

UNIVERSITY OF LATVIA
FACULTY OF ECONOMICS AND MANAGEMENT
DEPARTMENT OF PUBLIC ADMINISTRATION,
DEMOGRAPHY AND SOCIO-ECONOMIC STATISTICS



**ADEQUACY AND EQUITY OF PENSIONS AS A FUNCTION
OF PENSION SYSTEM INSTITUTIONAL DESIGN: A CASE
OF THE BALTIC STATES**

**PENSIJU ADEKVĀTUMS UN TAISNĪGUMS KĀ PENSIJU SISTĒMAS
INSTITUCIONĀLĀ DIZAINA FUNKCIJAS: BALTIJAS VALSTU
GADĪJUMS**

DOCTORAL THESIS

Author: **Olga Rajevska**

Advisor: prof. Dr.oec. Biruta Sloka

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ABSTRACT

Olga Rajevska's doctoral dissertation "Adequacy and Equity of Pensions as a Function of Pension System Institutional Design: a Case of the Baltic States" focuses on identifying and assessing key factors of pension adequacy and equity.

The aim of this study was to compare the institutional design of old-age pension systems in Estonia, Latvia and Lithuania; to identify how certain elements of their design influence adequacy and equity of pensions; as well as to elaborate recommendations for policy makers.

The first chapter sets out the discussion on taxonomy of pension systems, their functional and organizational elements, criteria for their evaluation and assessment and provides a brief analysis of the economics of pensions outside the context of any particular country.

The second chapter reviews pension legislation of Estonia, Latvia and Lithuania. It starts with a recapitulative survey of its retrospective development since early 90s, which is followed by comprehensive compendium of the currently existing laws and regulations, with a special emphasis on the most recent amendments and the lessons of crisis.

The third chapter provides comparative analysis of the design and up-to-date performance of the pension systems in the Baltic States, from the perspective of their compliance with the criteria of adequacy and equity. First, the dimensionality and measurement instruments of each criterion are discussed, and then those instruments are applied to the systems studied.

Key words: pension systems, adequacy, equity, public pensions, Baltic States, comparative analysis

ANOTĀCIJA

Olgas Rajevskas promocijas darbs “Pensiju adekvātums un taisnīgums kā pensiju sistēmas institucionālā dizaina funkcijas: Baltijas valstu gadījums” fokusējas uz pensiju adekvātuma un taisnīguma noteicošo faktoru identificēšanu un izvērtēšanu.

Pētījuma mērķis ir salīdzināt Igaunijas, Latvijas un Lietuvas vecuma pensiju sistēmu institucionālo dizainu, identificēt, kā dizaina noteikti elementi ietekmē pensiju adekvātumu un taisnīgumu, kā arī izstrādāt rekomendācijas politikas veidotājiem.

Darba pirmajā nodaļā analizētas diskusijas par pensiju sistēmas taksonomiju, tās funkcionālajiem un organizatoriskajiem elementiem, izvērtējuma kritērijiem, kā arī sniegta īsa pensiju ekonomikas analīze ārpus valsts specifiskā konteksta.

Otrajā nodaļā analizēta pensiju likumdošanas attīstība Igaunijā, Latvijā un Lietuvā, sākot ar 1990. gadu retrospektīvu apskatu, kuram seko plašs spēkā esošo likumu un noteikumu izvērtējums, īpaši akcentējot pēdējo gadu grozījumus un krīzes mācības.

Trešajā nodaļā sniegta institucionālā dizaina salīdzinošā analīze un pašreizējo Baltijas valstu pensiju sistēmu funkcionēšana atbilstoši to adekvātuma un taisnīguma kritērijiem. Sākumā tiek analizētas katra kritērija dimensijas un mērījuma instrumenti un pēc tam instrumenti tiek piemēroti pētāmo sistēmu analīzei.

Darba noslēgumā ir secinājumi un rekomendācijas.

