USAID
FROM THE AMERICAN PEOPLE

CLDS
Center for Liberal-Democratic Studies

KATARINA STANIĆ

PENSION SYSTEM IN SERBIA

– DESIGN, CHARACTERISTICS AND POLICY RECOMMENDATIONS –

Katarina Stanić
PENSION SYSTEM IN SERBIA – design, characteristics and recommendations –

Author:
Katarina Stanić, M.Sc

Reviewer:
Gordana Matković, PhD

Publisher:
USAID SEGA projekat, Beograd

Translation:
Dušica Janić
Tomislav Jovanović

Design:
Snežana Dimitrijević

Printing: „Sapient Chartic“

Circulation: 300

CIP – Каталогизација у публикацији
Народна библиотека Србије, Београд

This publication is made possible by the support of the American People through the United States Agency for International Development (USAID). The contents of this publication are the sole responsibility of Serbia Economic Activity (SEGA) and do not necessarily reflect the views of USAID or the United States Government.

CONTENT

I am grateful to Gordana Matković for review and regular consultations.

Also, many thanks to Nenad Rakić for the help with data and useful information.

PART I. PENSION SYSTEM DESIGN

1. INTRODUCTION

The foundations of the pension systems across the world had been laid, roughly speaking, from the end of the 19th century until the beginning of the World War II. The onset of the pension system development is usually considered to be 1889, when Germany`s *Chancellor Bismarck* had established a pension scheme for industrial workers from the age of 70 with the aim to provide *income maintenance.* At the same time, in 1891 Denmark and, few years later, New Zealand introduced pension schemes but with the different aim – to *alleviate poverty* across the whole old–age population.

The original pension policy set up was influenced by many factors – political, historical, cultural, etc. At the time Germany was an industrialized country which is why the pension system introduced by Bismarck was tailored to satisfy the needs of the working class. On the other hand, Denmark, which was an agricultural country, established a scheme reflecting the interests of farmers[1].

Other countries started to follow one of these two approaches. The German system was very influential in continental Europe, especially in the then Austro–Hungarian Empire. Conversely, the New Zealand approach was initially very influential in the Anglo–American world, apart from the US. As a result, countries had grouped into two distinct clusters: countries with ***Bismarck*** pension model introduced with the aim to maintain income in the old–age (relative living standard) vs. countries with ***Beveridge*** pension model set with the aim to alleviate old–age poverty and provide minimum income in old age (absolute living standard)[2].

Nordic countries had initially followed Denmark and its Beveridge approach introducing universal pension aimed at poverty reduction.

---

[1] Stanić, K. *PhD dissertation*, in progress.

[2] Although sir William Beveridge produced a report which proposed a program for social insurance for UK no sooner than in 1942, while pension scheme of that kind was introduced almost 50 years before that, still this type of pension system is dubbed after him.

However, as early as in the beginning of 1950s these countries also introduced a public pension component that replaced income in old–age, hence forming a separate group of countries – ***Nordic*** pension model.

Nordic pension model is a mix of the Bismarck and the Beveridge model. In these countries the public pension system very early started providing for old–age income replacement in addition to the basic old–age provision. This model is also characterized by developed private occupational pension arrangements. The occupational pension schemes started emerging at the same time as the public earning–related component with the aim to top–up the public pension, and were collectively negotiated by trade unions. Consequently, they represent a near–universal coverage.

While most countries initiated their pension system by adopting either Bismarck or Beveridge approach, the recent trend has been toward a convergence in pension provisions. Pension systems originally set as Beveridgean have introduced public and/or private earnings–related schemes, while Bismarkian regimes have introduced minimal pension provision aimed at poverty reduction and tended to reduce privileges across occupations, cut replacement rates and encourage supplementary private or occupational provisions[3]. This basically means that all countries developed their pension systems in the direction of accomplishing both goals. However, the historical differences between the systems are still quite noticeable.

Hence, pension systems nowadays strive to attain both old–age poverty prevention *(absolute standard of living)* and maintaining the income and standard of living in the old age on the standard of pre–retirement years *(relative standard of living)*. A pension system is said to be adequate when it manages to accomplish both[4].

Adequate and financially ***sustainable*** pensions are considered the priority of EU pension policy proclaimed by the process of open met-

---

[3] Stanić, *Phd dissertation* (as in Arza, 2006).

[4] HOLZMAN, R. And HINZ, R. (2005), *Old–Age Income Support in the 21st Century – An International Perspective on Pension Systems and Reform*, The World Bank.

hod of coordination. Achieving these objectives in an ageing Europe is a major challenge[5]. What complicates pension policy is the fact that the two objectives are conflicting. Provision of adequate pension level comes at expense of affordability and sustainability of pension systems. On the other hand, cutbacks that contribute to sustainability of pension systems make the adequacy of pensions uncertain. A good pension design must strike the right balance between these two contradictory objectives.

2. PENSION SYSTEM COMPONENTS

Due to the convergence in pension systems, most countries either have or are evolving toward retirement income systems that contain three basic components[6]:

(I) Mandatory component that assures a minimum adequate income to the aged population, aimed at providing absolute standard of living;

(II) Mandatory component that provides old–age income replacement with retirement benefit linked either to prior earnings or pension contributions (relative standard of living); and

(III) Supplementary component on a voluntary basis (relative standard of living, top–up typically for high earners).

There are two main approaches to organizing pension systems – *universal* and *fill the gap approach*[7]. These two approaches reflect historical origins of the social security system and the process of convergence.

In the *universal approach* there is a basic scheme for all citizens/residents (or contributors) above the statutory age. Basic pension is supplemented by the earnings related part (Figure 1). One may say that the universal approach is the legacy of Beveridge system – pension system was set as a universal scheme, and the earnings related part was introduced later, topping up the basic pension.

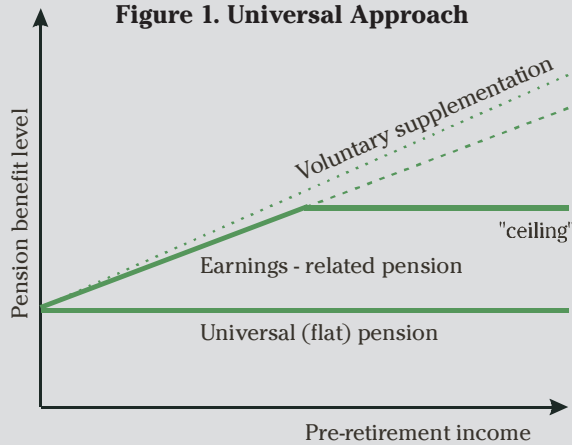
---

[5] European Commission, *Green Paper – Towards adequate, sustainable and safe European pension system*, Brussels, July 2010.

[6] Thompson, L.H. (2001), *Social Protection in Asia and the Pacific*, ed. by Isabel Ortiz, Asian Development Bank.

[7] Ibid.

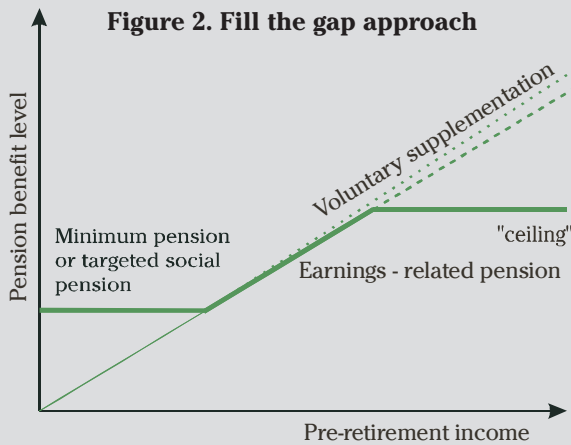
Figure 1. Universal Approach



Source: Thompson (2001), including amendments by the author

The other approach is providing a minimum that fills the gap between the benefits otherwise available and the minimum income level assuring an absolute standard of living. This minimum is paid only to those whose benefits would otherwise be too low *(*Figure 2*)*. This approach is obviously the legacy of the Bismarck system.

Figure 2. Fill the gap approach



Source: Thompson (2001) amended by the author

2.1. MINIMUM INCOME PROVISION

This component of the pension system seeks to ensure a minimum adequate income in retirement providing the absolute standard of livi-

ng in the old–age. It is seen as a redistributive element of the pension system. All countries have it, typically in the form of a mandatory state (public) system.

2.1.1. Types of minimum income provision

According to EC classification, there are three main types of minimum income benefits specifically dedicated to older people: flat rate benefits for older people, minimum benefits within the earnings related pensions, and separate social assistance benefits including general social assistance[8]. Similarly, OECD classifies minimum provision systems into basic, targeted and minimum[9].

We are inclined to say that there are four types of minimum old–age benefits – basic (universal), targeted pension, minimum pension (within the earnings related pensions) and general social assistance.

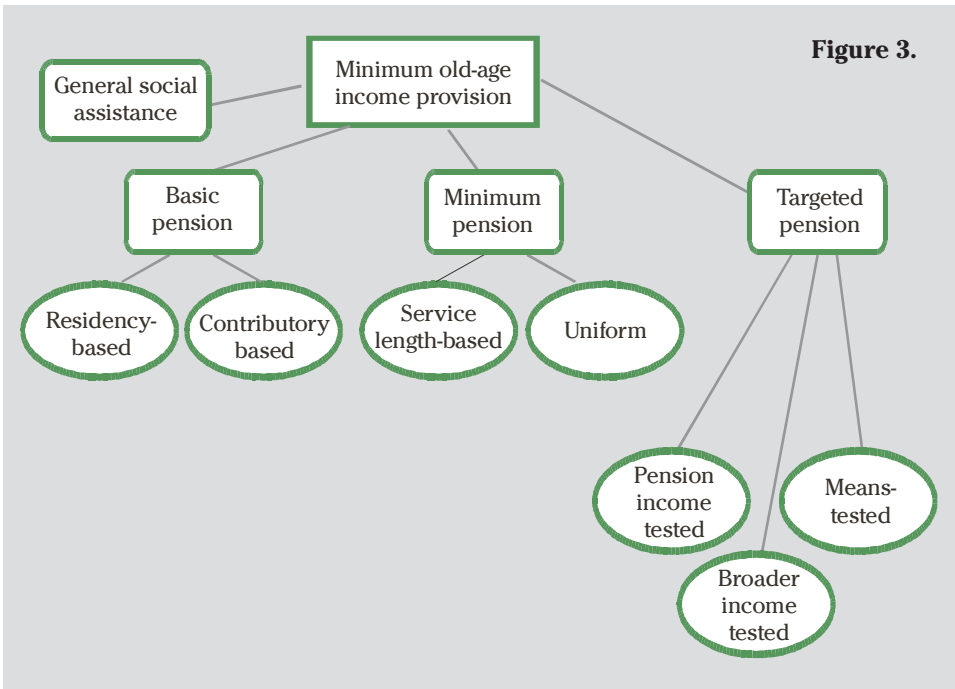


Figure 3.

[8] European Commission, SPC (Special Pension Study) – Minimum income provision for older people and their contribution to adequacy in retirement, December 2006.

[9] Whitehouse (2005), *Pension at Glance: Public Policies across OECD Countries*, OECD, Paris.

Basic/flat pension

Basic pension scheme falls under the universal approach. It can be said that basic pension is a legatee of Beveridge origin pension system. It is a flat rate pension with the same amount paid to each retiree, and it does not vary with the level of other pension income[10]. The basic scheme can be *residency–based* or *contributory–based.*

Residency–based scheme pays flat benefit (same amount) to all residents. This type of pension scheme is typically financed with general taxes. Originally, basic pension was designed so that other income did not affect the level of the basic pension; hence it is often received even by those whose absolute living standard is not jeopardized[11]. However, there is a recent trend of "numerous measures adopted in the recent years to make basic flat–rate pensions selective"[12]. For example, Canada introduced in 1989 "OAS claw back" that serves as a special tax which reduces and, in some cases, even eliminates basic pension for high–income earners. Sweden and Finland have replaced their basic residency schemes with pension income tested residency schemes. Hence, almost all residency-based schemes, except the one in New Zealand, have an element of testing nowadays.

Social pension is a non-contributory pension financed through budget, by general taxation. It represents a pure transfer rather than saving or insurance[13]. Social pension is a social assistance benefit unlike standard pension, which is a social insurance benefit. Major difference between social insurance and social assistance is the way in which they are organized and financed, as well as the eligibility to receive social

---

[10] WHITEHOUSE, E. (2006b). "New indicators of 30 OECD countries' pension systems" *The Journal of Pensions Economics and Finance*. 5 (3), 275–298 , page 276.

[11] Such pension is typical of high income countries with global income taxation that eventually manages to smooth the „injustices".

[12] ILO (2000), World labour report: income security and social protection in a changing world, page 133.

[13] Palacios, R. And Sluchynsky, O (2006), *Social Pensions Part I: Their Role in the Overall Pension System*, Social Protection Discussion Paper No.0601, World Bank.

benefits, which is subject to the payment of contributions regarding social insurance[14].

Contributory–based basic pension scheme depend only on the number of years of work but not on earnings[15]. Typical example is the UK Basic State Pension. This is a flat–rate contributory–based pension established in 1946. The full rate of the basic State Pension is for those who had worked full service (44 years for men, 39 for women) and it amounted to Ł82.05 per week in 2005/06, which was 15% of average earnings. Those who contributed less than the number of years required for full basic pension get a partial rate pension. State Pensions cannot be taken up before state pension age, but may be deferred in return for a higher state pension (10.4% increases per year of deferral).

Contributory-based basic pension is social insurance benefit, since the eligibility is subject to to the payment of contributions and it is financed with contributions.

Targeted pension

Targeted pension pay a higher benefit to poorer pensioners and reduced/no benefits to better–off retirees. There are three ways of targeting[16].

Targeting can be *pension–income tested,* like the Finnish residence–based national pension (*Kansanelake)* and the Swedish guarantee pension (*Garantipension*). This type is a residency–based pension with the pension income–tested provision. It represents a safety net for those who are not entitled to an earnings–based pension or whose pension is very small. Full amount of guarantee pension is paid to residents with no pension at all, while lower amounts are paid as a top–up

---

[14] According to SNA Glossary, social assistance programs are budget-financed (general taxes), while contributory arrangements are referred to as social insurance. Social assistance benefits are provided outside of an organized social insurance scheme and are not conditional on previous payments of contributions.

[15] Whitehouse (2007), *Pension at Glance: Public Policies across OECD Countries*, OECD, Paris.

[16] Classification provided by Whitehouse, Pension at Glance (2005). In subsequent issues there are slight changes in the classification – targeted pension is dubbed resource-tested pension; furthermore, instead of three ways of targeting in there are two ways of targeting (income and means tested), while the pension-income tested pension is classified as a minimum pension. Here the first classification is used, since it seems more appropriate.

to those pensioners with very low pension, for the purpose of achieving a guaranteed threshold.

Secondly, benefits can be *broader–income tested*. This means that payment is reduced upon income other than pension, such as income from saving for example. Thirdly, benefits can be broader *means–tested*, taking into account both income and assets.

All types of targeted pension are clearly social assistance benefit i.e. social pension.

Minimum pension (within general earnings related scheme)

Minimum pension aims to prevent pensions from falling below a certain level[17]. It is a part of pension insurance system and is funded through contributions. Usually, contributions must be paid on behalf of retirees for a minimum number of years to be eligible for minimum pension.

Minimum pension is, to a certain extent, similar to a contributory–based basic pension. What is differentiating them is that in a contributory–based basic pension benefit is paid to every beneficiary, regardless of the other pension income. On the other side, minimum pension is paid as a top–up only to those with extremely low pension benefits.

Minimum pension is also similar to pension–income tested pension[18]. However, the institutional set–up, financing and eligibility conditions differ. Firstly, most important distinction between them is the eligibility conditions. Only those who have contributed to the pension system are eligible for minimum pension, and it is not possible to receive pension otherwise. On the other side, guaranteed pension in Sweden and Finland can be paid to those who were never insured. Secondly, guaranteed pension is financed by taxes and is not organized within earnings–related system.

---

[17] Whitehouse (2005), Pension at Glance: *Public Policies across OECD Countries*, OECD, Paris.

[18] In the first OECD publication Pension at Glance (2005), Whitehouse had classified this type of pension as targeted according to pension income. In subsequent issues it has classified them as minimum pension.

General assistance

Some countries do not have specific, targeted programs for older people, i.e. social pensions, but poor older people are entitled to the same general social–assistance benefits available to the whole population[19]. Typical example is Germany, as a prototype of Bismarck pension system type.

2.1.2. Minimum income provision across countries

All countries have some type of publicly organized minimum income provision scheme. It is quite difficult to classify countries according to the type of minimum old–age income provision, as there is a variety of arrangements, and some of them comprise characteristics of few different forms. Furthermore, some countries use one instrument to provide minimum income and prevent old–age poverty, while the others employ a combination of two or even three.

Table 1 presents types of minimum income provision across OECD countries and Eastern Europe.

Table 1. Minimum pension provision (% of average gross earnings)

		Targeted (resource-tested)			Basic/ Universal		Minimum	General social assistance	Overall entitlement (full-career)	Other benefits (from central government)
		Pension income	Income-tested	Means-tested	Residency	Contributory				
High-income OECD	Australia			23					23	Health care
	Austria			26					26	na
	Belgium			22			28		28	Reimbursement of health care
	Canada		18		14				32	na
	Denmark		18		18				36	Housing benefits
	Finland	18							18	Housing allowance
	France			22			23		23	na
	Germany							19	19	na
	Greece	11					34		34	na

[19] Whitehouse (2007), Pension at Glance: *Public Policies across OECD Countries*, OECD, Paris.

		Targeted (resource-tested)			Basic/ Universal		Minimum	General social assistance	Overall entitlement (full-career)	Other benefits (from central government)
		Pension income	Income-tested	Means-tested	Residency	Contributory				
High-income OECD	Ireland			32		34			34	na
	Italy			22					22	na
	Japan			19	16				19	Housing and other benefits
	Luxembourg					10	38	36	38	na
	Netherlands				31				31	na
	Norway		31		16				31	Housing allowance
	Portugal		16				32		32	na
	Spain						27	17	27	na
	Sweden	26							26	Housing allowance; maintanence support
	Switzerland			24			18		24	na
	UK		19			14			28	Housing benefits
	US			18					18	na
	Average	18	20	23	19	19	29	24	27	
Eastern Europe	Bulgaria		14				16		16	na
	Czech Rep.					8	11	23	23	na
	Estonia			14		7			14	na
	Hungary						16			Non-cash benefits
	Latvia						17	10	17	Apartment allowance
	Lithuania					17			17	na
	Poland						24	20	24	Nursing allowance
	Romania						25	14	25	na
	Slovakia							23	23	Housing and health supplement
	Slovenia			33			35		35	na
	Average		14	24		11	21	18	22	na
	Serbia						25	15	25	

NOTE: Other benefits when information available. NA stands fro non–availability, aning that it is not excluded that there are other benefits.

Source: Pension at Glance, SPC (2006) and ISSA

Half of high income OECD countries and Eastern Europe countries have minimum pension provision within social insurance scheme, while only

5 countries have residency–based schemes. Most of the countries have some type of targeted pension, or at least general assistance program, guaranteeing minimum income also to those who were not insured.

On average, in the OECD countries, first–tier benefits are worth 27% of national average earnings for those who were working full–time careers. Benefits are especially high relative to average earnings in Belgium, Luxembourg and New Zealand. They are at their lowest in Finland, Germany, Hungary, Japan and the United States, at less than 20% of national average earnings[20]. Minimum provision in Eastern Europe is at around 20% of national average earnings. In general, minimum pension within insurance system tend to grant somewhat higher benefits than social assistance benefits (social pensions), which make sense.

Some countries grant low income pensioners with allowances other than pensions, such as housing allowance, non–cash benefits, reimbursement of health–care, etc. However, systematic data for additional supplements are not readily available.

2.2. EARNINGS RELATED COMPONENT

This component of pension system seeks to ensure income replacement in old–age, i.e. to maintain the relative standard of living. In a wider context, this component can be considered as pension insurance.

Earnings related component nowadays exist and is mandatory in almost all countries. Only Ireland and New Zealand of the 30 OECD countries do not have mandatory earnings related provision[21].

Its design varies considerably across countries and is surrounded by controversies and debates. The first difference lies in the size of this component of the pension system. Further, differences arise from combinations of alternative solutions for several key features/elements of the pension system such as funding, type of benefit, public vs. private management.

---

[20] Whitehouse (2009), *Pension at Glance: Retirement–income systems OECD Countries*, OECD, Paris, page 157.

[21] Whitehouse (2009), *Pension at Glance: Retirement–income systems OECD Countries*, OECD, Paris.

Across OECD countries, it is most often publicly organized and funded on the pay–as–you–go (PAYG) basis. Due to the Bismarckian tradition of pension system in Serbia, and due to some other factors that are beyond the scope of this Study[22], starting point is that for average workers and those 2–3 times above the average public PAYG system should stay the main source of retirement income in the old–age.

Therefore, the following discussion addresses the design features and parameters of what is relevant for public PAYG earnings related component.

2.2.1. Actuarial fairness and neutrality

Due to financial and demographic pressures pension systems have been abandoning redistributive features that used to characterize public pension systems – redistribution from higher to lower earners, from men to women; from flat to those with rising careers, to early retiring, to privileged groups etc. Two principles are increasingly emphasized in pension policy – actuarial fairness and actuarial neutrality.

The principle of *actuarial fairness* requires that the present value of all paid contributions equals the present value of all pension benefits received. This basically means that there is a very close link between the contributions and benefits, and the same rate of return for everyone in the system.

The principle of *actuarial neutrality* requires that the present value of a pension benefit is equal for each additional year of service – longer service should increase the amount of the pension benefits, while early retirement should make it lower. Conversely, retiring a year earlier should reduce the pension benefit both by the entitlement that would have been earned during the year and by an amount to reflect the longer duration for which the pension must be paid. Actuarial neutrality is a *marginal* concept, relating to the effect of working an additional year.

