generations, might be particularly useful in determining if a pension system complies with the principle of intergenerational equity. Notwithstanding its shortcomings, GA can provide a meaningful yet by no means entirely precise picture about intergenerational redistribution within various pension systems. Due to its forward-looking nature (Auerbach, Gokhale & Kotlikoff 1992), its most important application lies in capturing the effect of reforms in public policies on the net burden of future generations. For the first time, GA in EU11 was developed by Gál, Simonovits and Tarcali (2000), who applied the method to the case of the Hungarian pension system.

Probably the simplest possible way of ensuring intergenerational pension equity is to fix the contribution rate for a long period and define the pension benefits through an NDC system that carries out an automatic actuarial adjustment of pensions payable to the development of the average life expectancy. Nevertheless, as will be discussed below, such a system provides considerable space for perverse redistribution due to life-expectancy differences across various occupational and income groups.

Another unwanted effect of having an NDC scheme is that replacement rates are projected to decrease dramatically as the population becomes older. This trend is expected to reach extreme levels in the case of Poland. In their comparative analysis of Europe's NDC schemes, Chłoń-Domińczak et al. (2012) expect an eventual decline of the ratio of the average Polish pension to the

average wage from 56 percent in 2007 to 26 percent in 2060.[12] As Table 5 demonstrates, a decrease of this magnitude in the replacement rate is unusually large, even in comparison to most other nations running an NDC scheme. Clearly, the Polish public NDC system falls into the trap of sacrificing adequacy for economic sustainability. It is likely that the implementation of such a strict NDC scheme will run into political difficulties in the long-run.

As Jabłonowski, Müller and Raffelhüschen (2010) discuss, the introduction of DC schemes into the Polish and the Latvian pension systems will most likely lead to a significant realignment of the intergenerational burden, from the shoulders of cohorts yet to be born to those already living. However, this is reached largely at the cost pension adequacy. The main channel through which an NDC system achieves the goal of easing the pressure on future generations is gradual cuts in the pensions of the current generation.

Table 5.

Gross replacement rate projections: NDC schemes in the EU28

	2013	2060
Italy	59.9	51.8
Latvia[1]	33.4	18.1
Poland[1]	53.0	28.7
Sweden[1]	35.6	29.0

Note: The numbers refer to gross replacement rates given in percentages derived from the baseline scenario of economic forecasts of the EU Ageing Report 2015; [1]public pensions.
Source: European Commission (2015).

Solidarity and efficiency

We end this part of the discussion with a repetition from the Introduction: if the system is unsustainable, it will be amended by subsequent reforms.[13] This imperative is the underlying reason behind the "permanent reform" (Simonovits, 2008) of the pension system observed in several EU11 countries.

A system respects the principle of *solidarity* if it pays attention to the interests of the poorer strata of the population. By contrast, the principle of *efficiency* requires that a system achieve conditional optimum. A good pension scheme should combine solidarity and efficiency, as much as possible. While a more redistributive pension system contributes to fulfilling the moral impera-

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[12] Note that, in contrast to the Polish case, Sweden softens the hardness of its NDC system by generous pension credit.
[13] For example, when Hungary applied for conditional loans from the World Bank and the IMF and the EU in October 2008, the government had to scrap the 13th month pensions introduced between 2002 and 2006.

tive of solidarity, it may also engender contribution evasion and withdrawal from the labour market. If it pays too much attention to efficiency, it may create mass poverty in old age.[14]

Creating a balance between solidarity and efficiency is particularly important at a time when the main emphasis is put on retaining elderly workers in the labour market, either through increasing the statutory retirement age or other measures. Almost every EU11 country allows workers to retire earlier or later than the statutory retirement age.[15] Nevertheless, earlier retirement normally results in a malus, while late retirement is remunerated by a bonus. In most cases, differences between adjustments for early and deferred retirement are rather limited and remain close to the actuarially fair level. For instance, in the Slovak Republic and Slovenia, a person's standard pension is cut by 0.5 per cent for a month of pre-statutory retirement, and is increased by 0.5 per cent for a month of post-statutory retirement. However, some nations motivate post-statutory retirement by raising retirement benefits more than the actuarially fair increase. For example, in Estonia, a person earns a 0.9-per cent increase of her standard pension for each month worked beyond the statutory retirement age, but a month of pre-statutory retirement leads to a cut of 0.4 per cent in one's pension.