Atslēgas vārdi: pensiju sistēmas, adekvātums, taisnīgums, valsts pensijas, Baltijas valstis

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List of Abbreviations

ASISP – Analytical Support on the Socio-economic Impact of Social Protection Reforms

CEE – Central and Eastern Europe

CIS – Commonwealth of Independent States

CPI – Consumer Price Index

DB – Defined Benefit [pension system]

DC – Defined Contribution [pension system]

ESPN – European Social Policy Network

EC – European Commission

EU – European Union

EVS – European Values Study

FCMC – Financial and Capital Market Commission (Republic of Latvia)

ILO – International Labour Organization

IMF – International Monetary Fund

ISSA – International Social Security Association

NDC – Notional (Non-Financial) Defined Contribution [pension system]

OECD – Organisation for Economic Co-operation and Development

PAYG – Pay-As-You-Go [pension system]

SoDra – State Social Insurance Fund Board of Lithuania

SSIA – State Social Security Agency (Republic of Latvia)

WB – World Bank

Introduction

All countries in Central and Eastern Europe passed through very radical pension reforms in the 1990s. It requires a certain temporal distance to evaluate the results of the reforms, so that the principles contained in them could be able to demonstrate their strengths and weaknesses, viability, adaptability, could be understood and accepted by the population as effective and fair and at the same time affordable for the country's financial system. Twenty years is a sufficient period, so now it quite right time to learn from the exercise.

Pension systems in the Baltic States have passed such evaluation test; they represent a variety of institutional design elements, so they are a promising object of research as a very good case for such comparative analysis. The three countries demonstrate significant variations in adequacy and equity of their pension systems, and these variations can be reasonably attributed exactly to variations in their designs and/or manner of effecting the reforms, bearing in mind that the external circumstances were (and still are) very much similar:

- all three countries had practically identical starting conditions and commenced modernizing of their pension systems at one time;
- all three countries had (and still have) similar population structure in terms of age, education level and employment patterns;
- economic structures of the Baltic States do not have substantial differences;
- they are in the similar geopolitical situation, the same duration of EU membership; and
- finally, the overall design of their reformed old-age pension systems is structurally similar: three pillars of pension insurance (I – mandatory public PAYG pillar, II – mandatory private funded pillar, and III – voluntary private funded pillar).

The **topicality** of the research is endorsed by wide-range studies by numerous experts from different countries and of different areas of expertise. These are political and social scientists, economists and financial analysts. Research investigation is supported also by many established international bodies such as the World Bank, IMF, ILO, OECD, ISSA, supra-national EU institutions – ASISP and ESPN expert networks providing counselling to the European Commission.

Special public and private research institutions are focusing on pension investigations. A number of universities have created separate single-purpose units concentrating on pension issues – e.g., Pensions Institute at City University of London, Mannheimer Forschungsinstitut

Ökonomie und Demographischer Wandel (Mannheim Research Institute for the Economics of Ageing) at the Mannheim University, Forschungszentrum Generationenverträge (Research centre for inter-generational contracts) at Freiburg University, Pension Research Council at the University of Pennsylvania, etc. Social security (with pension provision being its essential integrant) is among the fields of studies of the Cato Institute, Australian Centre for Financial Studies, as well as many other think tanks all over the world.

The European Commission is also actively articulating its objectives and priorities in the sphere of pension policies, which laid the ground for the open method of coordination (OMC) on pensions¹. The OMC on pensions contributes to the development of a common EU social-policy paradigm². Starting from 2009 the ASISP (Analytical Support on the Socio-Economic Impact of Social Protection Reforms)³ network published annual national reports on pensions, health and long-term care, in 2011 and 2012 national reports have been accompanied by synthesis report covering all 34 participating countries (including 28 Member States). In 2014, on the basis of ASISP and the European network of experts in social inclusion and social protection⁴, the European Social Policy Network (ESPN) was established. At the heart of the ESPN are country teams of independent experts on social policies. They are supported and coordinated by a central team of international experts⁵.

In 2010, the EC programme document on priorities in pension policies "Green Paper: towards adequate, sustainable and safe European pension systems" launched a consultation about how overcome the incomplete and fragmented framework of policy coordination. The consultation resulted in the "White Paper: on adequate, safe and sustainable pensions" that came out in 2012. It puts forward a range of initiatives to a better balance between time in work and time in retirement; to ensure the portability of pension rights between member states, to ensure that pension promises are kept and people get what they expect in retirement.