---

[22] Another publication – "Challenges of Introduction of the Mandatory Private Pension System in Serbia", CLDS and USAID/SEGA, 2009 – analyzed in detail other possibilities of organizing earnings related component such as introduction of mandatory private pension funds.

A system can be actuarially neutral along the margins without being actuarially fair. And vice versa, system can be actuarially fair at a given age of retirement, without being actuarially neutral at the margin of retirement[23].

2.2.2. Benefit type

There are two standard methods for determining pensions: defined benefit and defined contribution. Defined benefit schemes are mainly associated with public PAYG systems, while defined contribution benefits are related to private pension funding. However, this does not have to be the rule. Private funded schemes actually used to feature both DB and DC types of benefits, even more often DB type when it comes to companies plans, but have recently seen rapid shifts from defined benefit to defined contribution method. Furthermore, public PAYG systems started linking pensions to contributions with Notional defined contribution systems.

2.2.2.1. Defined benefit (DB)

In the systems with defined–benefit schemes benefits are exogenous and determined by the previously defined formula. In theory, this assumes that the level of the contribution rate in future should be adjusted in order to ensure a fiscal equilibrium in the pension system. The key feature of this type of benefit is that the risk in such schemes is borne by the sponsor of the pension scheme (state in case of public schemes).

In such systems, the benefit is related to the number of years of contributions and individual earnings. The link to past earnings makes the defined benefit system a typical consumption smoothing tool.

In ***standard (traditional) defined benefit system*** pension benefit depends on the *accrual rate* per year of service as the key parameter indicating the percentage of earnings that will make up the annual pension entitlement; on some measure of individual earnings from work (*va-*

[23] Jousten, Alain (2007), Public Pension Reform: A Primer. *Working Paper* No. 07–28. International Monetary Fund.

lorization rules and the *averaging period*); and on the number of years of contributions made[24].

Formula for standard (traditional) defined benefit system based on lifetime average is:

$$PB = \sum_{i=1}^{R} w_i (1 + v)^{R-i} a \qquad \textbf{(1)}$$

Where *PB* – pension benefit, *i* – particular year starting from first year of service until *R* – year of retirement. Accrual rate *a* is percent of the earnings that retiree will receive as a benefit; *v* is the factor by which earlier years' earnings (past earnings) are re–valued to reflect changes in costs and standards of living between the time pension rights are earned and drawn.

This formula covers the average lifetime earning period, which is nowadays most common average period taken into account for calculating benefits. It is possible, and was quite common in the past, to calculate benefits based on, for example, best 10 years or some other averaging period.

In addition to traditional defined–benefit system, there is a variation of this type of a system – a ***point system***. This system originates from German public system, hence it is often dubbed German point system. Alongside Germany, France (occupational scheme), Slovak Republic, Norway, Croatia and Serbia have introduced this system.

A point system formula has the same features as the one in the traditional DB system – it defines pension based on the years of service and the earnings level. The difference concerns only the key parameters of the formula which in the point system, as the name indicates, includes points. One may say that the point system is somewhat simpler/easier to understand than the traditional one.

According to point system pension benefit *PB* is defined as a product of a number of personal points and the general point value.

---

[24] Parameters will be explained in detail in the next section.

$$PB = PP \times GP$$

The personal point *(PP)* is defined by the following formula:

$$PP = PC \times YS$$

where *PC* is the personal coefficient and *YS* years of service.

The personal coefficient *(PC)* represents the average of annual personal coefficients, whereas the *annual personal coefficient* for year *i* (PC_i) represents the ratio of total earnings of the insured for each calendar year to the average annual earnings in the economy for the same calendar year $PC_i = w_i / \bar{w}_i$.

$$PB = \sum_{i=1}^{R} \frac{w_i}{\bar{w}_i} g_R$$

where *PB* pension benefit, $w_i / \bar{w}_i$ is annual personal coefficient PC_i, $\sum_{i=1}^{R} \frac{w_i}{\bar{w}_i}$ is personal point *PP*; g_R is the general point value (*GP*) at the time of retirement *R*.

By writing general point value as a function of its previous values and indexation, we get

$$PB = \sum_{i=1}^{R} \frac{w_i}{\bar{w}_i} g_i (1 + x)^{R-i} \qquad \textbf{(2)}$$

where *x* is a rate by which general point is indexed or up–rated.

2.2.2.2. Notional defined contribution (NDC)

In defined contribution schemes, contribution rate is an exogenous variable, and the level of benefit is an endogenous variable. In this type of pension scheme, instead of being pre–set and known in advance, benefits depend on a prescribed (usually legislated) contribution rate and its rate of return. Defined contribution is usually related to funded systems, where beneficiary bears financial risk.

A recent variant of a defined contribution system is called **NDC – notional defined contribution** or **non–financial defined contribution**.

It is an accounting method simulating defined contribution method, but without actual funding, while pensions are still paid out from current revenues (on PAYG basis). This system originated in Sweden, though it was implemented firstly in Latvia, and later in Poland and Italy.

Notional defined contribution method assumes that each contributor has his/her own savings account recording contributions paid in on his/her behalf. However, these are merely accounting records, not the real money owned by the contributor, since the revenues are immediately channeled to current pension financing, hence the name "notional". The fact that such contributions do not generate returns in the financial market evoked an alternative name – *non–financial* defined contribution system. An interest rate, i.e. internal rate of return is applied to the amount in an individual account. This rate is a notional one, set by the government, not the product of investment returns in the market[25].

The notional defined contribution system is therefore a version in between DC and DB – a beneficiary bear no financial risk, while prospective benefit, rather than being directly earnings–related as in DB, is linked to contributions.

The pension benefit in NDC system is calculated in the following manner:

$$PB = \sum_{i=1}^{R} \frac{w_i c}{A} (1 + r)^{R-i} \qquad \textbf{(3)}$$

where PB pension benefit, w_i is annual wage earning and c is contribution rate, while A is annuity factor (unisex life expectancy at retirement age). Hence the most important characteristic of NDC system is a direct link to contribution rate and life expectancy.

The annuity factor is an automatic stabilizer that adjusts a pension benefit to reflect increases in the longevity and hence help sustain the system's finances in the face of adverse demographic shocks. However,

---

[25] World Bank (2001), "Notional Accounts: Notional Defined Contribution Plans as a Pension Reform Strategy", *World Bank Pension Primer*, Washington, DC.

another kind of a stabilizer needed for financial stability – the one that takes into account declining fertility and hence declining labor force – is not really built into the system. Although countries that have introduced NDC scheme typically choose to apply a rate of return that balances the system, this is rather a matter of choice of a government than a built–in mechanism.

2.2.2.3. Relationship between DB and NDC

When we compare DB, point system and NDC formulas, we can notice that they are actually very similar.

If policy for valorization of previous earnings v is the same as indexation of general point x and the rate of return r in NDC ($v = x = r$), then the structure of equations

(1) $PB = \sum_{i=1}^{R} a w_i (1 + v)^{R-i}$; **(2)** $PB = \sum_{i=1}^{R} \frac{w_i}{\bar{w}_i} g_i (1 + x)^{R-i}$ and

(3) $PB = \sum_{i=1}^{R} \frac{w_i c}{A} (1 + r)^{R-i}$ is mathematically equivalent.

An accrual rate of traditional DB (a) is equivalent to the ratio of general point and average wage in economy ($g_i / \bar{w}_i$) and to the ratio of contribution rate and annuity factor in NDC (c / A)[26]. This means that, for example, we can easily calculate the accrual rate for the point system or for the NDC system.

The accrual rate for point system is the ratio of general point at that year and average wage in economy in the point system.

$$a_R = \frac{g_R}{\bar{w}_R} = \frac{g_i (1 + x)^{R-i}}{\bar{w}_R}$$

Since the value of the general point depends on its indexation, this ratio will be decreasing from year to year, unless a general point is indexed with the economy–wide wage growth. For example, if a general po-

[26] Whitehouse, E. 2006. „New Indicators of 30 OECD Countries' Pension Systems“, *Journal of Pension Economics and Finance* 5(3): 275–298, page 281.

int g is indexed to CPI only, then it will be the same (in constant prices) each year ($g_i = g_R = g$), while average wage in economy will be increasing from year to year ($\bar{w}_i < \bar{w}_R$). This means that the ratio of general point and average economy wage will be decreasing from year to year – $g / \bar{w}_i > g / \bar{w}_R$. The ratio is going to be constant only in the case of real wage general point indexation.

Consequently, when valorization/indexation does not take fully into account real wage growth, the effects on pension benefits will not be the same for traditional DB and for point system – benefits will be lower in the point system. This is because the "accrual rate" of point system (general point/average wage ratio) will be constantly declining, while accrual rate in DB system is fixed.

The point formula is more sensitive to the past earnings valorisation then the traditional DB formula. This effect is even more pronounced for those with rising career[27]. Thus point system is more transparent than traditional DB.

Major difference between NDC and DB formulas (traditional and point) is that the pension benefit in NDC automatically depends on the contribution rate and its changes, as well as on the life expectancy. In a defined contribution scheme accommodation for financial difficulties must, in principle, be effectuated by adjusting the value of pensions. If a deficit is to be compensated by an increase in contribution rate, this will cause higher expenditures in the future. On the other hand, defined benefit systems are designed to make the necessary adjustments to accommodate for demographic and economic developments by altering the contribution rate. However, in practice benefits are not always strictly defined since governments change parameters and formulas as a response to financial difficulties. The fact that a defined benefit scheme can make financially warranted adjustments by either changing the contribution rate or the value of pensions, is making it more

[27] More about differences in indexation/valorization in the section 2.2.3.3.

flexible than a defined contribution scheme. However, there are both positive and negative aspects of this flexibility[28].

When it comes to life expectancy, it is certainly a great advantage for the NDC system to have it built into the formula. However, life expectancy effects on pension system can also be incorporated into DB formula, such as reductions for early and bonus points for deferred retirement. Still, NDC is more transparent and politically easier to implement.

2.2.3. Parameters

In order to calculate pension benefit, the measure of individuals` past earnings is necessary. Three main parameters are: the *accrual rate* – the rate at which a worker earns benefit entitlements for each year of coverage; the *past earnings revaluation* – the way past earnings are adjusted to reflect changes in living standards between the time when contributions were paid into the system and the time pension benefit is claimed[29]; and the *reference period* – the period of working life that is taken into account when calculating a pension benefit.

Another DB parameter is min/max pension benefit or *min/max replacement rate*. Maximum benefit is usually linked to the *ceilings/floors* of pensionable income (contribution base). *Retirement age* is also an important parameter when it comes to eligibility for pension benefit, while in NDC it is indirectly incorporated into the benefit calculation.

During the payment of benefits the only parameter is *indexation of benefits in payment*.

2.2.3.1. Accrual rate and ceiling

An accrual rate is the rate at which a worker earns benefit entitlements for each year of coverage. The accrual rate times years of service equal the gross replacement rate. Accrual rate is a given parameter in the traditional DB system, while it is a calculated parameter for the point and NDC system as explained in the section 2.2.2.3.

---

[28] Ibid.

[29] Whitehouse (2006), *Pension Panorama*, World Bank, Washington DC, page 16.

Most pension schemes cover only a part of workers' earnings up to a ceiling to calculate pension benefits. The rationale behind such ceilings is the view that higher–income workers can save individually if they want to reach a higher replacement rate[30]. The ceiling in EU–15 and other higher–income OECD countries is relatively low – around twice average earnings. In EU–8 countries ceiling is significantly higher than in EU–15 (*Table 2*). This is probably due to the fact that pensions and earnings in EU–8 are quite lower than in EU–15, so it is hard to expect even from relatively higher–income workers to save enough for old–age.

Table 2. Accrual rates and contribution ceilings

		Country	Accrual rate	Notes	Ceiling
High–income OECD countries		Australia	na		na
		Canada	0,63 + 0,35B	Eearinings related + basic pension equivalent to 0,35	104
		Japan	0,55 + 0,4B	Eearinings related + basic pension that is equivalent to 0,4	149
		Norway	1,05 + 0,4B	Eearinings related + basic pension equivalent to 0,4. Lower accrual for higher income earners (0,35%)	219
		New Zealand	na		na
		US	0,91	Higher accruals for lower earnings and lower for higher	262
		Average	1,07		184
	EU–15	Austria	1,78		146
		Belgium	1,33		118
		Denmark	na	There is negligible public earnings related component	na
		Finland	1,50	Varies with age – 1,9% for age 59–62; 4,5% for age 63–67	none
		France	1,75	Total accural for two programs. Occupational scheme program pay higher accrual for higher wages	99 (298)
		Germany	1,00		149
		Greece	2,57		325
		Ireland	na		na
		Italy	1,75		367

[30] Whitehouse (2006), *Pension Panorama*. World Bank, Washington DC., page 12.

		Country	Accrual rate	Notes	Ceiling
High–income OECD countries	EU–15	Luxembourg	1,85	Varies with number of year in service. After age 55, increased by 0.01 percentage points. Each year of contributions beyond 38 also attracts an additional accrual of 0.01 percentage points. The maximum accrual rate is 2.05% per year.	231
		Netherlands	1,75 + 0,77B	Accrual rate in private occupational. Varies with different occupational schemes – most final salary schemes 1,75; most average salary schemes 1,75 – 2%	na
		Portugal	2,25	Lower accrual for higher earnings (2% is the lowest)	none
		Spain	3,00	3,33% for first 15 year, then 3% for next 10 year, followed by 2%	189
		Sweden	1,04	For public PAYG sheme. For occupation schemes additional 0,18 for average earner and higher accrual for higher earners	132
		UK	0,89 + 0,31B	Eearinings related + basic. Accrual rate varies with earnings, lower accruals for higher earnings.	159
		Average	1,75		202
	EU–8	Czech	0,45 + 0,2B		None
		Estonia	0,5 + 0,16B	Eearnings related + basic. ER is point system, general point indexation with swiss formula will be lowering accrual rate in future	1000
		Hungary	1,22		220
		Latvia	0,60		700
		Lithuania	0,5 + 0,4B	Eearinings related + basic equivalent to 0,4	500
		Poland	0,67		245
		Slovak	1,19		300
		Slovenia	1,50		na
		Average	0,92		494
		Serbia	1,28	Value for 2010. Point system, so valorisation will be lowering accraul rate value in following years.	500

Source: Pension at glance, 2007.

For an average worker, accrual rate is around 1.75% on average in EU–15 countries, providing around 70% gross replacement. It is lower in other OECD high–income countries as well as in EU–8 – around 1% – providing 50% gross replacement. The reason for lower accrual rate in EU–8

countries is the introduction of private pension funds as a part of the World Bank reform

Accrual rates are linear in almost half of the high–income OECD and EU–8 countries. Only a few countries have retained vertical redistributional features in their pension systems through lower accrual rates for higher earnings – UK, US, Norway, Czech Republic and Portugal to a small extent[31]. In Sweden, accrual rate is higher for higher earners only in occupational schemes, since higher earnings are not covered in public system due to the ceiling. The France public PAYG scheme has the similar system.

There are two countries where the accrual rate increases with the age/year of service – Finland and Luxembourg. Presumably, the intention is to create incentives for the workers to stay longer in the labour market. In contrast, Spain has lower accrual rate for longer years of service.

2.2.3.2. Reference period

Reference period is the period over which earnings are measured and taken into account when the pension benefit is calculated. Table 2 shows that even in the second half of the 90s, most countries still tended to base their benefit calculations on earnings in a limited part of working careers, usually either when earnings are highest (best years) or number of last/final years.

Basing pension benefit calculation on a limited number of best or final years tends to be regressive, because the people with final or best years substantially above their lifetime average earnings are likely to be those that earn the most, those with rising careers. Moreover, the countries with a large informal sector provide incentives to under–report earnings in earlier years, while other countries may tend to reinforce systems of steep seniority–based pay[32]. Hence, most of the countries embarked on reforms and prolonged the number of years taken into account for the calculation of benefits.

---

[31] Vertical redistribution is redistribution from rich to poor.

[32] European Commission (2010), Interim EPC–SPC Joint Report on pensions, Brussels.

Table 3. The length of reference period – past, present and planned

			1997/98	2007/08	planned
High-income OECD countries		Canada	lifetime average [a)]	lifetime average	
		Japan		lifetime average	
		Norway	best 10 of last 20	best 20	
		New Zealand	na	na	
		US	best 35	best 35	
	EU-15	Austria	best 15	best 18	best 40 (2028)
		Belgium	last 42	lifetime average	
		Denmark	last 10	lifetime average	
		Finland	final 10	lifetime average	
		France	best 15	best 25	
		Germany	lifetime average	lifetime average	
		Greece	final 5	final 5	lifetime average
		Ireland	na	na	na
		Italy	best 10	best 10	lifetime average
		Luourg	lifetime average	lifetime average	
		Netherlands	na	na	na
		Portugal	best 10	best 20	best 40 (in 2017)
		Spain	last 15	last 15	last 15
		Sweden	best 15	lifetime average	
		UK	since 1978 (last 20)	lifetime average	lifetime average
EU-8		Czech	last 12	last 21	last 30 (in 2016)
		Estonia		lifetime average	
		Hungary	best 4 in last 5	since 1988 (last 20)	lifetime average
		Latvia		lifetime average	
		Lithuania	na	since 1994 (last 14)[b)]	
		Poland	6 consequtive of last 15[c)]	10 consequtive of last 20[d)]	lifetime average
		Slovakia	best 5 of last 10	since 1994 (last 14)	lifetime average
		Slovenia	best 10	best 18	
		Serbia	best 10	since 1970 (last 38)	lifetime average

[a)] excluding 15% of the worst; [b)] and 5 consequtive best between 1984–1994; [c)] in 1993, the employee chose the best 3 consecutive years from the last 12 years; [d)] or 20 years chosen by insurer from the total coverage period.

Source: Holub (2010); Pension at Glance; http://www-ssw.issa.int/

Nowadays, most countries have reformed their system, and are either already applying the calculation based on lifetime career averages, or they are heading towards the gradual increase of the number of years taken into account.

2.2.3.3. Past earnings revaluation

Past earnings revaluation is reflected in the valorisation policy within traditional DB systems (v), in the general point indexation in the point system (x), and in the internal rate of return in the NDC (r).

Decisions on the reference period and past earnings revaluation are related policies. The valorisation policy became more important with the trend of extending the reference period. If the reference period was defined as the last few years before retirement, valorisation would not have a significant impact. On the other hand, if the lifetime income average is taken into account, valorisation becomes more important.

Any revaluation that does not take wage growth fully into account will invariably lead to a fall in the replacement rate. The extent of the fall will depend on the valorisation formula (to what degree, if at all, wage growth is taken into account). It will also depend greatly on the speed of the real wage growth – the more rapid the real wage growth, the lower replacement rates, and vice versa.

Furthermore, it depends on the benefit formula as shown in the section 2.2.2.3. Indexation of general point with CPI will bring RRs in the point system to a much lower level than the valorisation of past earnings with CPI in the traditional DB formula. An example is presented in the Table 4.

Table 4 shows that general point indexation with prices in the point system, and valorisation of past earnings also with prices in traditional DB system, give different levels of pension benefits and therefore different RRs. When valorisation is performed with prices, then pensioners are better off in traditional DB system, particularly the pensioners with rising careers. For example, in case of flat career, benefit in traditional DB system would be 50% higher, and in case of rising career even 60%. In general, when valorisation is not done with real wage growth, traditional DB system is in favour of those with rising career. That is one of the reasons why the point system is considered to be more transparent. Hence, a comparison of valorisations across countries is not straightforward.

Table 4. Valorisation with prices – RR in traditional DB vs. point system

Valorisation	wages	prices	ratio
	(1)	(2)	(2/1)
Flat career (always average)			
Point system	71,3	32,9	46,1
Traditional DB	71,3	49,7	69,7
Rising career (twice the average in the second half)			
Point system	53,5	24,7	46,2
Traditional DB	53,5	39,7	74,2
Parameters			
Accrual rate	1,80%		
Reference period	40 years		

NOTE: RR is defined as the ratio of the fist pension benefit and last salary.

Source: Author's calculation

Nevertheless, it is useful to take a look at valorisation methods across countries (Table 5). The most common practice is to revalue earlier years' pay in line with the growth of average earnings in the economy. Belgium, France, and Spain, however, revalue earnings only with price inflation, although the effect in Spain is relatively small because only the final 15 years' salary enters the benefit formula, compared with 25 years in the French public scheme and the lifetime average in Belgium[33]. Furthermore, accrual rate in Spain is extremely high (3%), and quite high in France (1.75%).

Countries with point system normally take into account wage growth. Countries with NDC systems typically use some kind of economic aggregate for the rate of return – such as contribution growth, GDP, or as in case of Sweden per capita wage growth adjusted by the automatic balancing mechanism. Balancing mechanism in Sweden means that if pension assets fall below liabilities, the indexation is reduced by the assets/liabilities ratio. Hence, labour force movements are indirectly taken into accounts.

It is important to note that balancing mechanism is not built into the NDC formula, it is chosen as a rate of return, such as any valorisation method that can be used in any type of benefit system. That means that

[33] Pension at Glance (2009)

this type of valorisation can be applied in DB system as well. Typical example is German *sustainability factor* – that is wage growth adjusted with system dependency ratio.