At first approximation, an NDC scheme is a perfect solution also in this respect. Any extra year increases the workers' nonfinancial pension wealth and decreases the number of years for which the wealth is to be distributed, thus resulting in increased monthly pension instalments, based on actuarial formulae. But at a second approximation, things are more complex. Late retirement and high income are associated with high life expectancy. Therefore, a typical NDC scheme, just as any scheme relying on uniform mortality tables, oversubsidizes the well-to-do, healthy part of the population. The total elimination of this inequity is possible, but at a very high cost.

As already mentioned, there is a widespread analytical bias concerning the proportionality of annual versus lifetime flows. When discussing redistribution, most analyses concentrate on the amounts of annual benefits. Lifetime income flows are largely ignored. For example, the Polish pension system is near proportional in annual terms. However, if we take into account that the higher one earns, the longer she lives, lifetime proportionality disappears. In fact, because of differences in longevity, the lifetime return on one monetary unit of social security contribution will be greater among well-to-do workers than the lower paid ones.

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[14] It appears that redistribution within the pension system is not the only factor influencing public willingness to comply with social security laws. Despite its very redistributive retirement system, the Czech Republic does not seem to suffer from tax and contribution evasion more than its counterparts in the EU11.

[15] By contrast, since 2011, females in Hungary serving for at least 40 years can retire at any age with full benefits; but since 2012 males with arbitrary long service and females with shorter than 40 years, cannot retire below normal retirement age. Introducing this type of rigidity into the pension system will almost inevitably backfire.

In a paradoxical way, the importance of this heterogeneity is stressed when evaluating *progressive* public pension systems. Progressive systems provide proportionally lower monthly benefits to those who contribute more in an average month during a limited period of their careers. The critics of such systems (e.g. World Bank, 1994, p. 131) and their defenders (e.g. Orszag & Stiglitz, 2001) equally emphasize that 'there [is] little [lifetime] redistribution from the rich to the poor, despite progressive benefit formulas,... because [they are] earnings-related ... [and]... upper-income people enter the labour force later in life and live longer after retirement.' To see the independence of proportionality between contributions and benefits and fairness, note that in some countries (e.g. Germany), proportionality and weak actuarial adjustment coexisted, while in other nations (e.g. the US and the Czech Republic), progressivity and strong actuarial adjustments coexist.

Stability and flexibility

A well-designed pension system is both stable and flexible to some extent. If a system is stable, it is easy to adapt to it. Stability and reliability are of particular importance in countries where trust in the state and in the pension system was undermined by frequent haphazard historical changes in the past. If a system is flexible, it can be changed in a smooth way, avoiding ruptures. It is a much more difficult problem to determine when stability degrades into rigidity and flexibility degenerates into erratic governing.

We give only one concrete example for rigidity and another one for erratic government, respectively. Hungary's attempt to harmonize the functioning of its public and private pillars is a perfect example for rigidity. The country introduced its mixed pension system in 1998, with the possibility of partial opt-out from the public pension system into a fully-funded defined-contribution scheme, where future pensions would depend on the amount of accumulated pension wealth and life expectancy. If the public pillar had remained strongly progressive, only the higher paid would have entered the private pillar during the voluntary entry period (1998 and 1999). To avoid this segregation, the public pillar was to be transformed into a DC system, just as the private pillar. But a 15-year-long transitory period was planned for the changes in the public pillar, until the private pillar starts paying indexed life annuities. The most conspicuous part of this transition was the gradual elimination of a complex 10-part progressive benefit formula.[16] The positive feature of this smooth transition was that there were no notch babies, but the process preserved an unnecessary system for too long. When the progressive formula of the public scheme was meant to finally be-

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[16] Note that in the US, three brackets (with 90, 32 and 15 per cent replacement) are sufficient.

come proportional, the private pillar was already closed down. Eventually, two brackets with 10 and 20 percent deduction remained.