The **research object** – are institutional structures of old-age pension systems of Latvia, Estonia and Lithuania, as well as the parties involved in their proper operation.

¹ European Commission, DG for Employment and Social Affairs (2003). *Adequate and sustainable pensions. Joint report by the Commission and the Council*. Luxembourg.

² Eckardt, M. (2005). The open method of coordination on pensions: an economic analysis of its effects on pension reforms. *Journal of European Social Policy*, Vol. 15, pp. 247-267.

³ ASISP web-page - <http://www.socialprotection.eu/>

⁴ The peer reviews in Social Protection and Social Inclusion prepared by that network members touched , inter alia, pension-related issues and are available online: <http://ec.europa.eu/social/main.jsp?catId=1024&langId=en>

⁵ European Social Policy Network (ESPN) - <http://ec.europa.eu/social/main.jsp?catId=1135>

The **research subject** - are the mechanisms of achieving adequate and equitable old age pensions by the means of institutional design, their interrelations and manifestations.

The **aim** of this study was to compare the institutional design of old-age pension systems in Estonia, Latvia and Lithuania in order to identify how certain elements of their design influence adequacy and equity of pensions; as well as to elaborate recommendations for policy makers.

The **tasks** arising out of this purpose included

1. reviewing of pension system and their institutional elements classifications and management peculiarities,
2. identifying the appropriate indicators of pension adequacy and equity and their trajectories;
3. analysing factors shaping the current pension systems of the Baltic States;
4. analysing pension legislation in Estonia, Latvia and Lithuania including retrospective of their development since 1990s ;
5. analysing the indicators of pension adequacy and equity in reference to both present and prospective pensioners; elaborating of recommendations for improving pension adequacy and equity through modernization of certain system design elements.

Research methods included:

- Analysis of the existing academic literature;
- Analysis of the normative acts (laws and regulations);
- Comparative analysis of official statistical data from Eurostat, national statistical bodies, national social insurance agencies (including unpublished data, obtained in personal communication);
- Processing of data of the specifically tailored survey („Inequality, integration and sustainable development of territories”, conducted by LU SZF in June 2013); using SPSS software
- Simulation analysis using statistical and normative data;
- Interviews with country experts.

The **novelty** of this thesis is based on generalization and synthesis of vast literature and representative statistical data, and manifests in

- the original comparative analysis of pension legislation and regulation in Latvia, Estonia and Lithuania. In the course of analysis, the author logically dismantles the

institutional design of pension systems into separate elements and studies the role of each element in providing adequate and equitable pension benefits to elderly population in each study country;

- new approaches in the analysis of statistical data – the first comparative analysis of pension distribution by size and gender; analysis of pension expectations on replacement rate; expounding of discrepancies in statistical data;
- the model of retrospective simulation was elaborated and tested empirically in order to assess system outputs at varying initial conditions and assumptions (different wage levels, different notional capital valorisation rules, participation or non-participation in II pillar);

In a wider context, this thesis contributes to the research tasks defined by the international team of pension experts relating specifically to reflections on Notional Defined Contribution (NDC) pension schemes, namely:

- “Assessing the outcomes of NDC schemes in view of the primary goals of pension systems (coverage, adequacy, sustainability) and in comparison with alternative scheme designs.
- Developing better measurements of pension assets and liabilities to guide the introduction, adjustment, and sustainability of NDC schemes.
- Clarifying the interaction of NDC (as a central consumption-smoothing pillar) with other pillars and benefits.
- Addressing the design and implementation issues of NDC schemes in low- and middle-income countries”⁶.

The author’s approach is mainly based on the conceptual framework for pension systems assessment elaborated by leading experts of the World Bank⁷. According to it, the primary evaluation criteria are the ability of the system to maintain adequacy, affordability, sustainability, equity, predictability and robustness. This thesis is dedicated particularly to two of the above mentioned parameters: to adequacy and to equity, as they are, to a great extent depending on system endogenous variables: its organisation and design elements. The rest four parameters are to a much more significant extend depending on exogenous

⁶Holzmann, R., Palmer, E., Robalino, D. (2013) NDC pension schemes in a changing pension world: Volume 2 - gender, politics, and financial stability, The World Bank, p. xvii.