Table 5. Valorisation and benefits indexation across countries

			Earnings valorisation	Benefits indexation
High–income OECD countries		Canada	wages	prices
		Japan	wages	prices
		Norway	wages	prices
		US	wages [a)]	prices
	EU–15	Austria	moving to wages [b)]	discretionary
		Belgium	prices	prices
		Denmark	n/a	n/a
		Finland	80% wages – 20% CPI	20% wages – 80% CPI
		France	prices	prices
		Germany	sustainability factor [c)]	sustainability factor [c)]
		Greece	national incomes policy	discretionary
		Ireland	n/a	n/a
		Italy	GDP	prices [d)]
		Luxembourg	wages	wages
		Netherlands	wages	wages
		Portugal	25% wages – 75% prices	prices [e)]
		Spain	prices	prices
		Sweden	balancing mechanism	balancing mechanism
		UK	wages	prices
EU–8		Czech	wages	33% wages – 67% prices
		Estonia	50% prices – 50% contributions	50% prices – 50% contributions
		Hungary	wages	50% wages – 50% prices
		Latvia	wages	discretionary [e)]
		Lithuania	earnings	earnings
		Poland	wage bill	80% wages – 20% prices
		Slovakia	wages	50% wages – 50% prices
		Slovenia	wages	wages
		Serbia	prices [f)]	prices [f)]

[a)] earnings valorisation to age 60; no adjustment from 60 to 62; prices valorisation from 62 to 67; [b)] as the reference period is increasing; [c)] wage growth adjusted with system dependency ratio; [d)] larger benefits are indexed with only 90 and 75% of price growth; [e)] higher increases for smaller pensions; [f)] if GDP growth 4%, for the pecentage point that exceed this growth.

Source: Pension at Glance (2009) and ISSA

2.2.3.4. Pension benefit indexation

Indexation refers to the policy of up–rating pensions in payment during retirement, in contrast to valorisation, which covers the period before retirement[34].

When pension systems were established, only few countries had formal indexation rules. However, high inflation era of 1970s led many governments to adopt procedures for adopting pension in payments. Afterward, during 1980s many countries moved to indexation with wages, but returned back to prices in 1990s as a cost–cutting measure[35].

With the price indexation, the purchasing power of pensions is preserved. However, the living standard of individual retirees over time falls behind that of workers. Still, most of the high–income OECD countries decided to make necessary cost cuts and savings on pension in payment.

The reason to save on benefits in payment rather than on the earnings valorisation, or on both, is probably the following. If the savings were to be made by choosing some combination of wage and price formula for both valorisation and pension in payment indexation, an individual would experience a sharper decline of income at the time of retirement, and later his or her living standard would slightly increase. When cuts are done only via indexation of pension in payments with prices, then an individual would see less of a sharp decline at the point of retirement, and the living standard would remain the same throughout the rest of the life (Chart 1). From individual life cycle hypothesis and smooth consumption perspective, indexation of benefits in payments is a more favourable situation.

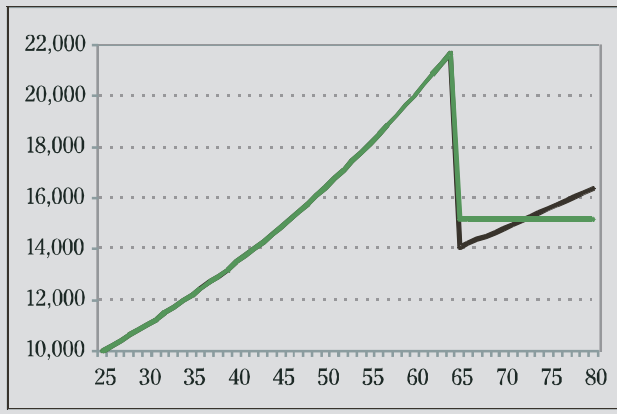
That was most likely the reason why high–income OECD countries chose to make saving on pension in payment indexation. Indeed, nowadays most of the high–income countries index pension in payments with prices – 10 out of 18 (Table 5).

---

[34] Whitehouse, E. (2006). "New indicators of 30 OECD countries' pension systems" *The Journal of Pensions Economics and Finance*. 5 (3), 275–298.

[35] Whitehouse, E. (2006). *Pension Panorama*, World Bank, Washington DC.

Chart 1. Lifecycle with same valorization and indexation vs. indexation with prices



This was also the rationale behind the design of some elements of the Swedish NDC system. In that system the annual pension benefit is calculated when accumulated notional capital is converted into an annuity by using annuity divisor. Annuity divisor generally reflect life expectancy at the year of retirement, but in Sweden it is corrected for imputed real rate of return of 1.6%, so that the initial benefit at retirement is higher than it would have been if rate of return was not imputed. However, benefits in payment are indexed with the increase in nominal average earnings less the imputed interest rate in the annuity divisor of 1.6%. "The reason for this construction was to provide a relatively high initial benefit rather than having a high benefit at the end of life. The alternative would have given an increasing benefit profile from a lower initial level"[36].

Hence, looking only at the individual level consumption this seems as a better solution. When pensioner living standard is compared to the rest of the population, he/she is lagging behind. This probably have some negative implications in developed countries, though not that much since initial pension level are relatively high, and the real wage growth is low, so the differences are not huge.

---

[36] Könberg, B., Palmer, E. and Sunden, A (2005) *The NDC Reform in Sweden: The 1994 Legislation to the Present.* Pension Reform: Issues and Prospects for Non–Financial Defined Contribution (NDC) Schemes. Ed. by Holzmann, R and Palmer, E. The World Bank, Washington DC.

However, in the transition countries, where the initial pension benefits levels are quite low and the potential growth of the standard of living is considerable, it would be unfair to exclude the pensioners from benefits of growing economies. That is the reason why transition countries typically take into account some portion of real wage growth when indexing pension in payment (Table 5).

Table 6. Pension benefits in dinars – hypothetical case (general point indexation with wages, pension in payment with prices)

	2003	2004	2005	2006	2007	2008
Average earners						
New pensioner	9,640	12,052	15,108	17,684	21,584	25,785
Pensioner from 2003	9,640	10,594	11,770	13,665	15,264	16,241
difference	...	1,458	3,338	4,019	6,320	9,544
Three times average						
New pensioner	28,920	36,156	45,324	53,052	64,752	77,355
Pensioner from 2003	28,920	31,783	35,311	40,996	45,793	48,723
difference	...	4,373	10,013	12,056	18,959	28,631
in payment/new pensioner	...	88%	78%	77%	71%	63%

Source: Author`s calculation

Another issue that arises with indexation of benefits in payment just with prices, is that then there is typically a situation of the different valorisation and indexation method. This can create huge gaps between the old and new pensioners with the same working record.

For example, if in Serbia indexation of general point with wage growth and CPI indexation of benefits in payment were put in place in 2003, pensioner who had retired in 2003 would have had in a five years' time pension benefit of only 63% of the same type of worker retiring in that year (2008). In absolute terms, these gaps are particularly high for higher income–earners. Specifically, someone whose lifetime earnings were three times higher than average earnings, and who retired in 2003, would now receive pension by RSD 28,631 lower than the same–profile person who retired in 2008.

Nevertheless, it is actually very common in high–income OECD countries to have different valorisation and indexation policy. The most co-

mmon practice – followed in 15 OECD countries – is to revalue earlier years' pay in line with the growth of average earnings in the economy. Conversely, pension benefits are usually indexed in line with consumer prices, or some combination of consumer price and earnings growth[37]. The aim is to maintain the level of old–age income at the pre–retirement level, while saving in pension costs is made possible by CPI indexation.

In the countries with robust wage growth, this is creating high inequalities between pensioners. Therefore, transition countries opt for not such extreme indexation and valorisation, and usually have some wage growth in both (Table 5).

Finally, a few countries such as Italy, Portugal and Latvia, have introduced some redistributive features into their pension systems via progressive indexation mechanisms, which give higher increases to low pensions than to higher benefits. This is particularly surprising since Italy and Latvia are countries with NDC formula, the most transparent formula when it comes to the connection of contributions and benefits.

Two of high–income countries (Luxembourg and Netherlands) still index pension in payments with real wage growth, while Sweden and Germany index with wages adjusted for balancing mechanism i.e. stability factor.

[37] Whitehouse (2007), Pension at Glance: Public Policies across OECD Countries, OECD, Paris.

PART II. DESIGN OF THE PENSION SYSTEM IN SERBIA

Mandatory pension and disability insurance in Serbia is the safeguard against three main types of risks: old age, disability and spousal survivor risks. The system is based on the pay–as–you–go financing.

Until recently, insurance was organized into ***three separate state funds***, which have been consolidated administratively since January 1, 2008, while the complete merging of the funds is planed for 2011, according to the statutory solutions. Pension and disability insurance of military pension beneficiaries has been regulated by the Army related legislation, but since 2008, pension benefits indexation has been regulated in the same manner as the indexation of general pension benefits. The proposed amendments to the law envisage that the military pension beneficiaries and other beneficiaries are integrated in the existing pension and disability insurance system.

Legal framework

Pension and disability insurance is regulated by the Law on Pension and Disability Insurance that was adopted in 2003. This Law was amended in 2005, while the adoption of new amendments is expected for the fall of 2010.

Earlier, the pension system had been regulated by two laws – Law on the Principles of Pension and Disability Insurance on the Federal Level (in effect since January 1, 1997) which regulated the rights of the insured and the beneficiaries, as well as the Law on Pension and Disability Insurance on the Republican Level (also effective as of January 1, 1997) which regulated in more detail the system organization and funding. Under the pension and disability insurance reform that took place in 2001/03, the Federal Law was partially amended in December 2001 (becoming effective as of January 1, 2002).

Pursuant to the 1992 Law on Pension and Disability Insurance, the Republic Fund for Pension and Disability Insurance of Employees, the Republic Fund for Pension and Disability Insurance of Self–Employed

and the Republic Fund for Pension and Disability Insurance of Farmers have been established as separate legal entities.

1. OLD–AGE PENSION

Until 2003, the component that maintained old–age income was regulated in accordance with the traditional defined benefit system. The reference period was 10 consecutive years of insurance which are the most favorable for the insured, while the valorization was performed on the basis of the net wage growth. The accrual rate was not linear but it changed depending on the years of service. For men, the accrual rate was 2.33% for the first 15 years of service, and then 2% for each subsequent year. For women, the accrual rate was 2.66% for the first 15 years of service, then 3% for the following 5 years, and 2% for each year over 20. The maximum pension benefit was 85% of the pension basis[38].

In 2003 Serbia introduced the so called *point system*. The reference period was prolonged to include the wages from 1970, which means that at the moment of introduction, the period was expanded from 10 best years to 33 years, while in 2010 it amounts to 40 years of service.

1.1. STANDARD OLD–AGE PENSION

1.1.1. Pension benefit calculation – point formula

Under the point system, the pension benefit level is determined by multiplying the number of personal points by the general point value on the day of retiring.

$$Pension\ benefit = PP(Personal\ Point) \times GP(General\ Point)$$

The personal point (PP) is defined by the following formula:

$$PP(Personal\ Point) = Personal\ Coefficient(PC) \times \\ \times Pensionable\ Service(PS)$$

The *personal coefficient* (*PC*) represents the average of annual personal coefficients, whereas the *annual personal coefficient* represents the

[38] The pension basis is the monthly average wage to the reference period.

ratio of total earnings of the insured for each calendar year to the average annual earnings in the country for the same calendar year.

$$(PC) = \frac{\Sigma\ APC}{YS}$$

where *APC* is annual personal coefficient and *YS* – years of service

Essentially, the personal point is equal to the *sum of annual personal coefficient*, except in certain cases – when the years of insurance are not equal to the pensionable service. Pensionable service is a broader term, apart from the years of insurance (years of service, including accelerated years of service) it also includes special years of service (additional benefit for women, women with three children).

Pensionable service (PS) can amount to 45 years at most. Each year of service equals 1, and one year of service above 40 years is calculated as 0.5 – up to the 42,5 at most. When the level of an old–age pension benefit is calculated for a female, years of service are increased by 15%, but the increased service can add up to 40 years at most. The new amendments to the law are expected to gradually decrease this percentage, ultimately resulting in 6% until 2019.

1.1.2. Pensions and general point indexation

The indexation method has been modified on numerous occasions after 2000. After the wage–indexation that was in operation during 1990s (which was often only nominal due to irregular payment of benefits), 2001 first saw the shift to the Swiss formula. Thereafter, the wage weight was gradually decreasing, and it was planned to index the pensions to cost of living only, as of 2009.

Under the 2003 Law, pensions in payment and the general point were indexed *four times a year* to CPI growth and the average wage growth in Serbia in the previous quarter, in the percentage that represented the sum of one half percent of CPI growth (fall) and one half percent of wage growth (fall) – the so–called *Swiss formula*.

Pursuant to the 2005 amendments to the Law on Pension and Disability Insurance, pensions in payment and the general point were indexed *twice a year only to CPI growth*, while the transition phase was envisaged for the 2006–2008 period, in which the general point and pensions in payment were indexed to the modified Swiss formula, with wage growth taken into account in a lower percentage each year (37.5% in 2006, 25% in 2007 in 12.5% in 2008). In addition, these amendments also set out extraordinary indexation in the event the average level of pension benefits in a given year is below 60% of the net average wage. Such extraordinary indexation will be performed in January next year[39]. Pursuant to this Article, the extraordinary indexation of 11% was performed in January 2008.

Another extraordinary indexation took place in October (an additional 10% to regular indexation), in response to the demand of a party member of the then new Serbian coalition government. After that, the pension freeze ensued which is still in effect.

Latest regulatory solution suggests changing the manner of pension indexation, so that during the first two years (from April 1, 2011 and April 1, 2012) pensions are indexed in the percentage which is the sum of percentage of consumer price growth (fall) in the last six months and percentage representing half of the real GDP growth rate in the previous calendar year. After that, the pension benefit will be indexed two times a year (on April 1 and October 1) to the consumer prices growth in Serbia in the previous six months, but in case that GDP in the previous year records a growth rate of more than 4%, pensions would be indexed on April 1st in the percentage that is the sum of percentage of consumer prices growth (fall) rate in the last six months and percentage representing the sum between real GDP growth rate in the previous year and 4% rate. Therefore, GDP represents a “trigger" and a parameter in the general point indexation and pension in payment.

The Law Amending the Budget System Law retains the agreed indexation manner at least until 2015 or even further, until the share of pensions in GDP reaches 10%.

---

[39] Article 75 of the 2005 Law Amending the Pension and Disability Insurance Law.

REPLACEMENT RATE

Replacement rate is the main indicator of pension system[40] design. General point indexation directly affects the level of replacement rate. Replacement rate depends also on wage growth.

According to the first part of the Study, it can be concluded that Serbia is an exception having an indexation of general point, which only to a small extent enables real growth (by a percentage point exceeding 4% of GDP growth). Point formula is a very sensitive to general point indexation, and if it does not take into account wages, it leads to significant decrease in the replacement rate.

Table 7. Replacement rate and share of pensions expenditures in GDP, indexation pursuant to the 2010 law amendments

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Replacement rate											
Scenario 1 – real wage growth GDP – 1%	71,3%	72,4%	72,2%	70,7%	68,9%	67,1%	65,4%	63,7%	62,3%	60,5%	58,9%
Scenario 2 – real wage growth GDP – 2%	71,3%	72,4%	72,9%	72,1%	70,9%	69,6%	68,5%	67,3%	66,4%	65,2%	64,1%
Scenario 3 – real wage growth as GDP	71,3%	72,4%	71,5%	69,5%	67,1%	64,7%	62,5%	60,3%	58,4%	56,3%	54,3%
Net pension expenditure in GDP	12,6%	12,7%	12,6%	12,3%	12,0%	11,8%	11,5%	11,3%	11,0%	10,8%	10,6%
Net pension expenditure and other benefits in GDP	13,1%	13,3%	13,2%	12,9%	12,6%	12,3%	12,0%	11,7%	11,5%	11,2%	11,0%
Assumptions:											
GDP real growth (%)	1,5	3,7	4,7	5,5	5,7	5,8	6,1	6,2	6,8	6,8	6,9
price growth (%)	7,0	5,5	5,0	4,5	4,0	3,5	3,0	3,0	3,0	3,0	3,0
number of pensioners in employee fund increases 1% annualy											
number of pensioners in self-employed fund increases 1,5% annualy											
number of pensionser in farmers fund is constant											

NOTE: Without military pensioners.

Indexation pursuant to the latest amendments of the Law leads to decrease in the replacement rate in the next 10 years by more than 12 percents, depending on the fluctuation of the real wages. Only if GDP

[40] For further details on replacement rate, please refer to: K. Stani? (2008), "Old–Age Income Replacement by Pension System in Serbia – Measurement and International comparison", Quarterly Monitor of Economic Trends and Policies in Serbia, No.13, FREN.

constantly grows by at least 2 percent more than real wages, we would not see such dramatic decrease of the replacement rate.

It is difficult to predict share of pension expenditures in GDP in the next 10 years, for we do not know at what rate the number of pensioners would grow, nor do we know the structure of future pensioners. Roughly, our calculation shows that even until 2020, share of pensions in GDP would not go below 10%. This is especially the case if the amount of 10% of GDP includes other payments from the Pension and Disability Fund[41]. In addition, military pensioners are currently not included into overall pension expenses, but with the consolidation thereof with Pension and Disability Fund in 2012 it is likely that they will be. It means that indexation suggested by the amendments of the Pension Law would need to be implemented until around 2025, which is not in line with the goal of providing adequate pension benefits.

1.1.3. Retirement Age

Retirement age in 2011 amounts to 60 years for women and 65 years for men, with minimum 15 years of service. The retirement age has been set following numerous changes in laws after 2000.

According to earlier regulations that were effective until 2001, retirement age was 5 years lower – 55 years for women and 60 years for men. That retirement age was set by the old 1965 law. It had not been changed for 35 years, in spite of the rising longevity, better healthcare and general working and business conditions[42].

In the end of 2001, the retirement age was increased at one go from 55 to 58 for women and from 60 to 63 for men. Pursuant to the 2005 law, the retirement age has been increasing gradually by six months from 2008 to end by 2011, when women will retire upon reaching 60 years of age and men 65.

---

[41] At the moment when the Study is written, amendments to the Law have not been adopted, so the details are still unknown. Pursuant to one of the Draft Law, "expenses on pensions include expenses for net pension benefits and other rights of pensioners, except for expenses on health insurance contributions".

[42] Matkovic, G. (2009), "Pensions System in Serbia – Characteristics, Reforms Thus Far, Dilemmas and Options", Pension System in Serbia, USAID/SEGA, page 9.

Further increase in retirement age for women has been a topic of negotiations with the IMF during 2009, but the idea has been rejected so far.

Redistribution from men to women is typical of any pension systems. Even with the same retirement ages for men and women, still some redistribution occurs since men live shorter on average hence women receive pension benefits over a longer period. This is the case even with the system of individual accounts (private pension funds), since unisex annuity tables are used in computations of pensions, which do not differentiate between men and women and use the average life expectancy. When the retirement age is lower for women relative to men, as is the case in Serbia, that significantly increases difference in length of the period in which pension benefits are received. That is the main argument on behalf of the request for increase of retirement age for women.

General trend in the developed countries is equalization of the retirement ages for women and men, so that further raising of retirement age for women will definitely be actual topic in the coming period.

Most of the developed countries of the Western Europe do not have lower retirement age for women than for men. It is mostly set to 65 years of age, rarely to 67 (Island and Norway, and Germany announced setting reti-

Table 8. Life Expectancy at 65 years of age

	Women	Men
EU–15	**21,44**	**17,70**
Austria	20,97	17,51
Belgium	20,99	17,32
Finland	21,25	17,04
Denmark	19,19	16,51
Germany	20,71	17,42
Ireland	20,11	17,06
Greece	19,37	17,43
Spain	21,95	17,81
France	23,00	18,41
Italy	21,81	18,00
Luxembourg	20,29	16,37
Netherlands	20,71	17,10
Portugal	20,17	16,76
Sweden	20,77	17,94
UK	20,21	17,50
EU 8+2*	**17,98**	**13,87**
Bulgaria	16,42	13,25
Czech	18,52	15,11
Estonia	18,47	13,13
Hungary	17,81	13,66
Latvia	17,19	12,80
Lithuania	17,90	12,87
Poland	18,95	14,57
Romania	16,86	13,94
Slovenia	20,21	15,85
Slovakia	17,50	13,56
Croatia	17,69	14,01
Macedonia	15,17	13,30
Montenegro	16,33	14,36
Serbia	**15,80**	**13,57**

*unweighted average

Source: Eurostat for 2007.

rement age at 67 in the next 20 years). There are only few countries to still having different retirement ages.

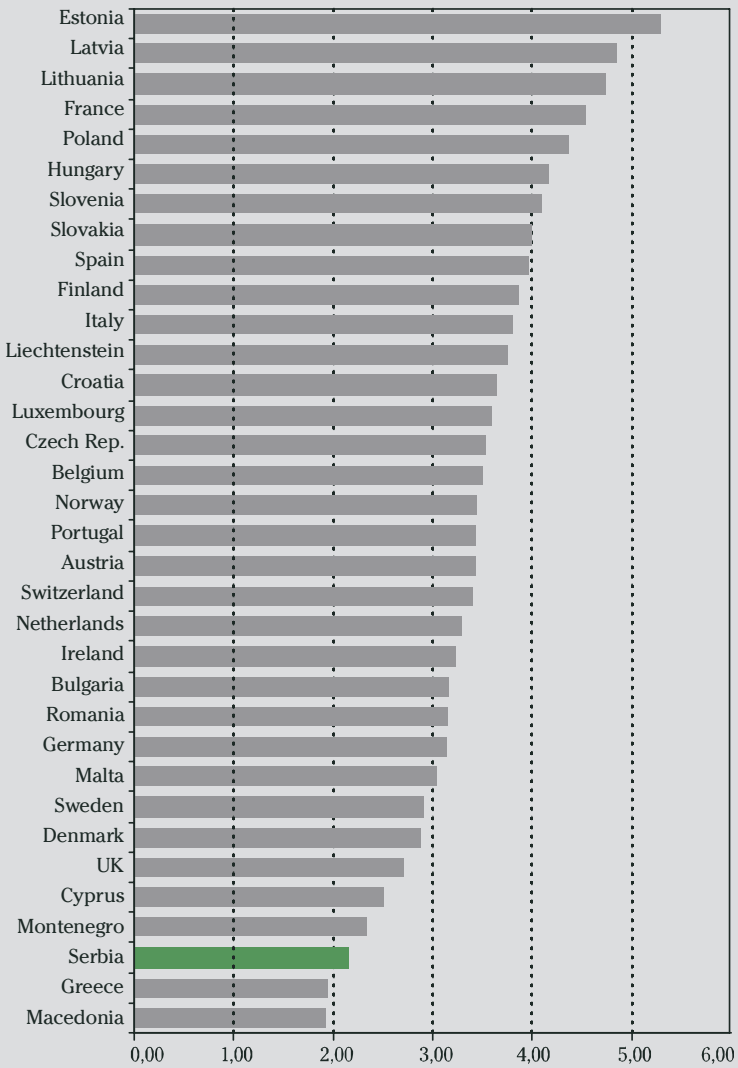
There is a somewhat different situation in countries of Eastern and South Eastern Europe. Currently, retirement ages are significantly lower and different for men and women (on average, 63 for men and 60 for women). Retirement age in 2008 has been equalized only in Hungary

Chart 2. Life Expectancy for women at 65 years of age

Source: Eurostat for 2007.

and Slovakia to 62 years, while Estonia envisaged equalization in 2016 to 63 years of age. Only Croatia planed to equalize the retirement age to 65 years until 2020 by the newest law amendments.