The second example concerns the Slovakian 'public economic revolution'. In 2003, the old, almost flat-rate pension system was suddenly transformed into a proportional points system, which became fully functional from January 2004 (Lesay, 2006).[17] Despite the large shift in the calculation of pensions, there was no transitional period. This led to very significant differences between the pre-2004 cohorts of pensioners and those retiring from 2004 onwards. Imagine the fate of two twins; the first could retire at the end of 2003 but the second only at the beginning of 2004. If they were low paid, the early retiree gained; if they were highly paid, the late retiree gained. A similar abrupt change affected the regulation of widows' pensions: depending on the year of death, spouses of the deceived would qualify for a widows' pension or not, creating extreme differences across identical cases of benefit claimants.

Is it possible to design a system that incorporates the necessary set of checks and balances, allowing stability and flexibility to prevail where needed? The answer to this question is complicated and depends not only on the economic conditions of a country, but also on politics. Pivotal parameter values of the pension system may be set up in a constitutional law, if the political situation allows its adoption. Under these circumstances, changes would still be possible, but only at the presence of a broader consensus. Whether such a reform is politically feasible, depends on the specific political and economic circumstances of a given country.

Design errors in valorisation and indexation

Since the publication of *Avoiding the old-age crisis*, a provocative World Bank (1994) study on ageing and pension reforms, a large body of scholarly work has studied the *big* and visible problems of various pension systems. Should the system be public or private? Should the public pension benefits be proportional to earnings, flat, or something in between? And, if a system is to become earnings related, should there be a link to lifetime earnings, or earnings in a more limited time period? Should the system be comprehensive or fragmented?

Relatively few studies have analysed smaller and less visible, though still relevant problems of private and public systems. We call these *design errors*. However, what is an error to one observer may be an achievement for another. To avoid this trap, following Simonovits (2014), we consider an error any measure which is inconsistent and unsustainable in the long run, regardless whether the measure is supported by the observer.

We confine our attention to the most important design errors in public systems in countries in transition.[18] These errors are often linked to rules concerning the details of increases in pensions, which are in many cases very complicated, and their exact consequences remain unforeseeable for the layman. Thus, they provide an ideal tool for obfuscating austerity policies (see Pierson, 1994).

We shall consider the indexation pensions, setting the contribution rate and the cap on covered earnings. Recall that in an inflationary world, unindexed pensions quickly lose their purchasing power. Therefore most modern public systems are *indexed* according to wages or prices, or their averages. The *contribution rate* should be high enough to ensure consumption smoothing and low enough to preserve sustainability. Its break up into the employee and the employer parts on the one hand and between public and private pillars on the other hand also requires care (see footnote 6 above). The *cap* on the contribution base should be high enough to replace the lost income of the lower paid workers and low enough to constrain excessively high pensions (cf. Valdés-Prieto & Schwarzhaupt, 2011 and Simonovits, 2015).

To be more concrete, we mention several serious design errors occurring in various countries. As Barr and Diamond (2008) emphasized, these errors were also widespread in market econo-mies. First, errors in adjusting (mostly indexing) pensions in payment have been very common across the region, Hungary being one of the most illuminating examples for such practices: (a) changing the technique of indexation in 1996 and 1999 back-and-forth, the Hungarian pensioners lost to the workers;[19] (b) by overestimating the consumer price index, the Hungarian government raised pensions in payment by 8 percent above the balanced level just in three years, between 2013 and 2015.