⁷ Holzmann R., Hinz R., Dorfman M. (2008). *Pension Systems and Reform Conceptual Framework*. The World Bank SP Discussion Paper No. 0824.

circumstances. Various design elements' contribution to the performance of the whole system can be assessed both quantitatively and qualitatively.

Following the definitions of the WB experts, an adequate system is one that provides benefits to the full breadth of the population, the benefits are sufficient for preventing old-age poverty on a country-specific absolute level in addition to providing reliable means to smooth down the lifetime consumption for the majority of the population. Meanwhile, an equitable system is one that provides the income redistribution from the lifetime rich to the lifetime poor, it is consistent with the societal preferences in a way that does not tax the rest of society external to the system; and one that provides the same benefit for the same contribution.

Unless explicitly stated otherwise, the author of this thesis is using the terms 'adequacy' and 'equity' bearing in mind the above definitions. It is to be noted that conceptual understanding of what constitutes pension adequacy and / or pension equity is developing and the borderlines between these notions are not 'bullet-proof'.

The main **hypothesis** of the thesis can be formulated as follows:

H₀: Despite the resemblance in the organization of pension systems in the Baltic States some principal features of their institutional design vary significantly exerting a decisive influence on their adequacy and equity.

Should this hypothesis be validated, its implications can be subsequently stated in the following terms "*In order to improve adequacy and/or equity of a pension system, certain element(s) should be introduced / removed / modified*".

The basic hypothesis is specified in detail by the following **propositions** that are defended stepwise, chapter to chapter, shaping the **structure** of the dissertation.

Proposition 1. *Institutional design of pension systems comprises various functional and organizational elements, each contributing to one or more system objectives.*

The first chapter sets out the discussion on taxonomy of pension systems, their functional and organizational elements, criteria for their evaluation and assessment and provides a brief analysis of the economics of pensions outside the context of any particular country.

Proposition 2. *Pension systems of the Baltic States have been maturing in similar external environment. They have many common elements, in the meantime having considerable distinctions.*

The second chapter reviews pension legislation of Estonia, Latvia and Lithuania. It starts with a recapitulative survey of its retrospective development since early 90s, which is followed by comprehensive compendium of the currently existing laws and regulations, with a special emphasis on the most recent amendments and the lessons of crisis.

Proposition 3. *There are sizeable variations in pension adequacy and equity between the Baltic States and these variations can be substantially explained by differences in pension system design elements.*

The third chapter provides comparative analysis of the design and up-to-date performance of the pension systems in the region, from the perspective of their compliance with the criteria of adequacy and equity. First, the dimensionality and measurement instruments of each criterion are discussed, and then those instruments are applied to the systems studied.

The **major findings** are the following:

- Different levels of adequacy and equity of pensions in Baltic States derive from different institutional design of their pension systems
- The principal pension system elements in the Baltic States affecting their adequacy are:
 - o Presence of decent minimum guaranteed pension and its affixment to average wage
 - o Presence of non-contributory component (basic pension)
 - o In NDC-system – notional capital valorisation rules preventing diminution of accumulated capital from inflation or from other reasons (depopulation, fall in GDP, etc.)
 - o In point systems – indexation rules preventing monetary value of accumulated points from diminution
 - o In any type of pay-as-you-go system – indexation rules preventing pensions in payment from losing purchasing power
 - o Level of administrative fees in II pillar
 - o Minimum guaranteed rates of return in II pillar (missing in all three countries)
- The major pension system elements in the Baltic States affecting their equity are:
 - o Presence of earnings-related schemes (pension points, notional accounts)
 - o Methodology of converting pre-reform service record into new schemes

- In point systems – regular update of denominator and its affixment to average wage
- In NDC-system – notional capital valorisation rules preventing from abrupt jumps in index (moving averages, balancing mechanisms)
- Uprating pensions in payment and pension rights in accumulation at the same pace
- Actuarially fair rules for early / deferred pension calculation
- Possibility to participate in several II pillar pension funds simultaneously
- Tax exempts and progressive taxation
- Pension ceilings without ceilings on contributions
- Indexation rules beneficial to low pension recipients
- Parental pensions
- Non-contributory bonus for long service record
- In NDC and in II pillar – inheritance gains and/or hereditability of II pillar accumulations.