Chart 3. Difference in life expectancy (65 years) between men and women



Source: Eurostat for 2007.

However, the thing that one should bear in mind whenever the retirement age in pension system is reviewed is life expectancy, because what we really want to know is how long a person is receiving pension

benefits. Thus, data on the retirement age should always be viewed in combination with demographic data. So, retirement age for men in Serbia and in some Scandinavian country is incomparable, given the fact that people in Scandinavia have longer life expectancy.

When we take into account demographic data for Serbia and compare them with EU–15 (Table 8), we arrive to the conclusion that life expectancy in Serbia is short. This applies to both men and women. When we compare Serbia to countries that joined EU later, we see that life expectancy for men is approximately the same, but women in Serbia live two years shorter on average. Except for women in Macedonia, women in Serbia have shortest life expectancy compared to EU–27, Croatia and Montenegro (Chart 2). Hence, the difference between life expectancy between men and women in Serbia is much smaller than in other European countries – 2.15 years in Serbia relative to average 3.43 in the observed countries (Chart 3). The reason for that is an important question for the demographers.

Table 9. Gender differences in retirement ages and the life expectancy for that age in 2008 – expected retirement duration

	MEN		WOMEN		
	Minimum retirement age	Life expectancy for the years of age at the moment of retirement – estimated pension duration	Minimum retirement age	Life expectancy for the years of age at the moment of retirement – estimated pension duration	Estimated differences in pension duration (men/ women)
1	2	3	4	5	6
EU–15 + NO + CH					
Austria [a)]	65	17,7	60	21,1	3,4
Belgium	65	17,5	65	21,0	3,5
Denmark	65	16,6	65	19,5	2,9
Finland*	65	17,5	65	21,4	3,9
France	60	22,3	60	27,4	5,1
Germany [b)]	65	17,6	65	20,7	3,1
Greece	65	17,8	65	19,8	1,9
Ireland	65	17,2	65	20,4	3,2

1	2	3	4	5	6
Italy	65	18,0	60	26,2	8,2
Luxembourg	65	17,4	65	21,0	3,6
Netherlands	65	17,4	65	20,7	3,3
Norway	67	16,1	67	19,4	3,3
Portugal	65	16,9	65	20,3	3,4
Spain	65	18,0	65	21,9	4,0
Sweden*	65	18,0	65	21,0	2,9
Switzerland	65	18,9	64	22,3	3,4
UK [c)]	65	17,5	60	24,5	7,0
Average	64,8	17,8	63,9	21,7	3,9
EU–8 + 2 + Hr					
Czech [d)]	62	17,3	58,5	24,5	7,2
Estonia [e)]	63	14,7	60,5	22,9	8,1
Hungary	62	15,7	62	20,4	4,8
Latvia	62	14,6	62	20,1	5,6
Lithuania	62,5	14,8	60	22,0	7,2
Poland	65	14,8	60	23,2	8,4
Slovakia	62	15,7	62	20,2	4,6
Slovenia [f)]	62,5	18,4	56	28,4	10,0
Bulgaria	63	14,7	60	20,8	6,1
Croatia [g)]	65	14,3	60	22,2	7,9
Romania [h)]	63,5	15,0	58,5	22,6	7,6
Average	63,0	15,4	60,0	22,5	7,0
Serbia [i)]	**63,5**	**14,8**	**58,5**	**21,0**	**6,2**

NOTE: Life expectancy data are for 2008

[a)] Gradual increase of retirement age for women to 65 years of age (in the period 2024-2033); [b)] Gradual increase to 67 until 2029; [c)] Gradual increase to 65 for women (until 2020); [d)] Data for women with two children; retirement age is gradually increased to 63 for men and women without children, while the reduction for children remains; [e)] in 2016 it is equalized to 63; [f)] in 2009, 63 for men; in 2023, 61 for women; [e)] in 2020 it is equalized to 65; [g)] until 2014 gradual increase to 65/60; [h)] in 2011 it is increased to 65 for men and 60 for women;

* In Sweden and Finland retirement age is essentially flexible (61-67 in Sweden, 63-68 in Finland)

Source: EUROSTAT for life expectancy, MISSOC and ISSA for retirement age

Table 9 shows the retirement ages in EU member states, combined with the demographic data. It shows that pensioners in Serbia, women and men in particular, use pension benefit shorter than the EU–15 average, and shorter than the rest of the EU states and the region. Also, pur-

suant to these data, retirement age in Serbia is not lower that in EU–8 and countries in the region. Moreover, in 2011 retirement age will be higher for men when it will reach 65 years of age for men.

1.2. ANTICIPATED PENSIONS

In addition to the traditional conditions for old age pension – based on age and prescribed standard retirement age – the insured may exercise right to pension also through years of service (so called "full years of service pension" in Serbia or anticipated pension in EU). This is the pension category well established in many pension systems in Europe.

Pursuant to the valid Law, condition for pension based on (full) years of service is 35 years for women and 40 years for men, with minimal retirement age of 53. For example, a woman who started working immediately after the high school – at the age of 18 – can retire at the age of 53, in compliance with the current Law. In addition, 15% of the years of service are added to her record, which increases her years of service to 40 years, making it equal to the full service for men. As for men, if a person starts working immediately after high school (at the age of 18), condition for retirement on full years of service can be fulfilled at the age of 58. Minimal retirement age according to the current Law is 53.

When a person retires on the basis of the years of service, that person practically receives the pension benefits longer than the person who retired due to observing the age criteria, which is contrary to the actuarial fairness principle[43]. For instance, average life expectancy for men in Serbia at the age of 58 is almost 18.5 years, and at the age of 65 close to 14 years. This means that a person who retires at 58 will receive approximately 30% higher total pension benefits than the person retiring at 65 (Table 10).

[43] Assuming that such pensioners do not have shorter life expectancy. There is a possibility that such assumption is incorrect, given that those pensioners are the insured without university degree, their jobs were more difficult and they endured bad living conditions. Since the data are not available, and considering the practice in other countries, the initial assumption that is used is that the life expectancy of these pensioners is equal to the average life expectancy of the entire population.

Table 10. Expected retirement duration

	Expected life expectancy (Average expected pension duration)	Longer pension duration relative to standard retirement age	
		Number of years	Percentage
Male			
58 years	18,43	~ 4,5	~ 30%
60 years	17,07	~ 3	~ 22%
65 years*	13,84	..	..
Female			
53 years	25,86	~ 6	~ 30%
58 years	21,58	~ 1,5	~ 8%
60 years*	19,93	..	..

*Retirement Age
Source: Eurostat for 2008.

Pursuant to the suggested Law adoption of which is expected, required years of service for a woman to be eligible to anticipated pension is raised from 35 to 38, and minimal retirement age from 53 to 58. Full years of service for men remains 40. Additional benefit regarding women's years of service shall be decreased at the same time, from the current 15% to 6%. It is stipulated that all these changes be implemented gradually: From 2011 to 2019 – required years of service to be increased from 35 to 38 (4 months each year), and coefficient of years of service increase for women will be decreased to 6% (1% each year). The minimum retirement age will be raised to 58 from 2011 to 2023 (by 6 months each year).

New law practically affects exclusively women. In theory, men who start working at the age of 15 can fulfill condition at the age of 55, and in that case moving minimal retirement age affects men as well. However, these are rare cases and mostly men that meet anticipated pension at the age of 58 or more; thus moving minimal retirement age will not largely affect men as it will affect women.

Therefore, this brings about equalization of men and women regarding definition of full years of service (38 and 40 instead of 35 and 40), and

years of service in general (6% additional benefit on women's years of service instead of 15%). Even though there are historical reasons for a more favorable treatment of women in the pension system, such as the inferior position in the labor market and the society in general, the pension system is not an institution that should solve this kind of problems, although the policy makers bear such problems in mind. In view of that, the proposed changes are adequate, especially having in mind their gradual introduction.

However, the issue of actuarial neutrality between pensioners retiring on retirement age and years of service is, somewhat, growing bigger. On one hand, the proposed law is practically eliminating the possibility for women to retire on the basis of the years of service. On the other hand, the issue of actuarial neutrality with men remains unsolved.

More adequate solution for transition economy and generally modern solution that enables flexibility would be to decrease pension benefits "on years of service basis" by certain percentage. For instance, decreasing pension benefits by around 9–10% for women retiring on years of service at the age of 55 and men retiring at the age of 60 recognizes the actuarial fairness principle, and at the same time leaves the possibility to retire before standard retirement age.

1.3. ACCELERATED PENSION BENEFITS

Accelerated years of service include service with increased duration on jobs which are particularly difficult and hazardous for health in spite of application of all prescribed security measures. For these jobs, an employer pays increased contributions.

Accelerated years of service in Serbia is defined by general enactments, that is *Law on Pension and Disability Insurance* and *Rules on Staffing and Organization of Work, and/or Activities with Increased Duration of Years of Service*, which defines the jobs for which years of service are considered to include increased duration. Also, there is a special group of jobs with accelerated years of service – so called Article 42 of the Law – which defines accelerated years of service for certain

group of jobs, such as Ministry of Interior, Intelligence Agency, tax police etc, for which pensions are calculated somewhat differently. For these jobs, employer also pays increased contributions.

Years of service with increased duration shall also include the insured with at least 70% physical defects, military disabled persons, civil disabled persons, blind persons, persons with dystrophy, multiplex sclerosis etc; for them the employer does not pay increased contributions, but rather accelerated years of service are "charged to" solidarity in the pension fund.

Pursuant to general enactments

There are four groups of jobs for which years of service are considered to have increased duration and for which employer pays additional contributions:

1. The insured whose effective 12 months of service are considered as 14 months. For them, the employer pays additional 3.7% of contributions;
2. The insured whose effective 12 months of service are considered as 15 months. For them, the employer pays additional 5.5% of contributions;
3. The insured whose effective 12 months of service are considered as 16 months. For them, the employer pays additional 7.3% of contributions;
4. The insured whose effective 12 months of service are considered as 18 months. For them, the employer pays additional 11% of contributions.

In addition to the increased years of service, retirement age for the insured, performing these jobs, is lower than the standard retirement age; such decreased limit has been changed depending on the legislation (Table 11).

Pursuant to 1997 and 2003 laws, the first group of jobs (12/14) saw decrease of retirement age by one year every 6 years spent on these jobs;

second group (12/15) saw decrease every 5 years: third group (12/16) every 4 and fourth group (12/18) every 3 years.

Table 11. Retirement age for the accelerated years of service (different legislative rules)

Group of jobs with the accelerated years of service	Law in 2003 and 1996/97	Amendments and Addenda in 2005	Amendments and Addenda in 2010
12 → 14 years	6 years	3 years	5 years
12 → 15 years	5 years	2 years and 6 months	4 years
12 → 16 years	4 years	2 years	3 years
12 → 18 years	3 years	1 years and 6 months	1 years and 6 months

Amendments to law in 2005 significantly relaxed those criteria – they were practically "halved". The latest draft amendments to the law in 2010 to a certain extent brings back the old solutions, although not fully – for instance, first group of jobs need 5 years of service instead of 6 years as stipulated previously for 1 year; second group needs 4 years instead of 5, third group needs 3 instead of 4. As for the fourth group of jobs (12/18), the same criterion remains as in the solution from 2005 – 1 year and 6 months.

When it comes to the minimum retirement age, until January 1, 1997 there was no minimum requirement in terms of the years of age. On this date, the then effective federal Law laid down that the minimum retirement age shall be 50 years of age. As provided in the amendments to the Law which were introduced in 2001 (and became applicable as of January 1, 2002) – the retirement age was increased by three years, from 50 to 53 years of age. Such legal solution was retained in the 2003 Law on the Pension and Disability Insurance with the transitional provision stipulating that the minimum retirement age of 50 for the 12/18 group is supposed to be in force until January 1, 2008, when it too is

going to be raised to 53. However, the amendments to the Law introduced in 2005 envisaged that the retirement age for the 12/18 group is permanently set at 50 years of age. Pursuant to the amendments passed in 2010, the retirement age for the first three groups is gradually increased to 55 (until 2015), while for the fourth group, the retirement age remains 50.

Table 12. Minimum retirement age for the accelerated years of service (different regulations)

Group of jobs with the accelerated years of service	1996/97 Law	2003 Law	2005 Amendments	2010 Amendments
12 → 14 years	50 years of age (for ballet artists without limitations)	53 years of age	53 years of age	55 years of age from 2015 (until then, gradually raising by 4 months a year)
12 → 15 years				
12 → 16 years				
12 → 18 years		53 years of age*	50 years of age	50 years of age

* transitional provisions – 50 years by end 2007

In accordance with special regulations

There are insurance beneficiaries with accelerated years of service that retire under special conditions – in accordance with *Article 42* of the Law on Pension and Disability Insurance. Such beneficiaries are employees of the Ministry of the Interior and the Security Information Agency, employees of the Ministry of Foreign Affairs working on certain posts where the years of service are calculated as accelerated years of service, employees of organizations and authorities working on counter radio–investigation service and cryptography posts, authorized officers pursuant to the regulations on the execution of criminal sanctions, authorized persons of the tax police.

For this group of the insured, the years of service are treated as accelerated by calculating 12 months as 16 months. The amount of the pension benefit is calculated in the standard manner (according to the po-

int formula where the years of service are calculated as accelerated), and such calculated amount of the benefit is further increased by 20%.

The 2003 Law contained a transitional provision stating that until December 31, 2007, the pension benefit for these insurance beneficiaries shall be calculated on the basis of the average monthly wage earned during the calendar year preceding the year of retirement, if that is more favorable for the beneficiary, and in the following manner – for 20 years of pensionable service the pension benefit equals 55% of the wage (men), and 57.5% (women) and is raised by 2.5% of the pension basis for each subsequent year until 30 years of pensionable service. For every year above 30 years of pensionable service, the pension benefit is increased by 0.5% of the pension basis, but it cannot amount to more than 85% of the pension basis.

This provision did not cease to be effective as of January 1st 2008, as originally planned. Instead, it remained applicable until the end of 2009. In addition, the amendments to the Law introduced in 2005 envisaged that the retirement age for this group of jobs shall be lowered to 50 years of age, which is to be applicable until the end of 2009.

Therefore, during a 4–year period (from end 2005 until the beginning of 2010), pursuant to Article 42, the beneficiaries with the accelerated years of service could retire under very favorable conditions – at 50 years of age and receiving the pension benefit calculated as the percentage of the last wage.

In addition to the pensioners with accelerated years of service referred to in Article 42, there are also the inherited pensioners in conformity with "special regulations" that had retired under the old laws. These include the pensioners who had joined the National Liberation Army during the WWII, soldiers, academics, administrative pensions, etc.

INTERNAL RATES OF RETURN

In order for the pension system to comply with the actuarial fairness principle, the rate of return on contributions of the “ordinary” pensioners must be equal to the rate of return on contributions of those pensioners with the accelerated years of service.

Given that the internal rate of return also depends on the pace of the wage growth, in order to simplify the analysis and make the overview of the system design clearer, we made a hypothetical assumption that during the employment period there was no real wage increase. This is due to the fact that the real wage growth intensifies the differences, the stronger the growth – the greater the differences. Table 13 shows the rates of return for the workers who performed the jobs for which the years of service are calculated as accelerated and who began working when they were 25 years old.

As we can see, such worker/pensioner is in a far more favorable position than a regular pensioner. Internal rates of return are extremely high. Amendments passed in 2005 were particularly advantageous for the pensioners with accelerated years of service, while concurrently they were unfavorable for the pension system.

Table 13. Rate of return – Employee who started working at 25 years of age (male)

Group of jobs with the accelerated years of service	2003 Law	2005 Amendments	2010 Amendments	Regular old-age pensioner (40 years of service)
12 → 14 years	1,312%	2,687%	1,461%	0,665%
12 → 15 years	1,371%	2,270%[a)]	1,953%	
12 → 16 years	1,942%	2,599%	2,275%	
12 → 18 years	2,270%	3,082%	3,082%	
Article 42	2,638% (2,804%)*	3,965%	2,973%	

* Transitional provision

NOTE: Assumption that there was no real wage growth in the past and that the pensions were frozen; standard retirement age is 65 years of age; data on life expectancy according to the years of age (EUROSTAT); for pensions pursuant to the Article 42 , 20% growth of the last wage (2003/2005)

a) According to the legal framework from 2005, the beneficiaries with the accelerated years of service from the 12/15 group who start working at 25 practically reach the retirement age at the same time as the beneficiaries from the 12/14 group, but the contributions paid for the group 12/15 are higher, which is why the IRR for them is lower.

Source: Author's calculation

Internal rates of return are somewhat lower for those pensioners who started working earlier than for the pensioners who retired by meeting the years of service requirement (Table 14). These beneficiaries worked longer in order to meet the years of age requirement than those who started working at the age of 25 due to the minimum retirement age; at the same time, the increased number of years does not get the full effect of the longer duration because of the 42.5 years limit. As a result, pursuant to the latest draft law, the pensioners with the accelerated years of service who started working at 20 are not in a much more favorable position than those who retire when meeting the years of service requirement, but both groups are in a significantly more advantageous position than the regular pensioners who retire when they reach the prescribed years of age. In addition, the Table 13 and 14 indicate that not even the pensioners with accelerated years of service are equal among each other.

Table 14. Rate of return – Employee who started working at 20 years of age (male)

Group of jobs with the accelerated years of service	2003 Law	2005 Amendments	2010 Amendments	Regular pensioner meeting the years of service requirement (40 years of service)
12 → 14 years	1,250%	2,252%	1,478%	1,344%
12 → 15 years	1,245%	2,235%	1,712%	
12 → 16 years	1,491%	2,217%	1,726%	
12 → 18 years	1,547%	1,874%	1,874%	
Article 42	1,840% (2,294%)*	2,768%	2,140%	

* Transitional provision

NOTE: Assumption that there was no real wage growth in the past and that the pensions were frozen; standard retirement age is 65; data on life expectancy according to the years of age (EUROSTAT); for pensions pursuant to the Article 42, 20% growth of the last wage (2003/2005)

Source: Author's calculation

The increased contribution rate paid by the employer for this type of jobs is proportionally calculated relative to the years of service which are added (for example, for the years of service 12/16 the contribution rate is by 33% higher than the regular contribution rate, while the increased years of service which are added are exactly 33%). Differences in the internal rate of return occur, however, for the same reason why they occur with regard to the standard pension and anticipated pension – the formula does not take into account the length of the pension duration.

Therefore, with the aim to improve the actuarial fairness in the system, consequently increasing the savings, it is necessary to further improve the manner of pension benefit calculation for the accelerated years of service. This can be attained by increasing the contribution rate for these categories and/or by introducing "penalties" for each year of longer pension period relative to the standard retirement age.

2. MINIMUM OLD AGE PENSION BENEFIT

In Serbia, a component securing minimal old age income has been organized as *minimum pension benefit* within pension insurance system.

By the end of 2001, the lowest pension benefit has been defined as *multiple service–length based minimum pensions*, defined as a percentage of net wages depending on pensionable service duration. The lowest minimum pension benefit – for up to 20 years of service, amounted to 40% of net average wages in the previous year, and the highest minimum benefit – for over 35 years of service, amounted to 80% of net average wage.

Through amendments to the Federal Pension and Disability Law in December 2001, a *unique amount* of minimal pension benefit was introduced at the level of *20% of average monthly (gross) wage* in the previous year, instead of past multiple minimum pension benefits. Minimum pension benefit was later indexed as other pension benefits – with Swiss formula, which means that the benefits were being decreased relative to average wages.

Through amendments to the Law in 2005, minimum pension benefit saw one–off increase in January 2006, which raised them to the level of 25% *of average wage* from the previous year. It has been stipulated that subsequently minimal benefits were to be indexed as other pension benefits, with condition that if minimal pension benefit was lower than 20% of average wage for the year it was to be adjusted extraordinary on January 1st next year by a percentage "securing that the lowest pension benefit for previous year be at the level of 20% of average pension benefit in the previous year".

Pursuant to the latest amendments to the Law in 2010, extraordinary increase of the lowest pension benefits as of January 1st 2011 has been stipulated, by "the percentage which ensures that the participation of the lowest pension amount in the average wage without taxes and contributions of employees in the territory of Serbia in 2010 is higher by one percent relative to participation of the lowest pension benefit paid in 2010 in the average wage without taxes and contributions in the territory of Serbia in 2010."

Table 15. Minimum Pension Benefit

	2002	2003	2004	2005	2006	2007	2008*	2009	2010
Minimum pension	2,691	3,213	3,781	4,569	6,878	7,667	9,946	11,088	11,088
% gross wages	20	19	18	18	22	20	24	25	24
% net wages	29	28	27	26	32	28	34	35	33

* wages acording to the new methodology
Source: Pension and Disability and Health Fund

Table 15 shows the minimum pension development in dinars relative to gross and net wages. In 2002, minimal pension benefit is somewhat higher relative to gross wages than one would expect, probably due to changes in methodology of wage statistics[44]. Later, ratio between minimum pension benefit and wages grows significantly in 2006, due to new legislations, as well as in 2008 which is a consequence of two factors – extraordinary pension adjustment and changes of methodology of wage calculation.