Bulgaria and Romania represent even more extreme cases, as indexation rules have often been disregarded by the incumbent, who passed pension raises and cuts by government decrees, lead-ing to significant and largely unpredictable changes in pensioners' income. As Adascalitei (2015) reports, the replacement rates of Bulgarian pensions oscillated between 28 and 43 per cent of net pre-retirement income throughout the 1990s, which led to an erosion of trust in the social security system. However, the practice of arbitrary indexation continued well into the late 2000s in the two countries. For instance, the centre-right Justice and Truth Alliance, increased Romanian pen-sion benefits by more than sixty per cent in 2008. Yet, in sharp contrast to this practice, the so-cial-democratic government of the early 2000s decided to apply different indexation rules to dif-

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[17] In a flat-rate pension system, it is the number of contributive years that plays the greatest role in deter-mining the size of future pensions. The level of contributions paid by the workers plays no role.

[18] A similar study has assessed the failed 2011 Spanish pension reform using the balanced Swedish system as a benchmark (Vidal-Meliá, 2013). Lovell (2009) discussed the design errors of the otherwise well-designed US Social Security System.

[19] For a similar example, see Lovell's (2009) study on the 'one-year lag' in the United States.

ferent cohorts of Romanian retirees, arguably with the intention of maintaining the continuity of rules (Adascalitei, 2015).

Second, the design problems of *initial pensions* also deserve discussion. Issues related to the calculation of initial pensions have many dimensions: (a) due to the originally short *reference period*, in most of the EU11 countries only the last few years' earnings were taken into account when calculating the initial benefits, which favoured those with a steep rise in their wage curve; (b) the relatively high cap on the contribution base, or even a lack thereof, causes tensions, especially if such a policy is combined with proportional pension benefits. Thus, very high earners, most commonly with above average longevity, will receive very high benefits once they retire; (c) *improper valorisation,* which occurs when the calculation of the lifetime average earnings neglects the wage increases of the latest years, but makes the initial benefits oversensitive to wage and price changes in the closing year; (d) *clumsy progressivity,* which refers to excessively complicated and often inconsistent ways of calculating the reference wage from average lifetime earnings. A good example to illustrate this point is the Czech public pension system. The old-age pension benefit is composed of a flat transfer of approximately 90 euros per month and an earnings related component, which is calculated in a complicated way from workers' assessment base, using four income brackets. The first 420 euros of the assessment base are taken fully into account, while earnings exceeding this level are weighted downward (Social Security Agency, 2014).

The afore-mentioned issues with indexation of pensions in payment and valorisation of starting pensions may also lead to inequities among subsequent cohorts of pensioners. As was already mentioned, in the Slovak Republic, pensions in payment have been increased by a uniform amount since 2012, mostly depending on inflation. By contrast, future pension claims have been valorised in a more proportional way, and depending on the average wage. Such differences in the details of indexation and valorisation lead to inequities among subsequent cohorts of retirees. This example illustrates that intertemporal stability requires that policy-makers pay attention to the interplay between the rules governing indexation and valorisation.

Finally, as already implied, poor design is often closely linked to the excessively complicated nature of certain aspects of the social security legislation. Even in a well-designed pension system, workers may be poorly informed about their rights and responsibilities. However, if the system is reasonably designed, such inattention can be understood as *irrational inattention*, an error committed by the individual. By contrast, inattention to the features of a poorly designed system, whose guiding rules and principles are haphazard and will likely change in a haphazard way, is rational. In other words, there is not much use in devoting attention to the features of the pension system, thus citizens' decision to remain uninformed is reasonable. Yet, in the more distant future, such inattention may lead to hardship in individual cases.

Privatization and renationalization

The late 1990s and early 2000s were a period of significant shifts in pension policy in Eastern Europe. For a number of reasons, not least because of the support the World Bank showed for this reform, the post-socialist countries of Eastern Europe enthusiastically embraced the multi-pillar pension system.[20] The basic idea was simple and straightforward for the citizens and the policy makers of countries in transition: everything public is inefficient; therefore it should be privatized. Indeed, privatization was very successful in the competitive sector, but less so in the transfer systems.