The author has elaborated recommendations what elements may the countries domesticate from each other in order to improve adequacy and equity of their pension systems.

Used sources contained academic literature, primary and secondary legislation, political documents, surveys data, statistical databases and reports.

Functioning of pension systems is being studied extensively by academic community. Pension's agenda is many-faceted and comprises topics related to economics, finances, public administration and public policy, social work administration and social policy, health studies, sociology, legal studies and even philosophy.

The list of the world's most prominent scholars, the authors of conceptual overarching publications includes such names as Nicholas Barr, Peter Diamond, Robert Holzmann, Edward Palmer, Richard Paul Hinz, Peter Orzag, Joseph Stiglitz, Gosta Esping-Andersen, David Robalino, Mark Dorfman, Aaron Grech, Bernhardt Ebbinghaus.

They are followed by numerous researchers, specialising in more 'niche' studies. Such international organisations as the World Bank, OECD, ILO, ISSA and European Commission are also regularly publishing both research papers and political documents on pension themes. Each chapter of this thesis starts with a brief review of academic literature related to its subject.

The Baltic States researchers in the pensions' field are represented by such leading country experts as Andres Võrk and Lauri Leppik from Estonia, Feliciana Rajevska, Edgars Voļskis and Ruta Zilvere from Latvia, Jolanta Aidukaite, Romas Lazutka and Teodoras Medaiskis from Lithuania. In the last years, young scientists^{8,9,10,11,12,13} are also joining this list, but the field is still insufficiently studied in the region.

The Journal of Pension Economics and Finance (JPEF) issued by Cambridge University Press is the only academic journal focusing on the economics and finance of pensions and retirement income. JPEF provides a valuable and influential forum for international debate in this area. Its senior editors are working in the Netherlands, USA and UK, the editorial board comprises experts from France, Germany, Italy, Belgium, Switzerland, Australia, Canada and other countries. The journal was started in 2002, and its volume has been steadily increasing. JPEF publishes original research papers, covering a variety of topics, including pension fund management, the regulation of pensions, links between pensions and labour markets. Some of the topics covered relate to quite specific field of studies, thus, issue 4 of volume 10 (October 2011) was almost completely dedicated to financial literacy and retirement planning, while issue 2 of volume 14 (April 2015) – to assessing the U.S. pension insurance modelling system (PIMS).

The vast majority of the papers are country-specific studies, however a number of articles cover more general problems. The most interesting (for the purpose of this thesis) were the articles of the second type: e.g., an international benchmarking study by David Tuesta on administrative costs of private pensions¹⁴. A valuable source of information, especially on the funded pillars, was also the article by Polish researchers Marcin Kawinski,

⁸ Arefjevs, I., Lindemane, M. (2014). The Market Potential Assessment Model for Private Pension Savings. *Procedia – Social and Behavioral Studies*, Vol. 110, pp. 755–766.

⁹ Mavlutova, I., Titova, S. (2014). Economic environment impact on pension system: Case of Latvia, *Procedia - Social and Behavioral Sciences*, Vol. 110, pp. 1063–1072.

¹⁰ Võrk, A., Piirits, M., Jõgi, E. (2015). The Impact of Introduction of Funded Pension Schemes on Intragenerational Inequality in Estonia. NETSPAR Academic Series, DP 06/2015-021, <http://arno.uvt.nl/show.cgi?fid=137638>

¹¹ Stavausis, D. (2013). Izglītības veicināšana finanšu jautājumos kā spējīnāšanas instruments Latvijā: valsts fondēto pensiju gadījums. In Rajevska, F. (Ed.) Sociālā cilvēkdrošība: spēju attīstība, sadarbība, iekļaušana. Rīga, LU Akadēmiskais apgāds, 141–160 lpp.

¹² Dundure, I. (2013). Role of the Elderly in Building Sustainability of Pension System. *Journal of International Scientific Publication: Economy & Business*, Vol. 6(2), pp. 131–141.

¹³ Bartkus, A. (2013). On Future Pensions from Second Pillar Pension Funds. *Organizations and Markets in Emerging Economies*. Vol. 4-1(7), pp. 121–140.