[44] It should have amounted to 20% of wages from the previous year (2001), not current 2002. Probably at the moment of setting minimal pension benefit at 20% of gross wages, some other data were used.

Often, one could hear requests for fixing minimal pension benefits to gross wages through a certain percentage of gross wages. That practically means indexing minimum pension benefit to the real wage growth. Such an approach under the circumstances of indexing general point with prices and only partially with GDP growth, would lead to significant increase of redistribution in the system. It would seriously change the existing design of pension system, so that over time it would transform it into the basic pension system based on contributions with very weak component of income maintenance. Redistribution in the system would be increased in such manner.

3. SURVIVOR'S AND DISABILITY PENSIONS

Survivor's pension

The right to survivor's pension is conferred to the family members of a deceased insured person or pensioner. Survivors' pension is calculated as a percentage of old age or disability pension benefit that would have been paid to the insured or the beneficiary at the time of his/her death, and it is determined according to the number of family members entitled to the pension, as follows:

- 70% for one member;
- 80% for two members;
- 90% for three members;
- 100% for four members.

The minimum basis for determining the amount of the survivor's pension is the old–age pension benefit of the deceased pensioner calculated for a 20 year–long pensionable service

The survivor's pension is not subject to minimum pension benefit. More precisely, the minimum pension benefit is applied to the old–age or disability pension which is used as the basis for calculating the survivor's pension, while the survivor's pension is determined as the percentage of the resulting amount, relative to the number of pension beneficiaries. Hence, the survivor's pension can be very low – 7,761 RSD

for one beneficiary, 8,870 RSD for two beneficaires, 9,979 RSD for three beneficiaries, compared to the minimum old–age pension benefit which equals 11,088 RSD.

Disability pension

Disability pension is calculated by determining the personal coefficient in the same manner which is applied for the old–age pension. For the disability pensioners who retire because of the injury at work or work–related illness the personal coefficient is calculated on the basis of a 40–year long pensionable service. If the disability is caused by illness or injury which is not related to the workplace, 2/3 years of pensionable service are added in order for the insured to meet the 53 years of age requirement, and 1/2 years of pensionable service are added so that the insured can reach the minimum retirement age.

Minimum disability pension benefit is calculated in the same manner as old age pension benefit.

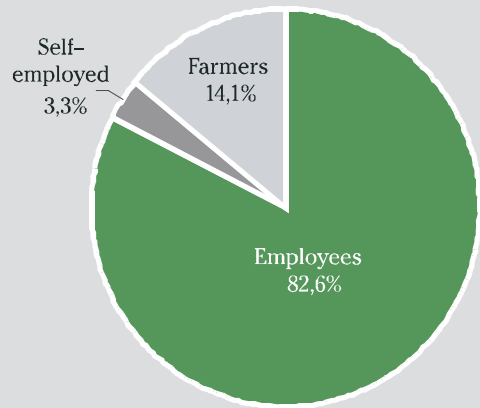
PART III. BASIC CHARACTERISTICS OF THE SERBIAN PENSION SYSTEM

1. NUMBER AND STRUCTURE OF PENSIONERS

1.1. NUMBER OF PENSIONERS AND INSURED PERSONS

In 2009, the total number of pensioner in the state PAYG system reached ***almost 1.6 million***. The majority of pensioners belong to the pension insurance of employees – over 80%[45].

Chart 4. Structure of pensioners per insurance fund



Source: Statistics of the PDI Fund

Table 16. Number of pensioners per type of insurance, 2002–2009

	Employees	Self–employed	Farmers	Total
2002	1,270,318	43,626	212,390	**1,526,334**
2003	1,251,808	43,472	214,176	**1,509,456**
2004	1,243,067	43,938	219,153	**1,506,158**
2005	1,238,146	45,225	224,127	**1,507,498**
2006	1,256,890	47,181	227,379	**1,531,450**
2007	1,279,240	49,872	229,460	**1,558,572**
2008	1,298,625	49,415	224,728	**1,572,768**
2009	1,314,234	52,795	224,071	**1,591,128**

Source: Statistics of the PDI Fund

[45] This study mostly focuses on the employee insurance as the largest insurance. For detailed analysis of the design and features of the farmers insurance, please consult B. Mijatović (2010) "Pension Insurance of Farmers", CLDS and USAID–SEGA.

In 2009, the system support ratio fell to approximately 1.5, while the ratio in the employee insurance was slightly over 1.3. Such an unfavorable ratio is primarily the result of large–scale economy disturbances and the reduced number of employees, liberal retirement conditions that were applied in the past, the maturity of the system, and to a lesser extent the aging of the population.

Table 17. The Insured and Pensioners, 2009

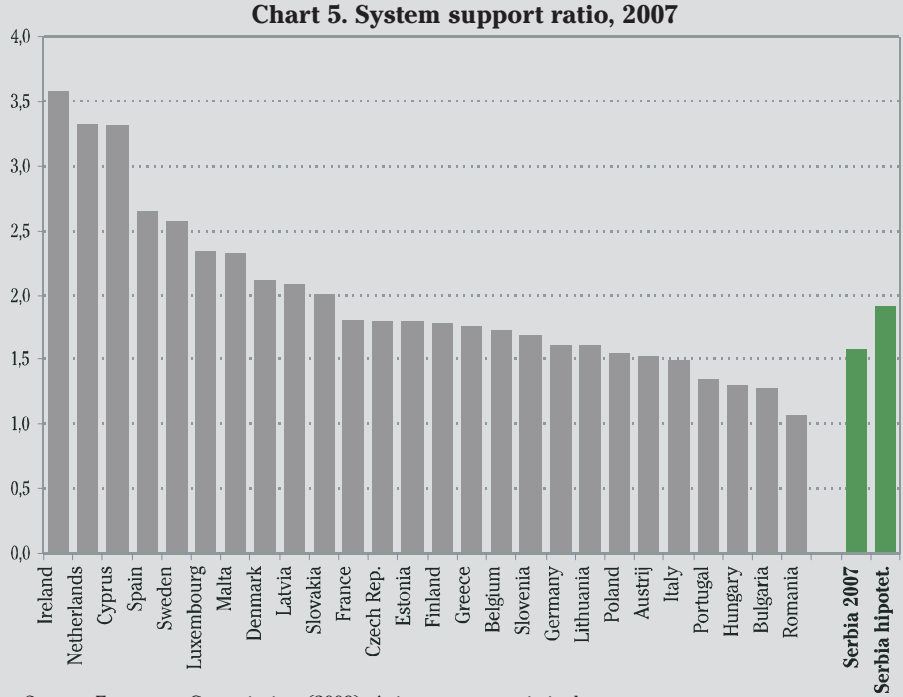
Insurance Basis	Number of insured persons	Number of pensioners	Support Ratio
Employees	1,770,000 a)	1,324,338	1,34
Self-employed	339,214	52,795	6,43
Farmers	222,920 b)	224,71	0,99
Total	**2,332,134**	**1,591,128**	**1,47**

a) The data includes the assessment of the number of employees in the Ministry of Interior and the Ministry of Defense

b) Data on the basis of the Personal identification records, according to the assessments of Mijatovic (2010) Number of the insured persons is much lower.

Source: PDI Fund; for the number of employees – National Employment Agency

Chart 5. System support ratio, 2007



Source: European Commission (2009), Aging report, statistical annex

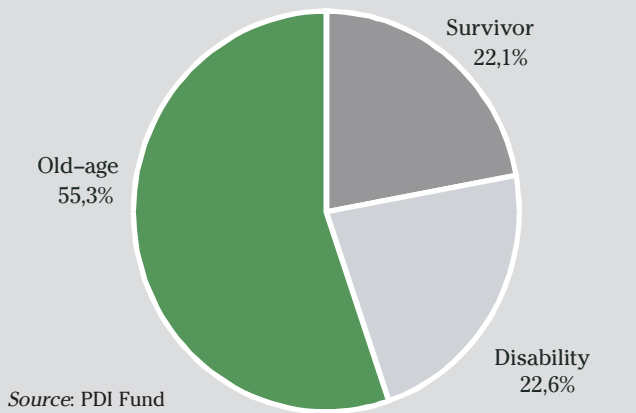
The most favorable support ratio is between the insured and the self–employed pensioners, which is above all the result of the "early stages" of the system, but also the completely opposite developments in this segment of the economy – "the number of the insured in this fund suddenly increased as the transition progressed, while the number of pensioner is extremely low, considering that they belonged to a small segment of the active population in times of socialism and the dominant social and state ownership"[46].

It is interesting, however, that the comparisons with some EU countries do not show that they are in a significantly better situation. Particularly if we consider the fact that currently the unemployment rate in Serbia is extremely high. If today the number of employees in Serbia was as the level from 1985, the dependency ratio could reach about 1.9.

1.2. STRUCTURE OF PENSIONERS

According to the type of pension benefit, the bulk of the structure are old–age pensioners (55%). Despite the fact that over the past few years the share of the old–age pensioners has been increasing, it is still unfavorable.

Chart 6. Structure of pensioners per type of pension benefit, 2009



Source: PDI Fund

[46] Serbian Pension System (2009)- "Characteristics, Reforms Thus Far, Dilemmas and Options" page 9, Pension System in Serbia, USAID/SEGA.

Table 18. Pensioners per type of pension benefit, all three insurance funds (annual average)

	Average number of pensioners			Share (%)		
	Old–age	Disability	Survivor	Old–age	Disability	Survivor
2002	765,029	419,899	341,407	50,12	27,51	22,37
2003	758,272	412,118	339,066	50,23	27,30	22,46
2004	760,989	401,898	343,270	50,53	26,68	22,79
2005	773,038	391,579	342,882	51,28	25,98	22,75
2006	803,175	382,207	346,068	52,45	24,96	22,60
2007	837,099	373,014	348,459	53,71	23,93	22,36
2008	859,007	364,593	349,168	54,62	23,18	22,20
2009	880,244	359,734	351,150	55,32	22,61	22,07

Source: PDI Fund

The situation is even more unfavorable among the beneficiaries of the employee insurance, where the share of the old–age pensioners reached 50% no sooner than in 2008. It is evident, however, that **the number of disability pensioners has dropped,** both in absolute and relative value. In the employee insurance, the number of disability pensioners recorded an annual fall at the rate of 2–3%, while the share of disability pensioners in the total number of pensioners decreased from 31% which was recorded in 2002, to 25% in 2009.

Table 19. Pensioners per type of pension benefit, employee insurance fund (annual average)

	Average number of pensioners			Growth rates (%)			Share (%)		
	Old–age	Disability	Survivor	Old–age	Disability	Survivor	Old–age	Disability	Survivor
2002	560,122	388,662	302,905	..	..	..	44,7	31,1	24,2
2003	559,802	385,716	306,290	–0,1	–0,8	1,0	44,7	30,8	24,5
2004	559,082	375,023	308,961	–0,1	–2,8	1,0	45,0	30,2	24,9
2005	567,019	364,094	307,034	1,4	–2,9	1,0	45,8	29,4	24,8
2006	593,005	354,545	309,340	4,6	–2,6	1,0	47,2	28,2	24,6
2007	623,649	345,005	310,586	5,2	–2,7	1,0	48,8	27,0	24,3
2008	649,913	337,007	311,705	4,2	–2,3	1,0	50,0	26,0	24,0
2009	670,114	331,377	312,771	3,1	–1,7	1,0	51,0	25,2	23,8

Source: PDI Fund of employees

The one–off 3–year increase of the retirement age that was performed in 2001 influenced the number of **old—age pensioners,** which stagnat-

ed over the period 2003–2005. After the introduced change it started to rise, especially since 2006, when it increased at the annual rate of 4–5%. In 2009, the increase of the number of old–age pensioners slightly slowed down.

An interesting development is the stable growth of the **survivor's pensions** at the rate of 1% a year. Even though the lower number of survivor's pensions can be expected, it seems that generations of women whose participation in the labor market was not big enough still retire. It is noticeable that the share of the survivor's pension beneficiaries who became eligible on the grounds of the insured person's death is lower among the new beneficiaries than among the existing ones. The stable growth of the survivor's pensions is surely an issue worth analyzing further.

The majority of the existing survivor's pension beneficiaries are those who became eligible due to the death of the disability pensioner (over 40%), a significant share is made up of the beneficiaries who receive the pension due to the death of the old–age pensioner (around 30%), and there are also many beneficiaries who became eligible due to the death of the insured (25%). Transferring from existing pension is not a common practice – approximately 7.5% of the total number of the survivor's pensioners has changed their pension for the partner's pension, usually the husband's (Table 20).

Table 20. Number of survivor pensioners according to the eligibility basis, December 2009

Eligibility basis	Number of beneficiaries	Share
From the insured	76,134	25,1%
From the pensioner	226,599	74,9%
– old–age	96,064	31,7%
– disability	130,535	43,1%
Total	**302,733**	**100,0%**
Of which transfering from pension	22,656	7,5%
– old–age	14,192	4,7%
– disability	8,464	2,8%

Source: PDI Fund of employees

The number and share of persons who worked full service is not high in Serbia. In 2009, only 277 thousand pensioners in the employee insurance have more than 40 and 35 years of service, men and women, respectively. Their share in the old–age pensioners is around 42%. Among these pensioners, there are those whose years of service are calculated as accelerated.

Table 21. Pensioners with full service and average years of service

	2006	2007	2008	2009
women 35+	112,915	123,980	134,551	143,306
men 40+	110,389	118,107	126,748	134,346
share in total	37,8%	38,9%	40,4%	41,8%
average years of servies	33	33	33	33

Source: PDI Fund of employees

The share of pensioners who worked full service is increasing year after year, but in addition, the average years of service of pensioners in the employee insurance constantly stands at 33 years since 1998, and it is not changing.

The overview of the structure of the survivor's pension beneficiaries per years of service (Chart 7) shows that there is an increase of the beneficiaries with 35–40 years of service, while there is a drop of beneficiaries with 15–19 years, 30 years of service, 36 years of service, and a slight decrease of the beneficiaries with 38 years of service. Evidently, all these developments in a certain way negate the growth of the number of pensioners with full years of service, which is why the average years of service always remains at the same level – 33 years.

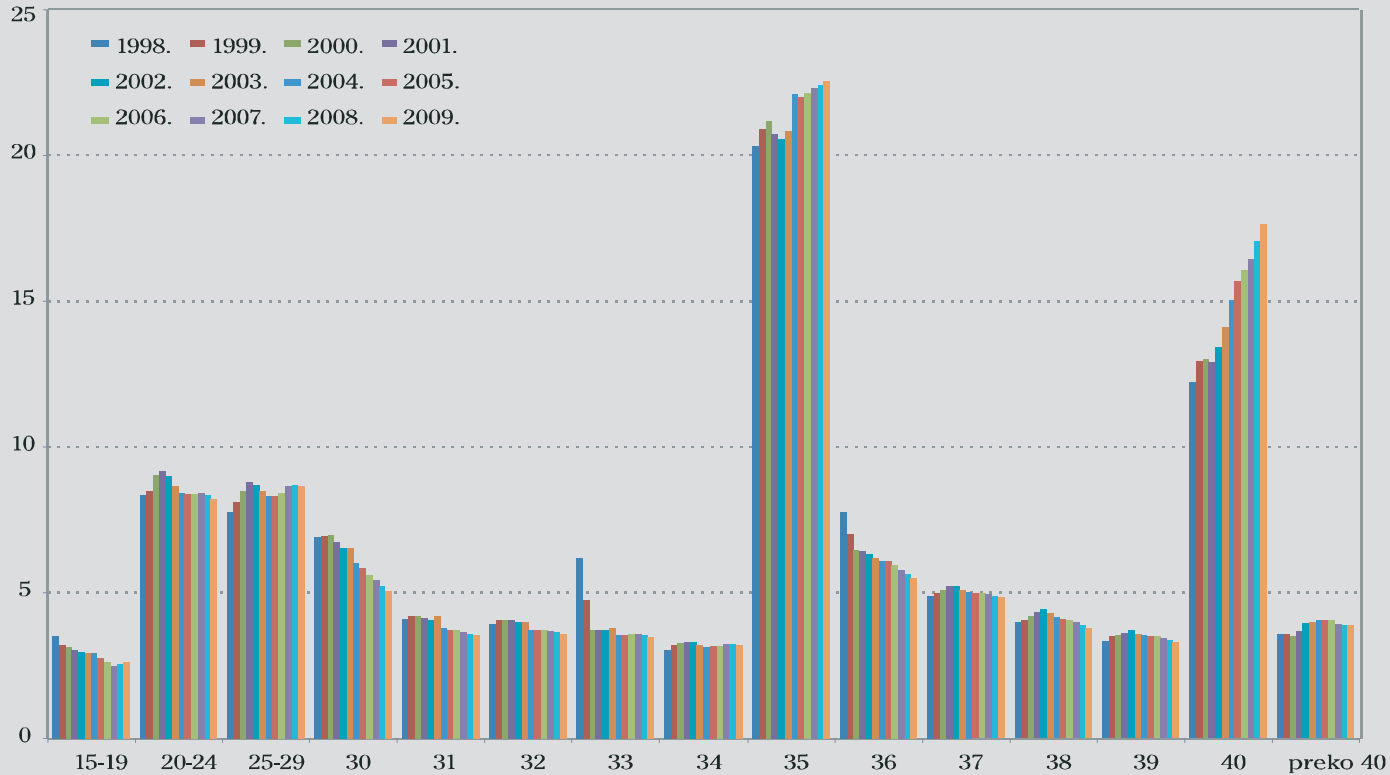
Table 22. Average pensionable service, new beneficiaries

	2002	2003	2004	2005	2007	2008
men	38,3	37	38	37	37	37
women	32,2	33	32	32	31	31
total	**35,5**	**35**	**35**	**34**	**34**	**34**

Source: PDI Fund of employees

The average pensionable service of the new beneficiaries is also quite stable and free of significant changes, even though it is a bit higher than

Chart 7. Structure of old–age pension beneficiaries per years of service, 1998–2009 (as of December)



Source: Statistics of the PDI Fund

the pensionable service of the existing beneficiaries. Period 2002–2005 saw a somewhat higher average pensionable service of the new beneficiaries, which can be attributed to the shift of the retirement age, when the population groups affected by the shift were able to retire only on the grounds of the years of service.

However, it is important to stress that the point formula is designed to effectively link the work history with the amount of the pension benefit, so that the pensioners who worked for a shorter period than the prescribed full service do not jeopardize the pension system in any way. They are not subject to redistribution, except for the minimum pension benefits (this will be elaborated in the following chapter).

Therefore, the fact that a small number of employees worked full service should not pose a concern in terms of the pension system expenditures, but this data is important to stress as it is one of the reasons why the *average pension relative to average earning indicator is not adequate*, and the reason why the replacement rate should be used for analyzing the pension system design.

In addition, a comparative overview shows that the situation in EU countries is practically similar—the average years of service for the new male beneficiaries is below 40 years, while for the women from EU–15 countries, the number is surprisingly low – 30 years of service.

Table 23. Seniority and average retirement age for new flows of retirees, 2006

	Seniority (including non-contributory periods)			Average Retirement Age		Statutory Retirement Age	
	Female	Male	Total	Female	Male	Female	Male
Austria	...			58,9	62,7	60	65
Belgium	30,5	42,6	na	61,6	64,0	64	65
Denmark	20,3	35,7	27,7	62,3	62,0	65	65
Finland	30,6	33,3	31,9	59,6	59,4	63	63
France [a)]	31,8	40,0	35,8	59,8	61,5	60	60
Germany [a)]	26,1	39,9	32,7	63	63,1	65	65
Greece	20,8	27,5	25,1	58,6	61,4	60	65
Ireland	N.A.			65	65	65	65

	Seniority (including non-contributory periods)			Average Retirement Age		Statutory Retirement Age	
	Female	Male	Total	Female	Male	Female	Male
Italy	27,9	34,9	32,1	60	60,5	60	65
Luxembourg	38,8	42,9	42,2	59,5	59,3	65	65
Netherlands	N.A.			65	65	65	65
Portugal	23,9	32,3	28,5	64,3	63,3	65	65
Spain	30,4	40,3	38,0	63	62,9	65	65
Sweden	34,0	40,0	37,0	64,8	64,7	61	61
UK	35,0	42,0	26,0	61,9	62,7	65	65
EU–15 average	**29,2**	**37,6**	**32,5**	**61,8**	**62,5**	**63,2**	**64,3**
Czech	39,9	44,4	42,0	57,7	61,1	60[b)]	62
Estonia	42,9	45,6	43,7	59	61,5	59	63
Hungara	38	39,9	38,8	57,5	59,9	62	61
Latvia	29,0	30,0	30,0	58,3	61,4	62	62
Lithvania	34,2	37,5	35,8	58,4	61,4	60	63
Poland	33,3	36,5	34,3	56,4	60,5	60	65
Slovenia	24,0	30,0	28,0	62,7	63,7	61	63
Slovaki	34	40,4	35,8	56,8	60,2	62[b)]	56
EU–8 average	**34,4**	**38,0**	**36,1**	**58,4**	**61,2**	**60,7**	**61,9**
Serbia (2005)	**32**	**37**	**34**	**57,1**	**61,0**	**58,0**	**63**

[a)] Data for 2004. For Germany total seniority in 2006 is 35.6 (there are no data available according to gender)

[b)] In CZ and SK the retirement age for women decreases depending on the number of children born

Source: Report by ISG (Indicator Sub-Group);

The important factor from the perspective of the pension system expenditures are the pensioners with accelerated years of service and those who retired on the grounds of the years of service, as they are in a more favorable situation than the regular old–age pensioners, hence "costing" the system more[47].

According to the December 2008 data, the share of pensioners with the accelerated years of service in the employee insurance reached 20% (250,306 persons).

[47] This subject was discussed in Part II.