Confining our attention to the pension system, there were two basic errors in the privatization plans. First, the efficiency of the private system was overestimated, especially with respect to reasonably designed public systems, such as the Polish NDC scheme. Second, the transition costs, which are equal to the amount of contributions directed from the public system to the private one, were significantly underestimated (Augusztinovics et al. (2002) on Hungary; Fultz (2002) on several post-socialist countries).

There were early critics (e.g. Beattie & McGillivray, 1995 Simonovits, 1999 and Orszag & Stiglitz, 2001) who warned of the pitfalls of the so-called paradigmatic reforms, but in most of the foregoing countries, privatization still took place. Hungary and Poland were the pioneers, who adopted their multi-pillar legislation as early as 1997 and 1998, respectively. Romania and the Czech Republic ended the reform wave, implementing their versions of the reform package in 2008 and 2013, respectively.[21] Slovenia remains the only exception that hitherto avoided the introduction of a private scheme aiming to replace the public system for the general population.

When the era of cheap debt financing ended in 2008, and strong fiscal anti-cyclic measures became inevitable to prevent a free fall, the issue of transition costs became pressing. Various attempts at resolving the apparent contradiction between the Growth and Stability Pact and the transition costs backfired. As a consequence, most of the second-pillar EU11 countries suspended or drastically reduced the contribution rate to the private scheme and redirected the difference to the public, first pillar. Some EU11 nations went even further. First, Hungary almost fully, then Poland in large part renationalized the private pillar. Poland also limited the options of pension

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[20] While private pension provision is acquiring an ever more important role in Western Europe as well (Ebbinghaus, 2015), this is not done through explicitly replacing public schemes, but rather through promoting private schemes supplementary to existing public ones.

[21] It should be noted, that, in comparison to earlier reformers, the Romanian, but especially the Czech reform created a rather moderate private scheme (Adascalitei & Domonkos, 2015).

fund allocation, by prohibiting the purchase of Polish state bonds (Naczyk & Domonkos, 2016). It is an open question in what form the second pillar will survive in the remaining countries (Drahokoupil & Domonkos 2012, Casey, 2014, see also Ebbinghaus, 2015).

As can be seen in Table 6, the reform trajectories undertaken by the countries of the region have been rather divergent. Nevertheless, almost all nations that introduced a second pillar into their pension system before 2008 had to re-evaluate the policy once debt financing for sovereigns became less available. In several cases a significant decline in the weight of the private pension scheme was legislated.

The Hungarian renationalization set a very bad example (Simonovits, 2011). Rather than explaining the real problem with debt-financed (partial) privatization of the pension system, namely that it does not reduce the actual public involvement in old-age pension provision, the conservative Fidesz government abolished the scheme within three months. Though the ex-members received full compensation, ordinary people started to fear irrationally that in a next step, their bank savings in foreign currency will be similarly raided. From the macroeconomic point of view, the nationalized assets, which amounted to about 9 percent of the GDP, were used to finance a controversial personal tax rate reform and to buy assets. The closing of the second pillar did not lead to a corresponding reduction in the explicit government debt.

However, there are countries that kept the initial reform path in pension privatization. Bulgaria and Croatia have been the only Eastern European EU member states that, as of 2015, have not introduced changes curtailing the second pillar. Romania represents a third case: even though the increase in second-pillar contributions between 2008–2015 has been slower than initially planned, the private system remained largely functional. Similarly, Estonia curtailed its second pillar in 2008–2010, but has later reintroduced second-pillar contribution rates at the initial level. Nevertheless, political debate about re-addressing the second-pillar legislation is on the agenda in several of these countries (Guardiancich, 2013, Adascalitei & Domonkos, 2015)

Table 6.