Table 24. Employee Insurance, regular pensions and pensions with accelerated years of service, (December 2008)

	Number of pensioners	Share in total
Standard total	**1,047,088**	**80%**
Old–age	511,525	39%
Disability	282,068	22%
Survivor	253,495	19%
Accelerated total	**259,306**	**20%**
General regulations	146,235	11%
Special regulations	113,071	9%
Total	**1,306,394**	**100%**

Source: PDI Fund of employees

If we focus on the pensioners from the employee insurance, old–age pensioners participate by slightly more than 50% in the total number of pensioners. Apart from that, when the accelerated pensions are excluded, we can see that ***the number of pensioners with the "standard" old–age pension*** is ***only fairly above half a million – 39.2%*** of the pensioners in the employee pension fund. There are also pensioners with accelerated years of service among the survivor's and disability pensioners.

Table 25. Employee insurance, structure of pensioners (December 2008)

	Number of pensioners	Share in total
Old–age	**660,221**	**51%**
Standard old–age	511,525	39%
Accelerated (special regulations)	40,774	3%
Accelerated (general regulations)	107,922	8%
Disability	**334,282**	**26%**
Standard disability	282,068	22%
Accelerated (special regulations)	13,901	1%
Accelerated (general regulations)	38,313	3%
Survivor	**311,891**	**24%**
General regulations	253,495	19%
Accelerated (special regulations)	58,396	4%
Total	**1,306,394**	**100%**

Source: PDI Fund of employees

The number of pensioners with accelerated years of service pursuant to general regulations is mainly following the trends of the standard

pensioners, except for 2006 and 2007 when the growth of the accelerated pensioners was higher due to the relaxation of the retirement conditions that took place in 2005 (Table 26).

Table 26. Pensioners with accelerated years of service pursuant to general regulations, 2002–2009 (December)

	2002	2003	2004	2005	2006	2007	2008	2009
Total	**88,740**	**88,546**	**89,064**	**90,368**	**97,548**	**103,561**	**107,922**	**111,136**
12/14	27,200	27,572	28,311	29,358	32,108	35,398	37,533	39,198
12/15	21,325	21,223	21,119	21,082	21,594	22,047	22,491	22,815
12/16	21,168	20,625	20,202	20,154	22,242	22,723	22,995	23,296
12/18	4,072	4,009	3,926	3,829	3,876	3,897	3,859	3,856
various	14,972	15,114	15,503	15,943	17,725	19,493	21,044	21,971
growth rate	1,4%	–0,2%	0,6%	1,5%	7,9%	6,2%	4,2%	3,0%

Source: PDI Fund of employees

The total number of accelerated pensioners pursuant to the special regulations is shrinking given that the majority of these categories were already in the system, save for the pensions in the Ministry of Interior. It is surprising that the number of pensioners who participated in the National Liberation Army is still high (Table 27).

Table 27. Pensioners with accelerated years of service pursuant to the special regulations, 2001–2010

	Dec–01	Dec–05	Nov–06	Dec–07	Dec–08	Apr–10
Special federal regulation						
National liberation army, before 1943	30,318	23,438	21,833	19,772	17,964	15,665
Memorial holders 1941	3,016	2,295	2,073	1,890	1,752	1,566
Federal Ministry of Foreign Affair	125	213	213	215	216	216
Federal Ministry of Interior	1,949	1,646	1,520	1,500	1.,42	1,380
Administrative	1,368	1,246	1,222	1,180	1,155	1,123
Special republic regulation						
National liberation army, after 1943	86,993	83,484	77,616	70,475	63,961	55,451
Soldiers	1,205	994	902	814	740	631
Republic Ministry of Interior	18,242	19,034	21,396	22,247	22,808	23,477
Exceptional	647	372	429	383	342	292
Academics	64	50	76	71	65	32
Miners	3,468	2,963	2,845	2,729	2,626	2,457
Total special regulations	**147,395**	**135,735**	**130,125**	**121,276**	**113,071**	**102,290**

Source: PDI Fund of employees

Age structure of old–age pensioners is extremely unfavorable. Around 30% of the total number of old–age pensioners is younger than 60 –when it comes to women, and 65 when it comes to men (Table 28).

Table 28. Old–age pensioners below 60 years of age (women) and 65 (men)

	2003	2004	2005	2006	2007	2008	2009
women up to 60	71,760	71,350	72,953	86,387	93,491	95,293	89,508
men up to 65	107,886	98,401	89,375	90,794	92,541	97,500	96,302
share in total	33,2%	31,2%	29,2%	30,1%	30,0%	29,9%	27,9%

Source: PDI Fund of employees

Data on new pensioners show that in normal circumstances – when the retirement age is not adjusted, only about 50% of old–age pensioners retire on the grounds of the years of age, while the rest 50% evidently retire on the grounds of the full or accelerated years of service (Table 29).

Table 29. Structure of the new beneficiaries per years of age

	2003	2004	2005	2006	2007	2008
Women	**8,160**	**12,117**	**23,350**	**25,768**	**25,468**	**18,342**
– below retirement age	65,1%	69,9%	44,7%	42,8%	40,9%	46,4%
– retirement age +	34,9%	30,1%	55,3%	57,2%	59,1%	53,6%
Men	**8,630**	**11,199**	**19,087**	**22,727**	**21,534**	**16,707**
– below retirement age	65,2%	73,3%	52,7%	62,2%	58,9%	67,0%
– retirement age +	34,8%	26,7%	47,3%	37,8%	41,1%	33,0%
Total	**16,790**	**23,316**	**42,437**	**48,495**	**47,002**	**35,049**
– below retirement age	65,1%	71,5%	48,3%	51,9%	49,2%	56,2%
– retirement age +	34,9%	28,5%	51,7%	48,1%	50,8%	43,8%

Source: PDI Fund of employees

1.3. BENEFICIARIES OF THE MINIMUM PENSION BENEFIT

Since 2003, the old–age pension benefit is uniform and currently amounts to 11,088 RSD. Slightly less than 4% of old–age pensioners and around 9% of disability pensioners receive the minimum pension benefit – making up the total of 55,000 beneficiaries[48]. There are also inherited

[48] This is the data without proportionate pensioners. Proportionate pensions are the pensions which the beneficiary only partially earned in Serbia, while the rest was earned in another country, which means that for the pensioner only one part of his/her benefit comes from the pension system expenditures, while the rest is coming from abroad. Often, such pensions are earned in the former SFRY republics.

beneficiaries of the minimum pension benefit in accordance with the old law. Such a pension was multiple and depended on the length of the years of service. The number of these beneficiaries is decreasing, which is logical as there are no new beneficiaries.

Even though pursuant to the new law the number of minimum pension beneficiaries is rising, the total number of the beneficiaries (both in line with the new and the old law) is decreasing as a direct implication of the 2003 Law.

Table 30. Beneficiaries of the minimum (the lowest) pension benefit pursuant to the old and the new law

	Dec–01	Oct–04	Dec–05	Nov–06	Dec–07	Dec–08	Apr–10
Pursuant to the New Law (2003)							
minimum old-age	..	1,914	3,221	13,636	18,193	21,712	25,559
– share in total old–age	0,3%	0,6%	2,3%	2,8%	3,3%	3,7%	
minimum disability	..	1,245	1,900	23,938	24,883	26,293	29,172
– share in total disability	0,3%	0,5%	6,8%	7,3%	7,9%	8,9%	
Pursuant to the Old Law							
minimum old–age							
40%	7,921	6,991	6,377	..	..	..	..
50 – 80%	105,063	96,016	91,016	87,201	82,632	78,323	72,417
minimum disability							
40%	22,359	19,620	18,218	..	..	..	..
50 – 80%	72,490	60,666	56,720	53,655	50,332	47,256	43,411
Total minimum pensions							
old–age	112,984	104,921	100,614	100,837	100,825	100,035	97,976
– share in old–age	20,5%	18,7%	17,5%	16,6%	15,8%	15,2%	14,2%
disability	94,849	81,531	76,838	77,593	75,215	73,549	72,583
– share in disability	24,5%	21,9%	21,4%	22,1%	22,1%	22,0%	22,2%

NOTE: This is the data without proportionate pensions

Source: Statistics of the PDI Fund

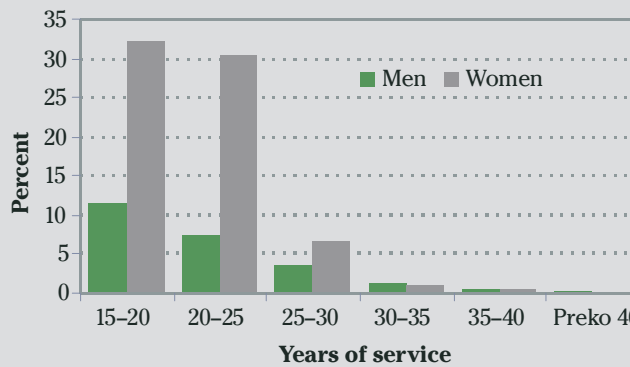
The number of beneficiaries of the minimum pension benefit significantly rose in 2006 due to the changes of the legal framework – when the minimum pension benefit was increased to 25% of the gross wage from the previous year. This is when all the beneficiaries of the minimum pension benefit pursuant to the old law (for the pensioners with

less than 20 years of service) were included in the minimum pension beneficiaries.

The current structure of the minimum pension benefit beneficiaries is dominated by women who worked for 15–25 years. The reason is certainly the fact that according to the old law, which was in effect until the end of 2001, the pensioners with longer years of service were transferred to higher pension benefits. It can be concluded that all pension beneficiaries with the years of service longer than 20 years are certainly new beneficiaries, i.e. the beneficiaries who retired from the beginning of 2002 onwards.

In the future, we can expect somewhat greater share of beneficiaries with longer years of service (an accurate estimate requires the structure of the new minimum pension beneficiaries per years of service). However, the pension benefit amount correlates with the length of the years of service, which is why the majority of the minimum pension beneficiaries will still be the pensioners who did not work for a sufficient number of years.

Chart 8. Beneficiaries of the minimum pension benefit per years of service



Source: Statistics of the PDI Fund

Given that the survivor's pension is not raised to the minimum level, ***there is a huge number of survivor's pensioners who receive less than 11 thousand RSD, and the bulk of them receive between 7***

and 8 thousand RSD. This means that a large number of survivor's pensions is determined according to the lowest old–age and disability pensions, which can be attributed to a significant number of pensions arising on the grounds of the death of the insured. In addition, a large number of survivor's pensions are based on the grounds of the disability pensioner death, and these pension benefits are also low (Table 31).

Table 31. Minimum Survivor's Pension Beneficiaries

Benefit amount (RSD)	Number of beneficiaries	Share
7.000 – 8.000	29,562	37,2%
8.000 – 9.000	11,215	14,1%
9.000 – 10.000	18,699	23,6%
10.000 – 11.088	19,897	25,1%
Total 11.088	**79,373**	**100,0%**

NOTE: This is the data without proportionate pensions (estimate)
Source: Statistics of the PDI Fund

2. THE LIVING STANDARD OF PENSIONERS

2.1. PENSIONERS' INCOME

According to the data from June 2010*, the average pension benefit* stood between 21.3 and 21.7 thousand dinars for pensioners from self–employed insurance and employee insurance and at slightly more than 8.000 dinars for retired farmers. More than half of the pensioners receive below–average benefits.

Table 32. Average pension benefits and share of below average benefits, June 2010.

Insurance Basis	Average pension benefit (dinars)	Share of pensioners with below – average pension benefit	
		Official data	Without proportionate pensions
Employees	21,753	59%	55%
Self–employed	21,304	59,4%	56,1%
Farmers	8,122 Minimal 8,384	13,3% 95%	11,2% 93%

Source: Statistics of the PDI Fund

With agricultural pensioners, situation is specific given that the average pension benefit is somewhat lower than minimal old–age pension benefit, so that small number of pensioners receive pension below average, but nearly all – over 90% of pensioners – receive pension benefit amounting to minimal or close to minimal level[49].

Table 33. Average Pension Benefit in the Employee Insurance Fund

	Average benefit (in payment)	Pension benefit net wage ratio (%)*	Real growth
2002	6,546	71,09	36,7%
2003	7,844	68,21	9,0%
2004	9,244	65,52	6,1%
2005	11,484	65,84	6,9%
2006	13,150	60,58	2,5%
2007	14,852	53,50	6,0%
2008	18,910	64,82	14,0%
2009	21,714	68,43	5,9%
Jun–10	21,753	63,68	–5,4%

NOTE: real growth in 2010 – june compared to 2009 average

* change in wage statistic methodology from 2008

Source: PIO fund and RZS

Also, it should be noted that proportionate pensions to a certain extent distort the distribution of pension beneficiaries, so that there is somewhat smaller percentage of pensioners receiving pension benefit below average and average when we exclude proportionate pension benefits (Table 32)[50].

Real average pension benefit in previous years has been increasing significantly. During the first years after the reforms in 2000, this growth has been extremely high due to introduction of regularity in pension benefits payments, high statistical wage growth with which pensions were indexed, as well as due to significant decrease of inflation which, given the two months delay in pension payment, lead to a significant real growth. Later, pension benefits continued to grow steadily at 5% annually; then pensions increased with extraordinary adjustment in October 2008 so that the real pension growth amounted to as much as 14%. Although immediately after extraordinary adjustment pension benefits were fro-

[49] For detailed analysis on the farmers insurance, please consult B. Mijatovic (2010) " Farmers` Pension Insurance", CLDS and USAID-SEGA.

[50] Naturally, when we exclude proportionate pension beneficiaries, then average pension increases and the percentage of pensioners receiving pension below average is probably the same, but with higher pension benefit.

zen, this growth was carried over to 2009 as well, while in 2010 pension benefits recorded a real decrease for the first time in ten years.

Ratio of average pension benefit and net wage currently stands at 63% of average wage. When interpreting this ratio one should be very careful, since the average pension includes disability and survivor pensions, too. Their share is high, and benefits are, according to the insurance logic, low. Average pension benefit reflects also work history of pensioners, and there are lot of them that did not fulfill the condition of full years of service. Also, "proportionate pensions" are taken into account, and when they are excluded we arrive to the average pension benefit from employees' insurance fund at around 22.2 thousand dinars.

Table 34. Average Pension Benefit in the Employee Insurance Fund

	Average pension (RSD)			In net wage (%)		
	old–age	disability	survivor	old–age	disability	survivor
2002	8,038	6,248	4,894	87,3	67,9	53,1
2003	9,696	7,543	8,102	84,3	65,6	70,5
2004	11,465	8,910	6,977	81,3	63,2	49,5
2005	13,896	10,812	8,494	79,7	62,0	48,7
2006	15,885	12,425	9,776	73,2	57,2	45,0
2007	17,635	13,869	10,498	63,5	50,0	37,8
2008	22,634	17,916	14,199	77,6	61,4	48,7
2009	25,224	20,045	15,964	79,5	63,2	50,3
Jun–10	25,170	20,021	16,014	73,7	58,6	46,9

NOTE: Application of methodology for wage monitoring in 2008.
Source: The statistics of the PDI Fund of employees

If we focus on the data for old–age pensioners, we can see that the difference is significant and that in 2009 the average old–age pension relative to average wage ratio was as high as 80%, while in 2010 it fell to approximately 74%. In addition, the overview of the pension benefit amount per years of service shows that the correlation between the benefit amount and the length of the years of service is significantly high. Apart from that, it is evident that for the pensioners with over 40 years of service, the average pension benefit to the average wage ratio

Table 35. Average old–age pension benefits per years of service, December 2009

Years of service	Average pension benefit	Share in average net wage
15 – 19	12,418	39,1%
20 – 24	13,311	41,9%
25 – 29	18,431	58,1%
30	21,331	67,2%
31	22,990	72,4%
32	24,296	76,6%
33	25,747	81,1%
34	27,066	85,3%
35	24,959	78,7%
36	27,964	88,1%
37	29,131	91,8%
38	31,613	99,6%
39	32,873	103,6%
40	30,787	97,0%
over 40	37,111	116,9%

Source: The statistics of the PDI Fund of employees

is very high, even higher than the replacement rate, which can result from calculating the pension benefit in compliance with the old law and/or it might indicate that the wages earned by the pensioners were above average.

As the main indicator of the pension system design, the replacement rate shows that, in previous years, the pension system provided more than an adequate replacement of income in the old age, for the persons who worked the full service. Comparatively, this rate is still adequate, but the situation is bound to change in the following years due to the new general point indexation[51].

The distribution of old–age pensioners broken down by the pension benefit amount is similar to the usual overview, one exception being the minimum pension benefit (Graph 9). Unfortunately, we do not have detailed information about the span of the pension benefits, which is why we cannot pinpoint the exact number of pensioners whose benefits are below old–age average.

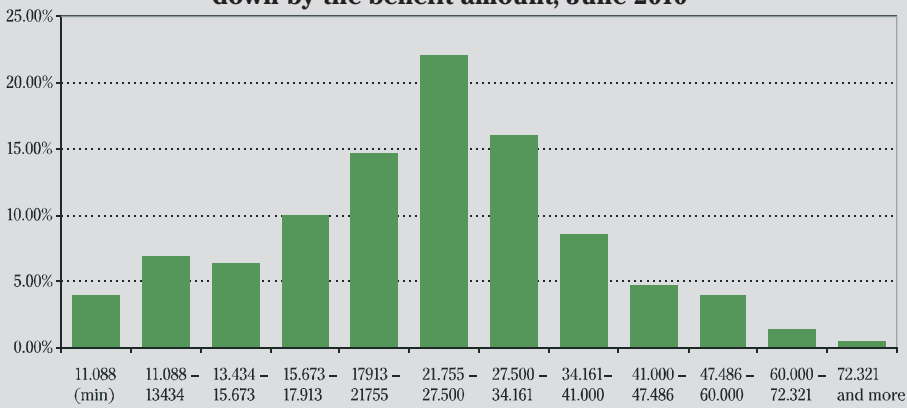
Table 36. Replacement rate, 2003–2010

	2003	2004	2005	2006	2007	2008	2009	2010
Pension benefit in RSD (PC 1/YS 40)	9,.272	10,904	13,180	15,000	16,720	21,592	24,180	24,180
Replacement rate	88,6%	85,3%	80,5%	77,0%	72,3%	69,6%	76,5%	71,8%

Source: Author's calculation

[51] This subject was discussed in Part II.

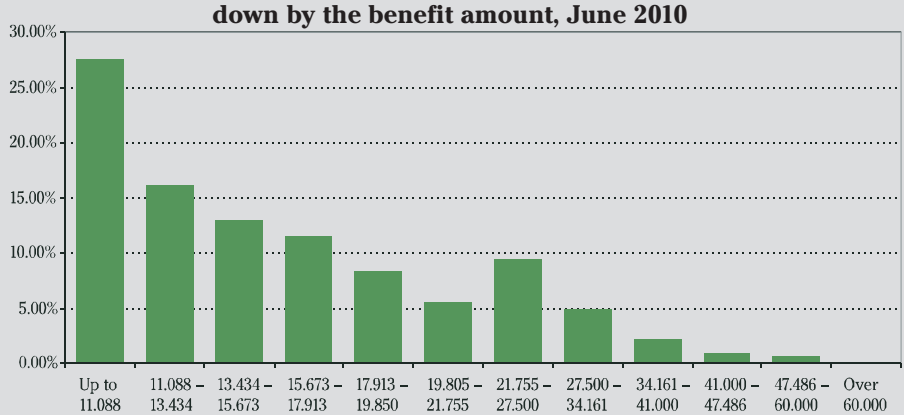
Graph 9. Distribution of old–age pension beneficiaries broken down by the benefit amount, June 2010



NOTE: This is the data without proportionate pensions
Source: The statistics of the PDI Fund of employees

The situation with survivor's and disability pensions is different. The average survivor's pension benefit is generally quite low – in June 2010 it amounted to only 16 thousand RSD (Table 34). There are also many pensioners receiving extremely low benefits (Graph 10).

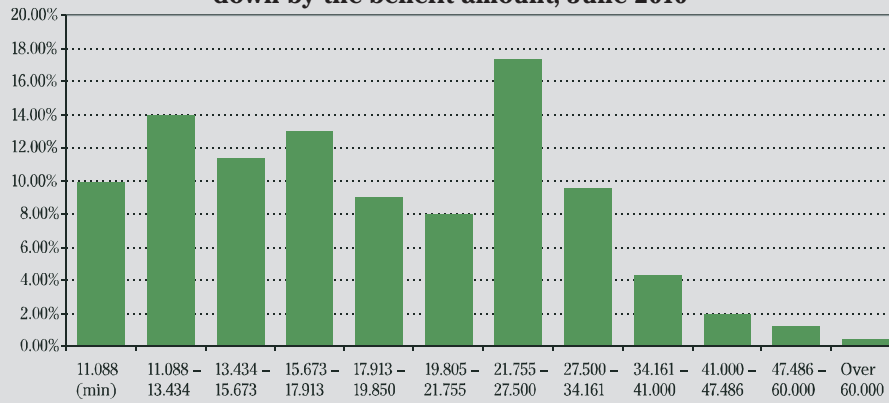
Graph 10. Distribution of survivor's pension beneficiaries broken down by the benefit amount, June 2010



NOTE: This is the data without proportionate pensions
Source: The statistics of the PDI Fund of employees

The average disability pension equaled around 20 thousand RSD in June, while the distribution shows that the pension benefit is close to the average amount for almost 60% of the pensioners (Graph 11)

Graph 11. Distribution of disability pension beneficiaries broken down by the benefit amount, June 2010



NOTE: This is the data without proportionate pensions
Source: The statistics of the PDI Fund of employees

Finally, it is interesting to examine the pensioners' consumption according to the Consumption Survey. In 2009, the consumption reached the Serbian average (Table 37). With respect to the pensioners older than 65, the situation is somewhat different as their consumption stood at 92% of the average (Table 38).

Table 37. Monthly consumption broken down by socioeconomic status

Socio–economic status	RSD	Serbia=100
Self–employed	19,421	107
Employees	19,632	108
Unemployed	15,363	85
Pensioners	18,112	100
Other inactive citizens	17,328	96
Employees and self–employed excluded	17,127	94

Source: Matković, G. i Mijatović, B. Analiza uticaija poreskih reformi na siromaštvo, CLDS i UNICEF, 2010

Table 38. Monthly consumption of senior citizens

Socio–economic status	RSD	Serbia=100
Older than 65	16,677	92
– Receiving pension benefit	17,337	96
– Not receiving pension benefit	14,451	80

Source: Matković, G. i Mijatović, B. Analiza uticaja poreskih reformi na siromaštvo, CLDS i UNICEF, 2010

2.2. POVERTY OF PENSIONERS

Measuring poverty

Poverty may be measured based on *consumption* and *income*. In Serbia, being a transition country, consumption is more often used for measuring poverty*.

Also, poverty may be measured as *absolute* and *relative*. Absolute poverty includes lack of basic conditions for existence. It is determined based on assessment of basic needs, i.e. it determines the poverty limit. Relative poverty is a concept according to which standard is defined relative to other citizens. European Union, i.e. member states **measure relative poverty**. Relative poverty limit is defined as 60% of median average consumption per consumption unit in a given country.

Relative poverty should not be mixed with relative living standard of pensioners in the mentioned sense. Relative poverty of pensioners reflects their living standard compared to the rest of the population, and relative living standard reflects standard compared to the standard that pensioners had before.

There are two sources based on which it is possible to measure poverty in Serbia. One is the Living Standard Measurement Survey (LSMS) from 2002, and repeated in 2007. In the meantime, the Republic Statistics Office developed a Household Budget Survey (HBS), so that now it represents the main source for poverty monitoring.

Poverty rate is a percentage of citizens below the poverty limit. *Poverty debt* is an additional poverty measure showing by how much the given population is below the poverty limit.

* For details regarding the selection of methodology for poverty measurement, please refer to B. Bogićević, G. Krstić, B. Milanović i B. Mijatović, *Poverty and Reform of Financial Support to the Poor*, CLDS and Ministry of Social Affairs, 2003.

2.2.2. Living Standard Measurement Survey (LSMS): 2002–2007

A study conducted in late 2008 reasearched in detail the condition of the senior citizens and pensioners based on the *LSMS*[52]. In 2002, pensioners and senior citizens over 65 were hit by the poverty stronger than the general population.

Trend of decreasing poverty in Serbia from 2002 until 2007 was present with the pensioners as well. Moreover, trend was more evident with the pensioner population, so that in 2007 it amounted to 5.5%, which is statistically significantly lower than average percentage for general population[53].

Table 39. Poverty index of pensioners and senior citizens aged 65 and more (SLS)

	2002	2007
General population	14,0%	6,6%
Pensioners	15,9%	5,5%
Senior citizens	19,9%	9,6%
Senior citizens 65+ pensioners	18,0%	7,3%
Senior citizens 65+ not pensioners	24,3%	19,7%

Source: David–Baronijan (2008)

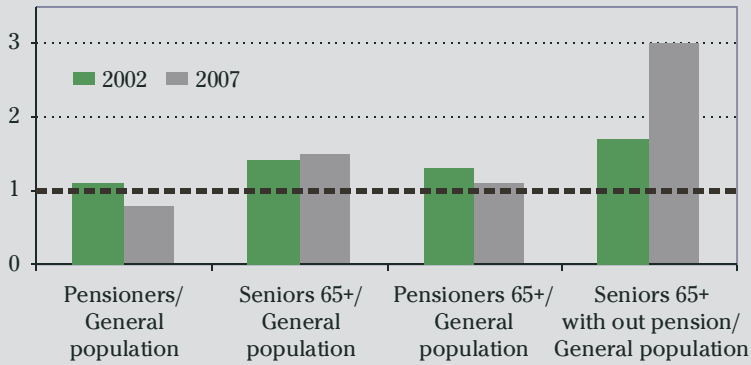
The senior citizens with more than 65 years of age are the population with significant poverty even in 2002 and 2007. *Particularly vulnerable*

[52] David-Baronijan, H. (2008), "Poverty among pensioners and senior citizens aged 65 and more", Research conducted for the Deputy Prime Minister Team for Implementation of the Poverty Reduction Strategy, The Statistics Office and the Ministry of Science and Technological Development of the Republic of Serbia, Belgrade.

[53] Poverty rate of pensioners from 5.5% in 2007 is somewhat higher that the published one, due to consideration of retired farmers as well. For details, please refer to David-Baronijan, H. (2008).

category is senior citizens *with over 65 years of age who are not pensioners – almost 20% of this population is poor*. This population saw a slight decrease in poverty rate in 2002, in spite of general poverty reduction in Serbia. To be more precise, citizens with more than 65 years of age with no pension benefits were 3 time poorer than general population in 2007 (Graph 12)[54]. This only confirms a very important role of pension benefits in poverty reduction of senior citizens.

Graph 12. Ratio of Poverty Index of Pensioners and Senior Citizens over 65 Relative to General Population



Source: David–Baronijan (2008)

Regarding persons that receive pension benefits, pensioners of up to 65 years of age are faced with low poverty risk (only 2.7%), ***while the most vulnerable group of pensioners are aged 75 and more*** (poverty rate 9.5%).

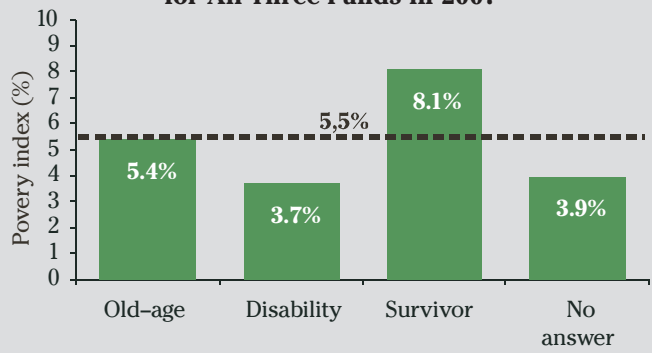
These differences may be attributed to the type of pension benefit – namely, pensioners of up to 65 are mostly disability pensioners, where generally lower poverty rate is noticed, and pensioners of over 75 are mostly retired farmers and survivors where pension benefits are lowers and where the largest poverty rate is recorded (Graph 13).

Survivors are hit strongly by poverty (poverty index is 8.1%), while disability pensioners are hit to a lesser degree (3.7%). Poverty rate

[54] Ibid, page 7.

with old–age pensioners is at the average level of pension population – 5.5% (Graph 13).

Graph 13. Poverty Profile per Type of Pension Benefit for All Three Funds in 2007



Source: David–Baronijan (2008)

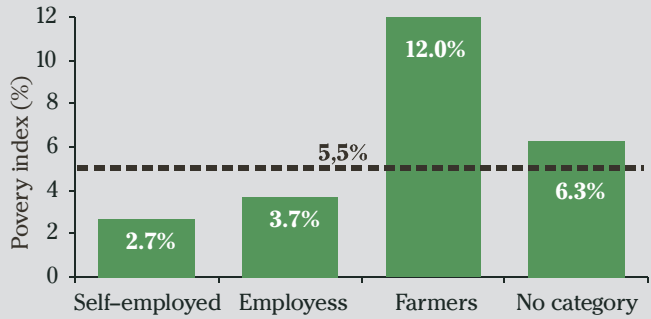
Survivors' poverty is in compliance with the data on very low average survivor's benefit and large number of pensioners receiving pension benefits below minimal amount. The survivors' characteristics are the following: Those are women, persons over 75 more frequently than with "regular" pensioners, poor educational background, often live in single member pensioner household and in rural areas.

Low poverty among disability pensioners may seem surprising at first glance, bearing in mind the fact that on average disability pension benefits are lower than old–age benefits. However, one should bear in mind that significant portion of existing disability pensioners retired under very liberal conditions, which means that they are not "real" disability pensioners, but rather people that wanted to retire earlier. Second, it is likely that those persons more often live in multi–member households than an average. In the end, there is a possibility that a number of disability pensioners receive elderly nursing and assistance.

Regarding old–age pensioners, slightly over 5% of pensioners are poor when we consider all three funds together. However, one should bear in mind that the group is not homogenous and that poverty within the retired farmers is more evident than with other old–age pensioners.

That is illustrated by Graph 14, which shows that ***poverty with retired farmers' fund is extremely high (12%)***[55].

Graph 14. Poverty Profile per Pension Fund, 2007



Source: David–Baronijan (2008)

On the other hand, **poverty of old–age pensioners**, which receive pension benefits **from the employee's fund, is significantly below average – lower than *4%*[56].** Out of that, around 10% of pensioners are poor, whose pension benefits are close to minimal (Table 40).

Table 40. Poverty indexes and average pension benefits per quintiles pursuant to benefit amounts of pensioners receiving pension benefits from the employee's fund and self–employed fund, 2007.

		Quintiles per Pension Benefit Amount				
		1	2	3	4	5
Old-Age Pension	Average pension benefit	8,476	12,100	15,359	19,313	28,626
	Poverty Index	10.3%	5.8%	1.8%	1.2%	1.1%
Disability pension	Average pension benefit	6,544	9,986	12,688	16,141	25,649
	Poverty Index	5.0%	7.1%	4.6%	0%	0.7%

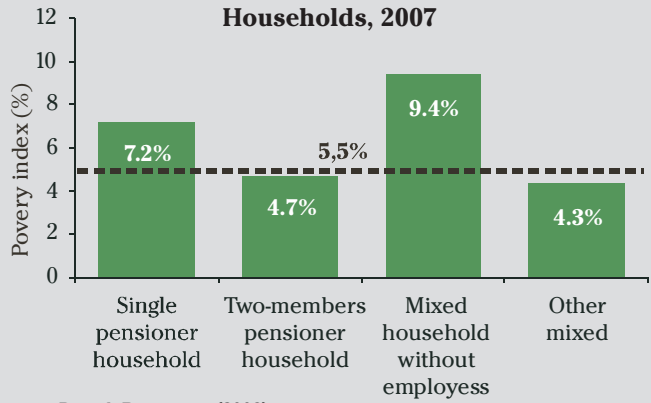
Source: David–Baronijan (2008)

[55] Over 80% of beneficiaries of this fund are old-age pensioners.

[56] Employee's fund includes only old-age and disability pensioners, while survivors are "not categorized" (for details, please refer to David-Baronijan, 2008).

Old pensioners' poverty may also be attributed to *low education*. Generally, pensioners with low education are poorer. **Poverty rate with pensioners without education is as high as 17%**, while such rate with pensioners with **incomplete elementary education is 10%**. Pensioners, already with three years of high school education are less affected by poverty (poverty index is 2.6%), while poverty almost does not exist among pensioners with high and university education (0.2%). Among senior citizens with 65 years and over, group with highest risk includes persons with no elementary education (poverty index 21.7%), and poverty rate decreases with increase of educational level.

Graph 15. Poverty Profile of Pensioners Households, 2007



Source: David–Baronijan (2008)

Type of household where pensioners live is also important. The largest poverty index is recorded with pensioners from mixed households with no employees (9.4%). Pensioners from single member household also record poverty index higher than average (7.2%). Pensioners from two–member households and other mixed households record poverty index lower than average.

Therefore, conclusion of this thorough analysis is that the poverty rate in 2007 is more evident with retired farmers and survivors (12% and 8%), while poverty with disability and old–age pensioners beneficiaries of the employee's fund is significantly below average (less than 4%). Pensioners' poverty is far more present with pensioners with low edu-

cation. Taking age structure into account, pensioners over 75 years of age are also hit strongly with poverty (almost 10%), most often survivors and retired farmers with poor education.

2.2.3. Household Budget Survey (HBS): 2006–2009

Household Budget Survey also shows trend of decreasing poverty, both of the overall population and the pensioners. This applies to both cases, when poverty is observed by consumption and by income.

Table 41. Poverty Rate, % (absolute poverty, consumption)

	2006	2007	2008	2009
Total population	**8,8**	**8,3**	**6,1**	**6,9**
– men	8,5	8,0	6,1	7,1
– women	9,1	8,5	6,0	6,8
Pensioners	**7,2**	**6,3**	**5,4**	**5,3**
– men	7,9	7,7	5,7	6,3
– women	6,6	5,2	5,1	4,6
Pensioners over 75 years of age	**9,0**	**9,1**	**7,8**	**6,9**
– men	9,3	10,9	8,0	7,1
– women	8,8	7,6	7,6	6,8

Source: National Report on Social Inclusion, draft (2010)

Table 42. At–risk–of poverty rate, % (relative poverty, with in–kind income)

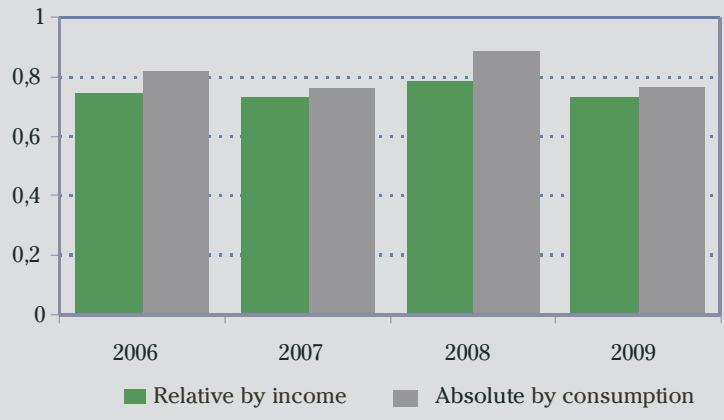
	2006	2007	2008	2009
Total population	**20,9**	**21,0**	**17,9**	**17,7**
– men	20,1	20,7	17,7	17,7
– women	21,6	21,3	18,1	17,8
Pensioners	**15,6**	**15,4**	**14,1**	**12,9**
– men	14,5	15,9	14,1	12,6
– women	16,6	15,1	14,1	13,2
Pensioners over 75 years of age	**25,1**	**20,8**	**19,5**	**16,0**
– men	21,9	19,1	20,2	13,5
– women	27,2	22,3	19,0	18,0

Source: National Report on Social Inclusion, draft (2010)

Also, pursuant to the Survey on Consumption of Households, pensioners are somewhat in better situation than the rest of population. Graph 16 shows the ratio of pensioners' poverty and overall poverty. We see

that the pensioners are slightly in a better position when the poverty is observed pursuant to income.

Graph 16. Ratio of Pensioners' Poverty Index



Source: National Report on Social Inclusion (2010)

According to the results of the Household Budget Survey, poverty of pensioners over 75 years of age is higher, but the difference is not as drastic as reflected in LSMS from the previous chapter.

3. PENSION EXPENDITURES

The difference must be acknowledge between the pension expenditures and the total expenditures of the PDI Fund which, beside the net pension benefits, include payments for carer's allowance, physical injury allowance, administrative costs, sometimes the debt repayments, etc.

In the period 2002–2007, the expenditures of all three funds (without military pensioners) stood at 11% of GDP. However, 2008 saw a significant rise of the pensions share in GDP, which was a direct consequence of the two extraordinary pension benefit adjustments performed during that year. The first extraordinary adjustment in the amount of 11% was carried out in January, pursuant to the article of the Law stipulating that the average pension benefit cannot fall below 60% of the average wage (now we know that this adjustment was unnecessary since the pension monitoring methodology has been changed in the meantime and showed that the ratio actually did not fall below 60%); the

second extraordinary adjustment was performed in October for the additional 10% which was added to the regular adjustment as part of the political agreement of the governing coalition.

Table 43. Share of pension expenditures in the GDP and the contributions to the change

	2002	2003	2004	2005	2006	2007	2008	2009
Total Net Pensions (3 insurances)								
– in dinars (000)	105,438	126,228	150,568	185,979	227,700	258,486	333,093	387,312
– in GDP	**10,8%**	**11,2%**	**10,9%**	**11,0%**	**11,6%**	**11,2%**	**12,2%**	**13,4%**
PDI Fund of employees								
– in dinars (000)	98,323	117,830	137,891	170,210	208,016	233,669	301,443	349,841
– in GDP	**10,1%**	**10,5%**	**10,0%**	**10,1%**	**10,6%**	**10,1%**	**11,1%**	**12,1%**
Change of Share		**0,36%**	**-0,48%**	**0,15%**	**-0,03%**	**-0,21%**	**0,92%**	**1,06%**
– contribution of pensioners' growth		0,00%	-0,06%	-0,03%	0,13%	0,15%	0,13%	0,12%
– contribution of pensions' growth		0,36%	-0,42%	0,18%	-0,16%	-0,36%	0,79%	0,94%

Source: PDI Fund

Such a high real pension growth was carried over in 2009, despite the pension freeze, which accompanied by the real GDP fall led to an extremely high share of pension expenditures – 13.4% of GDP. The contribution to the growth is presented in the Table 44 which clearly indicates that in the past few years the growth of the number of pensioners, which usually reaches 1.5% a year, contributed to the higher share of pensions in the GDP with approximately 0.13 percentage points of GDP a year, while the pension benefit increase recorded in the past two years resulted in the share increase by 1 percentage point per year.

Table 44. The share of pension expenditures in GDP per different types of pensions, Employee insurance

	2002	2003	2004	2005	2006	2007	2008	2009
Disability pensions	3,0%	3,1%	2,9%	2,8%	2,7%	2,5%	2,7%	2,8%
– up to retirement age	..	..	1,3%	1,2%	1,1%	1,0%	1,0%	1,1%
Survivor's pensions	1,9%	1,9%	1,9%	1,9%	1,8%	1,7%	2,0%	2,1%
Old–age pensions	5,6%	5,8%	5,6%	5,6%	5,8%	5,7%	6,5%	7,0%
– before retirement age	..	0,9%	0,8%	0,7%	1,7%	0,9%	1,2%	..
Pensioners with accelerated years of service	..	2,9%	2,7%	2,7%	2,7%	2,4%	2,8%	2,9%
– under special conditions	..	1,4%	1,3%	1,3%	1,2%	1,1%	1,1%	1,1%
– under general conditions	..	1,5%	1,4%	1,4%	1,5%	1,3%	1,6%	1,7%

Source: Assessment according to the PDI Fund data

It is interesting to consider the structure of expenditures by the pension type. The disability pension expenditures are extremely high. In 2002, they amounted to as much as 3% gradually decreasing during 2002–2007, but rose again due to the above–mentioned extraordinary adjustment. At 2% of GDP survivor's pensions also constitute sizeable expenditures, while the pensioners with accelerated years of service (including the pensions granted pursuant to special regulations) make up as much as 3% of GDP.

It is certainly worthwhile to compare the amount and structure of the total pension expenditures with other countries. However, such comparative analyses are much more complicated than they might appear. For example, EUROSTAT data also include privately funded pensions if they are mandatory or collectively organized – the so called first and second pillar according to the European Commission terminology[57].

Furthermore, the comparison by the pension type – old–age, disability and survivor – can get even more complicated. For example, in some countries the disability pensions are granted only up to a statutory retirement age, and after that they are transferred to the old–age pension. Striving to enable comparative overviews, EUROSTAT recommends that all countries shift their disability pensions, for the pensioners who reached the age limit, to the old–age pension category. It is not quite clear whether the countries strictly comply with this recommendation. When it comes to survivor's pensions, the situation is somewhat different. EUROSTAT recommends that survivor's pensions are treated as such even after the age limit is reached, but the final decision is optional, which means that it is unknown what the countries actually did.

In addition, the pensions are recorded in the gross amount, i.e. the total amount of the government's expenditure, regardless of whether the pensioner pays taxes or contributions after receiving the pension or not. This is primarily significant for the Nordic countries, which usually impose taxes on their pensioners, but in return, the pensioners are

[57] For different terminologies see Annex 2 in Matković et al. (2009), Izazovi uvođenja obaveznog privatnog penzijskog sistema u Srbiji, CLDS i USAID-SEGA, Beograd.

provided with a variety of services and benefits, both from the central and local government level. On the other hand, the contributions paid i.e. rerouted by the pension system institution for its beneficiaries, as is the case with the health chare contributions in our country, are not included in the calculation of the pension expenditures.

Table 45. Public pension expenditures in GDP

Average*		Country	Public pensions	Non–cash benefits**
Bismarck	11,2	Germany	10,4	
		Austria	12,8	
		Italy	14,0	
		France	13,0	
		Spain	8,4	
		Belgium	10,0	
		Greece	11,7	
		Luxembourg	8,7	
		Porugal	11,4	
Beveridge	6,6	Denmark	9,1	1,9
		Ireland	4,0	
		UK	6,6	0,6
		Netherlands	6,6	0,8
Nordic	9,5	Norway	8,9	1,8
		Sweden	9,5	2,5
		Finland	10	1,0
Baltic	5,9	Estonia	5,6	
		Latvia	5,4	
		Lithuania	6,8	
EU–7	8,8	Czech	7,8	
		Hungary	10,9	0,6
		Slovakia	6,8	
		Slovenia	9,9	
		Poland	11,6	
		Romania	6,6	
		Bulgaria	8,3	

* for old-age and survivor, shown if significant (*Source*: Pension at Glance, 2009)
** non-weighted average

Source: EC (2009), Aging Report

Therefore, it is very difficult to find data adequate for comparison and at the same time analyze such data in the appropriate context, bearing in mind huge differences and specific features of pension systems and social welfare systems in general.

As the most adequate data we have selected the information contained in the latest European Commission's Aging Report reflecting expenditures for public pensions. However, there are doubts surrounding these data as well, namely in Denmark for which the expenditures seem higher than they should be, and on the other hand, for Germany and Austria data seem underestimated.

Currently, Serbia is only at the public pension spending level of Italy and France, but was at the level of other countries with Bismarckian tradition before extraordinary adjustment (Table 44). It is evident that there is a significant difference between countries with different pension tradition, which is probably even higher bearing in mind doubts regarding the data. Concerning countries that joined the EU later, the situation is diverse. Baltic countries have extremely low share of pensions in GDP, while among the rest of the countries there are some that face high costs – such as Poland, Hungary and Slovenia, and some with much lower costs.

Regarding the share of pension expenditures in GDP in Serbia, one should bear in mind the following: first, GDP is extremely low; second, there are still problems with statistical data on the size of the GDP; third, there is also a problem of grey economy undervaluing the GDP. In addition, although 2001–2003 reform gave sound financial results that amounted to dozens of GDP percentage points being saved cumulatively, there are still inherited irrationalities in the system that , naturally, incur huge costs. These irrationalities are disability pensioners, pensioners with accelerated years of service and also significantly high expenditures for survivor' pensions.