Basic characteristics of second pillar pensions in EU11 nations

Country	Initial reform implementation	Old-age social security contribution rate / *2nd pillar contributions upon reform introduction* (% of gross wage)	Average annual 2nd pillar contributions, 2002-2010 (% GDP)[2]	Main post-2008 reforms
Bulgaria	2002	23[1] (ee: 8.05, er: 14.95, scr: 20) / *5*	0.7	-
Croatia	2002	20 (ee: 20, scr: 20) / *5*	1.3	-
Czech Republic	2013	28[1] (ee: 6.5, er: 21.5, scr: 23,05), 20 old-age / *3 + 2 by saver*	-	2nd pillar shut down on 1 January, 2016. Pension wealth accumulated up to 2016 will be transferred to individual bank accounts or to accounts other pension savings schemes.
Estonia	2002	20 (er: 20, scr: 16.67) / *4 + 2 by saver*	0.6	2009-2011: Temporary suspension of 2nd pillar contributions, return to 4 + 2 percentage points (p.p.) model from 2012 onwards.
Hungary	1998	33.5[1] (ee: 9.5, er: 24, scr: 27.02) / *6 gradually increasing to 8*	1.1	2010-2011: Complete reversal of the second pillar, including quasi-nationalization of accumulated pension wealth.
Latvia	2001	20 (ee: 0,er:20, scr: 16.67) / *2 gradually increasing to 8*	0.8	2009: Decrease of 2nd pillar contributions from 8 p.p. to 2 p.p.; Return to a contribution rate of 6 p.p. by 2016.
Lithuania	2004	25.9[1] (ee:2.5, er: 23.4, scr: 20.99) / *2.5 gradually increasing to 5.5*	0.6	2009, 2012: Decrease of the 2nd pillar contribution rate to 2 p.p. in 2009, further decrease to 1.5 p.p. in 2012. Increase planned in the future.
Poland	1999	19.52 (ee: 9.76, er: 9.76, scr: 17.78) / *7.3*	1.4	2011: 2nd pillar contributions decrease to 2.3 p.p. with a plan to gradually increase them to 3.5 p.p.; 2013: 2nd pillar contributions frozen at 2.92 p.p., approx. 50% of pension wealth (part allocated into Polish state securities) seized and future allocations into Polish state securities banned.
Romania	2008	27.5[1] (ee: 9.5, er: 18, scr: 23.31) / *2, gradually increasing to 6*	0.7	2009: Delay in the planned increases in the 2nd pillar contribution rates. Increases resumed in 2010.

Slovakia	2005	18 (ee:4, er:14, scr: 15.79) / 9	1.0	2007-2015: Opening several times the 2nd pillar for entry and leaving; 2008: abolishing mandatory 2nd pillar membership; 2012: Limiting 2nd pillar contributions to 4 p.p. of gross wage with a plan to gradually increase contributions to 6 p.p.

Notes: ee=employee contributions, er=employers' contributions, scr=standardized contribution rate (for calculation, see footnote 6);[1]includes contributions for old-age, disability and survivors' pensions.

Sources: Adascalitei & Domonkos (2015), Holzmann & Guven (2009), Naczyk & Domonkos (2016), Volskis (2012), [2]approximate values based on Price & Rudolph (2013, 46).

A framework for evaluating pension systems

The earlier discussion has demonstrated the importance of evaluating pension reforms along multiple dimensions. The introduction of mandatory funded schemes is probably the best reform attempt for the illustration of this point.

Table 7.

A common framework for evaluating the performance of pension systems

Dimension	Indicator	Source[1]
Adequacy	Median relative income of elderly households	Eurostat [tespn060]
	Poverty rate of the elderly	Eurostat [ilc_li02]
Sustainability	Share of pension expenditure on GDP	Eurostat [spr_exp_pens]
	Share of pension expenditure on general government revenue	Eurostat [spr_exp_pens and gov_10a_main]
Intragenerational equity and solidarity	Pension replacement rates at various income levels	OECD Pensions at a glance, net replacement rate
	Tax wedge at various income levels	Eurostat [earn_nt_taxrate]
	Lifetime pension flows for individuals with differing income levels	Internationally comparable data are not available. Data can be derived if the average replacement rate and longevity of various income groups is known.
Intergenerational equity	Net tax profile of generations to be born	Internationally comparable data are not available. Data can be derived from detailed fiscal data using GA.
Efficiency[2]	–	–
Flexibility	The presence and limits of early/late retirement and length of service period needed	OECD Pensions at a glance
	Punishment for early and late retirement	OECD Pensions at a glance

Notes:[1]brackets include Eurostat series identificators; [2]pension-system efficiency cannot be directly calculated. A pension system is considered efficient if it achieves the dual objective of income replacement and poverty alleviation, without interfering excessively with the economy.

Those who promoted the introduction of the second pillars paid very little attention to the dimensions of inter- and intragenerational equity, solidarity, and fiscal sustainability in the middle-run. By contrast, the expectation of large gains in efficiency through privatization dominated the policy discourse. Taking this into account, the reform reversals that took place after 2008 are rather unsurprising. Table 7 summarizes our recommendation for a comprehensive framework for analysing pension systems, and provides sources for data and indicators that may be used for evaluating pension policies along the dimensions identified.

The degree of adequacy of national pension systems can be internationally compared using data on the relative income of elderly households and statistics on elderly poverty. Statistics on the ratios of pension expenditure to the GDP and to budget revenue lend themselves to a meaningful and internationally comparable sustainability analysis the pension system. Intragenerational equity and solidarity can also be measured using OECD statistics on pension replacement rates for various income levels, in combination with an analysis of the tax wedge. Nevertheless, data on the net pension replacement rate for specific income groups are only available for a limited number of EU11 nations. Flexibility is a rather elusive concept, the measurement of which is possible only to a limited extent. However, the presence of variable retirement and the concomitant absence of a requirement for an excessively long minimum service period are good indicators of flexibility in pension provision. The lowest pensionable age and the level of actuarial adjustments for early and late retirement may also help in evaluating the flexibility of a pension scheme.

Conclusions

EU11 countries differed considerably in how successfully they managed to reform their economies in general and their pension system in particular after 1989. Some of them, like Poland and Slovakia, did rather well. Other countries, like Hungary and Slovenia were less successful. However, most countries have created pension systems that are in acute need for further reform. The foregoing countries executed similar pension policies in large part, but they diverged in details.
Having taken a closer look at the pension policies across the EU11, we have identified some of similarities and common lessons that should be learned from more than twenty years of post-socialist pension reforms. Adequacy and sustainability are closely linked. A pension system can be generous, but if it is unsustainable, it will have to be sooner or later downsized. A pension system can be sustainable, but if it is not adequate, voters will demand its replacement, and most likely succeed in the long run.

Pension system design should always observe the imperative of intra- and intergenerational fairness. It is important that the pension system, which concerns an average citizen for several decades should be accepted as fair at any given year by the then living population. It should combine solidarity and efficiency, as well as stability and flexibility. Pension schemes, which most commonly constitute an intergenerational contract, should display a reasonable degree of stability and predictability. They should not be amended as frequently as the regulation of taxation. However, if the system becomes overly rigid, it will almost inevitably be unsustainable.

Partial privatization and prefunding of the unfunded public pension system seemed to be a good idea twenty years ago, but the reform did not deliver its big promises. It is small wonder that at the first occasion when the financing of sovereign debt became difficult, a number of countries partly or fully nationalized their private pension funds. However, observing the recent pension-policy debate, it should also be noted that many experts overemphasize the importance of the big questions, such as the partial privatization of public pensions, and pay little or no attention to the subtler design errors of the policies. Practice shows that the latter can be as important or even more important than the former.

While statistics allowing a comparison of pension system adequacy and sustainability across countries are available, indices of intra- and intergenerational fairness, as well as policy stability are missing. Post-socialist pension reforms and their failures clearly demonstrate the need for such indicators.

If the governments of EU11 countries have paid more attention to the problems above, they could have more stable, more efficient and more equitable pension systems. While not all errors are inevitable, several of those discussed in this article, such as the creation of notch cohorts, could have been avoided. In any case, the political and technocratic elites of post-socialist Europe have accumulated enough experience with pension reforms by now. Accumulating the critical mass of political will to learn from past mistakes should follow suit.

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