4. PENSION SYSTEM FINANCING

The pension system in Serbia is financed from the contribution rate which is set at 22% of the gross wage (11% is borne by the employee

and 11% is paid by the employer). In the self–employed and farmers insurance funds the contribution basis is the taxable earned income i.e. the amount for which taxes are paid.

As the revenues generated from the contributions are not sufficient to cover the expenditures, the system is subsidized from the republican budget. The transfers are large and in some years they even amounted to almost 5% of GDP, when it comes to the transfers for the PDI Fund of employees[58]. This fact has long been the concern of politicians, experts and general public, and the widely accepted view is that the so called deficit, i.e. the amount of the transfers "adequately reflects the problems within the system and represents the most important indicators for the reforms"[59].

On that note, however, there are several issues that must be stressed. First of all, the **pension expenditures are not the same as the expenditures of the pension fund**, which is why it is not realistic to expect that pension contribution rate can finance not only all three pension benefit types – old–age, disability and survivor's (in some countries there are separate contributions for each type), but also some other entitlements of the pension and disability insurance, as well as fund's administrative costs[60]. Consequently, **the deficit of the PDI Fund and the pension system deficit are not the same thing**, which can be concluded from the Table 46[61].

Second of all, **when the contributions rates were determined in 2001**, the objective was not to achieve a balanced system. The logic behind the defined benefit system such as ours is to have a preset pension benefit amount according to the defined formula, and to adjust the

---

[58] When the transfers to the PDI Fund for farmers are also taken into account, the amount is even higher. This part of the study centers on the deficit resulting from the data of the PDI Fund of employees.

[59] Matković, G. (2009), "Najčešće zablude o penzijskom sistemu u Srbiji", Fokus, CLDS.

[60] For a detailed analysis of the pension system deficit in Serbia see J. Bajec and K.Stanic (2005), "What is the Real Pension System Deficit in Serbia?", Quarterly Monitor of Economic Trends and Policies in Serbia, No.13, FREN, pg. 2 1 FREN..

[61] In 2006, the statutory funding up to the level of the lowest pension benefit was introduced. This is a correct decision, since it is in compliance with the practice of the developed countries, and therefore the table also shows the calculation of the deficit which does not take into consideration the supplement amount up to the minimum pension benefit.

contribution rate in order to keep the system equilibrium. This flexibility for example is underscored as the advantage of the defined benefit systems as opposed to the notional defined contributions system[62]. Naturally, this has not been proved as a strict rule in the practice due to various problems facing all pension systems across the world, which is why the adjustments are made on the revenues side. Nevertheless, generally speaking, in defined contribution systems, contribution is an exogenous category, and the level of benefit is an endogenous category.

Table 46. Pension system revenues and deficit (Employee insurance)

	2002	2003	2004	2005	2006	2007	2008	2009
Pension contribution revenues	6,8%	7,1%	7,4%	7,6%	7,8%	8,1%	7,9%	7,8%
Budget revenues on special regulations	0,3%	0,6%	0,3%	0,4%	0,3%	0,3%	0,3%	0,3%
Budget transfers	4,9%	4,3%	4,5%	4,6%	4,5%	3,7%	3,8%	6,1%
Transfer for the minimum pension	..	..	..	..	0,05%	0,05%	0,09%	0,08%
Buget transfers (total)	4,9%	4,3%	4,5%	4,6%	4,6%	3,7%	3,9%	6,2%
Pension system deficit	3,01%	2,84%	2,25%	2,18%	2,54%	1,77%	2,80%	4,06%
Transfers (without up to minimum pension)	3,01%	2,84%	2,25%	2,18%	2,49%	1,72%	2,72%	3,98%

Source: PDI Fund of employees

When in 2001 the contribution rate was defined – at that time it was initially set at 19.6% and was later raised on two occasions, it was not determined with the aim to keep the system balanced, but that same year the deficit was extremely high. This was performed with a view to cutting the labor force costs, but in such a situation the deficit should not be taken as the indicator of necessary reforms. Deficit is a significant indicator when a change occurs, i.e. when once balanced system runs a deficit. But when the system is established in such a way that it has a huge deficit from the very start and the deficit is practically shrinking (Table 46), the interpretation is completely different.

Therefore, in the previous period pension system deficit (employee insurance) was 3% of GDP at most in the very beginning of the reform

[62] More on this issue in Part I of the study.

process, and was steadily decreasing even below 2% in 2007. This deficit drop shows the effects of 2001/2003 reforms, which would have been even more evident if we did not have problems with overestimated statistics of wage growth, along with mild increase of contribution rate. Naturally, pension system deficit growth in 2008 and 2009 is a really indication of another bad measure – two extraordinary pension adjustments in the situation when GDP was declining, which was discussed in the previous chapter.

The problem, which obviously arose in interpretation of deficit level, is failure to make a distinction between pension system deficit and budget transfers, which had not been decreased in the same dynamics due to various other payments such as debt repayments, cancellation of large delay in payment of pensions in the farmer's insurance etc.

Third of all, **financing pension system from sources other than contributions** can be found in other countries as well. Some countries do not have pension contributions at all, such as Denmark and Ireland, which can be explained by the Beveridge system heritage. Pension funding varies greatly from country to country. Generally, a component which secures minimal old–age income is funded through contributions. In Ireland, Great Britain and the Netherlands, basic pensions are funded through contributions (for Ireland and Great Britain that is understandable given that it is a basic pension based on contributions, while for the Netherlands that is not understandable given that the basic pension is based upon residence), while basic pension in Denmark, based on residency, is funded through general taxes. All targeted pension benefits are typically funded through taxes. Finland also has an unusual solution for funding targeted pensions based on pension revenues from contribution.

Generally speaking, mandatory pension insurance is always separated from the state budget, and only in several cases there is a legal obligation to fill in the gaps in contributions. In addition to that, budgetary transfers are high, partly due to solidarity elements that are funded from taxes (targeted supplementary pensions, contributions for peri-

ods of unemployment, maternity leave etc)[63]. Finally, due to financial crisis which is the reality faced by the majority of pensions system around the world, particularly in Europe, some countries earmark or consider to earmark a portion of indirect taxes to finance pension systems. Mostly, that tax is VAT, which is also known as "Social VAT" in literature.

International comparison of contribution rates for pension benefits is even more complicated than it is the case with pension expenditures. Administrative data on contribution rates, which are used in most pension system analysis and academic papers, are not satisfactory enough. This is because administrative data on contributions do not reflect the real burden imposed by current pension expenditures[64]. First of all, nominal contribution rates are carried on gross base. In case of differently composition of contribution rates between employers and employees, these rates are not comparable. The larger the contribution portion charged to the employer, the burden is smaller, and vice versa. That is why the only comparable thing to do is to review contribution rates carried relative to total expenditures of the employer, which is an OECD methodology of monitoring wage burden, but the contributions are not carried separately. Another problem when making a comparison are differently designed systems and their funding, which was talked about in the previous paragraph. Therefore, contribution rates are not comparable, and some countries either do not have contributions or do not have them separately broken down per purposes – pension separated from others. In the end, many countries make transfers to their pension systems, but some do record a surplus. For all these reasons, it is very difficult to make comparisons.

A possible way to make a comparison is to create the *effective contribution rate* (Table 47)[65]. The rates are calculated by comparing the total pension expenditures with the aggregate indicator – the total compen-

---

[63] Adequate and sustainable pensions: Synthesis report 2006, European Commission, page 98.

[64] Disney, R. (2004), 'Are contributions to public pension programmes a tax on employment?' Economic Policy, 39, July.

[65] Ibid.

sation for the employees which consists of gross wages of all employees in the country and the contributions paid by the employer. This data for EU countries is taken from the national accounts, while the data on the pension expenditures is taken from the above–mentioned European Commission Aging Report, and that is how the effective contribution rates were calculated for EU countries and Norway. With respect to Serbia, the national accounts data are not reliable as they also contain the estimated income of farmers and the self–employed, making the aggregate extremely large.

That is the reason why the total compensation was calculated on the basis of the estimated gross wage bill to which the employers' contribution rates were added. In this manner we calculated the aggregate "total compensation for employees" which for 2005 amounted to around 41% of GDP, and then the aggregate is compared to the pension expenditures from the employee insurance. Of course, this is an improvisation, but that is the most acceptable solution for now. Even though the year 2005 was primarily taken due to the availability of the estimated data on the gross wage bill, the fact that in that year the pension expenditures were lower than the current should not be considered a drawback of the analysis, since the expenditure levels reached in the past two years can be treated as an extraordinary situation.

From that perspective, the effective contribution rate in Serbia is above average – 24% relative to the average of 20%, but if we take into account different traditions of the systems, we come to the conclusion that Serbia is on par with the countries that have a similar pension tradition.

The main problem of the pension system is the revenues side – high unemployment rate and unsatisfactory collection of the contributions due to the under reporting. That is why a hypothetical example is extremely revealing – it shows how much easier it would be to finance the pensions if the number of employed workers in 2005 was 2.2 million instead of the then figure of 1.9 million – in that event, the effective contribution rate would be slightly over 19%.

Table 47. Effective contribution rate, international comparison

Country	TC share in GDP (%)	Public pension expenditure	Effective contribution rate	Average
Austria	48,2	12,8	26,6%	
Belgium	50,2	10,0	19,9%	
France	51,6	13,0	25,2%	
Greece	34,6	11,7	33,8%	
Italy	40,9	14,0	34,3%	**24,6%**
Germany	48,8	10,4	21,3%	
Luxembourg	44,6	8,7	19,5%	
Portugal	49,1	11,4	23,2%	
Spain	47,3	8,4	17,8%	
Netherlands	49,3	6,6	13,4%	
Ireland	41,3	4,0	9,68%	**13,0%**
UK	53,2	6,6	12,4%	
Denmark	54,6	9,1	16,7%	
Sweden	54,7	9,5	17,4%	
Norway	43,1	8,9	20,7%	**19,7%**
Finland	47,5	10,0	21,0%	
Estonia	48,6	5,6	11,5%	
Latvia	46,9	5,4	11,5%	**12,8%**
Lithuania	44,5	6,8	15,3%	
Czech	42,9	7,8	18,2%	
Hungary	45,8	10,9	23,8%	
Poland	35,2	11,6	33,0%	**22,7%**
Slovenia	49,8	9,9	19,9%	
Slovakia	36,4	6,8	18,7%	
Average	47,0	8,94	20,2%	
Serbia (2005)	**41,8**	**10,11**	**24,2%**	
hypothetical (2,2 mil. employess)	52,3	10,11	19,3%	

NOTE: TC – total compensation of employess
Source: Ameco database, EC (2009) Aging report

PART IV. RECOMMENDATIONS

When providing recommendations, one should start with several facts:

- Today, pension systems of nearly all (developed) countries consist of a ***component which secures minimum old-age income***, in order to provide absolute living standard ***and a mandatory component providing income maintenance in old age***, the earnings related system with the aim to provide relative living standard.
- For an average employee, ***mandatory system organized by the state*** represents basic source of income in nearly all countries, including those with liberal orientation such as the United States and United Kingdom. Exception can only be found in countries with strong Beveridge heritage, such as Ireland, New Zealand, which did not have such component so far, but have started developing it; it can also be found in Australia which does have the component but not sufficiently developed; Denmark and the Netherlands have the component, but in the form of occupational pension plans with nearly full coverage.
- ***Tradition of the pension system in Serbia is of Bismarckian type***, which means that since the very inception the pension system has been designed to provide old-age income maintenance as well.

These baseline facts significantly determine the main guidelines of the pension policy. Bearing that in mind, we start with the assumption that there is a consensus on the following:

- ***Pension system in Serbia should remain mandatory and organized/administered by the state, for the purposes of realization of both goals*** – securing absolute and relative living standards. Above all, this applies to an average employee and persons with wages higher than average. For part of the income significantly higher than average, old-age income maintenance should rely more on voluntary insurance and savings, and for those

below the average state need to provide additional support in order to assure absolute living standard[66].

- **Pension system should not resolve some other economic and social problems,** such as traditionally bad position of farmers, women, working class, surplus of labor force in the labor market etc., ***but creators of the system should bear in mind the position of these groups when making decisions on dynamics of changes.***

In compliance with the above mentioned, recommendations regarding future pension policy may be divided into following important issues:

INDEXATION OF GENERAL POINT AND PENSION BENEFITS

This is the largest issue and the easiest way to make savings, but that is the solution that enables linear cost cutting, even in segments of the system where savings would be justified, and also in segments where saving would be utterly unjustified.

The latest legislation face two problems. The first is using GDP as indicator for indexation. Data on GDP are not up to date and official data in the Republic Statistical Office usually lags behind, while in the meantime estimates are used. Methodology on GDP statistics has not been improved, so soon one can expect to see changes in the manner of calculating GDP, which would complicate indexation. We have already experienced similar problem in the past, when inadequate wage statistics decreased financial effects of 2001/03 reforms; hence, our experience tells us that one should be careful with statistical data. Secondly, linking pension system revenues, thus the expenditures as well, to GDP makes sense only when we talk about certain conceptual issues in the long run. Currently and in the medium future, pension system revenues are not directly linked to the GDP growth. Finally, GDP as an indexation parameter, is a logical choice only from the standpoint of

[66] Study Matkovic et al. 2009, Challenges of Introduction of the Mandatory Private Pension System in Serbia, CLDS and USAID-SEGA, Belgrade considers in detail alternatives and arrives to the above mentioned conclusion.

financial sustainability of the pension system. When we speak of equally important goal - pension adequacy – GDP does not seem to be an adequate parameter given the fact that GDP growth is not the same as growth of living standard.

Secondly, portion of real GDP growth included into indexation formula is small. Taking into account only part of the GDP growth exceeding 4% after 2012 is adequate from the standpoint of financial sustainability, but is most likely insufficient when we speak of adequacy of pension benefits. This is especially true having in mind Amendments to the Law on Budget System, which prescribe such indexation manner until participation of pensions in GDP reaches 10%.

However, taking financial crisis into account, along with the budget deficit and IMF pressure and the fact that current replacement rate is acceptable from the comparative standpoint, it is not realistic to have more favorable indexation in the next several years. At the same time, this indexation manner, stipulated by amendments to the pension law, is not acceptable in the long run from the pension benefit adequacy standpoint, so in several years indexation would need to be revised in order to place more emphasis to wage growth.

Primarily for the purposes of savings, in the medium run one can think of different indexation of pension in payment and general point, in such a manner that there are not large differences between old and new pensioners. To be more specific, pension and general point indexation formulae should not differ by more than 50% regarding participation of real wage growth (for instance, if general point is indexed with wages, than pension indexation may eventually use Swiss formula, nothing less than that).

RETIREMENT AGE

This is a topic that requires more thorough analysis of data from Pension and Disability Fund. Demographic data. Data analyses show that people in Serbia live shorter than in the developed countries, which especially applies to women. In compliance with that fact, the pension

system in Serbia does not have larger redistribution to women than other pension systems in the developed countries. If we take into account different manner and living standard of women in highly-developed countries and in Serbia, the decision on equalization of retirement age should be thoroughly reviewed and most likely postponed for future considerations.

IMPROVEMENT WITH REGARDS TO ACTUARIAL FAIRNESS AND NEUTRALITY

Point formula does a good job in linking work history and pension benefits. Notional defined contribution (NDC) does even a better job, though looses flexibility which the point system provides, such as the possibility to change contribution rates with no effects on future system obligations, treatment of persons that retired "based on years of service" etc. On the other hand, point formula can generally be designed so that it almost fully simulates notional defined contribution system. It is evident that advantages of a system present its flaws at the same time, and vice versa.

Therefore, there are *two options* to be used for moving towards goal of improving actuarial fairness and neutrality:

- Keeping and improving point formula
  - Advantages of this approach are keeping existing system, for frequent changes may decrease level of understanding and accepting pension system, particularly bearing in mind that existing system is not to demanding administratively.
  - Disadvantages are the need for changes in the parameters, which may trigger resistance, especially with privileged groups such as employees with accelerated service etc.
- Introduction of the Notional Defined Contribution system (NDC)
  - The advantage is the automatic introduction of the actuarial fairness in the system; from the political perspective, this system is probably easier to implement as certain groups, such as

employees with the accelerated years of service, etc. would not be in a position to exert pressure.

– The disadvantages are the following: necessary administrative capacity which may not exist in the country, frequent changes of the pension calculation system, loss of flexibility i.e. room for retaining certain redistributions elements in the system and changing the contribution rate.

Ultimately, these two options are not mutually exclusive. In the short run, the existing point system can be "repaired", and if at some point in the future it is assessed that there is capacity and need, the shift to the notional defined contribution system can be made.

It should be stressed that a return to the traditional defined benefit system, which existed in former Yugoslavia and prior to the 2003 changes, should not be an option, because such a move would not create any benefit, what is more, the point system is more advanced, i.e. the actuarial system is more transparent than the traditional one[67].

If the authorities opted for the improvement of the existing point system, it would be necessary to consider the following:

- Calculating pensionable service over 40 years by taking into account the full year, instead of the current 0.5 up to 45 years of service.
- Introduce a "penalty" for the early retirement. For example, impose a 10% reduction of the pension benefit if a person retires 5 years before the retirement age. This solution is not entirely actuarially fair, because the reduction of pension benefits would be even greater (around 20-30%), but it takes into consideration the situation in the labor market.
- Changing the formula for the accelerated years of service – raising the contributions and/or introducing penalties for each year of early retirement.

[67] The World Bank study "Doing More with Less" is not clear enough, as this is one of the suggested alternatives..

STRENGTHENING THE OLD-AGE POVERTY REDUCTION COMPONENT

Within the pension system it is also necessary to consider the instruments for the reduction of poverty in the old age, bearing in mind the financial capabilities and administrative limitations. The following options are possible:

a) The ideal option would be to remove the minimum pension benefit from the insurance system and concurrently introduce the social pension for the senior citizens over 60/65, which would be funded from the budget and would serve as a supplement for the pensioners who receive pension benefits below a certain threshold, while it would be the only source of income for the persons who are not entitled to the pension from the insurance or have no other income. Such social pension should be determined in accordance with the pension and other income of the household, and ideally in accordance with the property owned. The main disadvantages of this option are the financial costs and the lack of administrative capacities needed for the targeting process; however, by removing the minimum pension benefit from the system, some savings would probably be made.

b) Introduction of a targeted pension for the senior citizens over 75 – both for the persons who were not part of the insurance and as a supplement to those who receive the pension benefit which is lower than a hypothetically defined minimum. The chief shortcoming is again the administrative capacity necessary for targeting; in financial terms this option is the most realistic one, but on the other hand it does not provide a possibility to remove the minimum pension from the insurance system and make potential savings on those grounds.

c) Introducing a universal pension for the senior citizens over 75 years of age. This option does not require a particularly developed administrative capacity, but the financial expenditure is

certainly higher; with the implementation of this solution, a number of pensions would be granted to those who do not need it.

d) Defining the minimum amount of the survivor's pension that would serve as a threshold for the supplement which would be funded from the budget. The main drawback, apart from the financial aspect, is the additional burden to the pension fund which has for a long time been the first institution to endure the cutting of costs.

CONTRIBUTION CEILING

In comparison to developed countries, the contribution ceiling in Serbia is quite high. However, the basis is high in the neighboring countries as well, and there is a reason for that. The average wage in Serbia is so low that even the people who earn four times as much cannot set aside plenty of money for savings. In the future, the wage growth will create more room for voluntary savings by those people who earn much more than the average wage, which is why the lowering of the maximum basis can be one of the options, but it is imperative to connect this solution with the tax and contribution system reform.

PENSION SYSTEM FINANCING

The main problem of pension system is the revenues side - high unemployment rate and avoidance of paying contributions for the full wage amount i.e. under reporting. It is necessary to reinforce the collection of contributions and the reporting of the full pension basis. The options to be considered in this context are the following: raising the contribution rate for the PDI Fund, but this issue falls under the entire tax policy, i.e. taxation of the labor income. Another possibility is the separation of the contributions for old-age, disability and survivor's pensions. Special attention should be paid to the contributions designated for the career's allowance, which so far has been funded from the total contributions for PDI.

The contributions for the employees with certain illnesses or disabilities and for those employees whose years of service are calculated as

accelerated should be borne by the government, instead of the pension system, which is the current practice (through general solidarity). This is more a matter of transparency principle which should be promoted by the government, than the making of savings. However, in view of the law on employment of disabled persons, this can become a significant issue.

AREAS FOR FURTHER RESEARCH

Disability and survivor's pensions are areas which are not sufficiently analyzed both comparatively and generally. Stricter requirements for granting disability pension produce financial results which are primarily evident in the lower number of disability pensioners.

The survivor's pensions have not been reformed. On one hand, this type of pension represents a major outflow for the pension system. On the other hand, however, the research of the pensioner poverty combined with the distribution of the survivor's pension amount indicates the potential poverty risk. Therefore, the survivor's pensions represent an area which is extremely interesting for further research.

TECHNICAL ISSUES AND DATA IMPROVEMENT

A recommendation that might sound trivial is that the name of the Pension and Disability Insurance Fund should be changed. There are two aspects causing confusion. First of all, the term "fund" is associated with a capitalized fund, while in practice it is a PAYG system. Second, this institution also pays out some other benefits from the insurance apart from the pension benefits, such as the long term care allowance (which is increasingly important on the global scale), physical injury allowance, etc. Frequently, there is confusion about the expenditures of the entire Fund and the expenditures for net pension benefits. This is why a more adequate name of the institution should be considered with the aim to remove the confusion.

For the purpose of a better analysis of the pension system and the poverty of pensioners and senior citizens, and in order to enable the

comparison with EU countries, it is necessary to improve the existing statistical data base of the PDI Fund and data accessibility, but also to develop a system for measuring and monitoring the indicators suggested in the Open method of coordination.