¹⁴ Tuesta, D. (2014). Factors behind the administrative fees of private pension systems: an international analysis. *Journal of Pension Economics and Finance*, Vol. 13, pp. 88–111.

Dariusz Stanko and Johanna Rutecka¹⁵, providing a broader context for comparison. A wide international spectrum is covered by Annamaria Lusardi and Olivia Mitchell¹⁶ in their study of the importance of financial literacy of population in modern pension schemes. Gilles Le Garrec studied different pension systems¹⁷ to shed light on the dilemma between inequality and economic growth in retirement systems: greater progressivity results in less lifetime inequality but also less growth. Eelco Zandberg and Laura Spierdijk¹⁸ studied the sample of 54 countries to examine whether changes in the degree of pension funding affect economic growth (and did not find almost any effect). Franziska Tausch, Jan Potters and Arno Riedl explored the different aspects of solidarity (risk solidarity, income solidarity, subsidizing solidarity) in pensions¹⁹.

On the other hand, some country-specific articles were also very instructive and induced fertile lines of research by adopting their approaches to the Baltic context: e.g., the article on minimum pension in Poland²⁰, on expected and actual replacement rates in the Netherlands²¹, a comparison of adequate standard of living on retirement in the Netherlands and the USA²² and others.

Only few (less than ten) journal entries over more than twelve years relate to some extent to the Baltic States, some of them being not the articles *stricto sensu*, but 1-2 pages long reviews of books devoted to pension reforms in Eastern Europe. Surely, many other scientific journals give the floor to discussions on various aspects of pension systems and their development, pension reforms and related political processes, pension funds and occupational pension plans, etc. To name just few of them - *Journal of Banking & Finance*,

¹⁵ Kawinski, M., Stanko, D., Rutecka, J. (2012). Protection mechanisms in the old-age pension systems of the CEE countries. *Journal of Pension Economics and Finance*, Vol.11, pp. 581-605.

¹⁶ Lusardi, A., Mitchell, O. S. (2011). Financial literacy around the world: an overview. *Journal of Pension Economics and Finance*, Vol. 10, pp. 497-508.

¹⁷ Le Garrec, G. (2012). Social security, income inequality and growth. *Journal of Pension Economics and Finance*, Vol. 11, pp. 53-70.

¹⁸ Zandberg, E., Spierdijk, L. (2013). Funding of pensions and economic growth: are they really related?. *Journal of Pension Economics and Finance*, Vol.12, pp. 151-167.

¹⁹ Tausch, F., et al. (2013). Preferences for redistribution and pensions. What can we learn from experiments?. *Journal of Pension Economics and Finance*, Vol. 12, pp. 298-325.

²⁰ Chłoń-Domińczak, A., Strzelecki, P. 2013. The minimum pension as an instrument of poverty protection in the defined contribution pension system – an example of Poland, in *Journal of Pension Economics and Finance*, Vol. 12 (03), pp. 326-350.

²¹ van Duijn, M., Mastrogiacomo, M, Lindeboom, M., Lundborg, P. (2013). Expected and actual replacement rates in the pension system of the Netherlands: how and why do they differ? *Journal of Pension Economics and Finance*, Vol. 12, pp. 168-189.

²² Binswanger, J., Schunk, D. (2011). What is an adequate standard of living during retirement? *Journal of Pension Economics and Finance*. Vol. 11, pp. 203-222.

Planning Theory, Journal of Public Economics, Social Policy & Administration, International Social Security Review, Comparative Political Studies, Journal of European Social Policy, Journal of Baltic Studies, Communist and Post-Communist Studies, as well as many others.

Secondary data sources used for this thesis include statistics on pensions and other related subjects mainly obtained from online databases of national statistical bodies²³ and Eurostat, as well as databases and reports of statistical departments of national social insurance agencies²⁴, reports of pension funds supervisory authorities²⁵. European Value Studies (EVS) data²⁶ were used for comparing social trust levels in the study countries. A more detailed analysis of data sources forms a special section 3.1 in Chapter 3 of this thesis.

Approbation of results of research (publications, conferences)

Results of the research were presented and discussed in 12 scientific publications and 18 scientific international and local conferences (in Latvia, Lithuania, Poland, Germany, Norway, Italy and Russia).

Author's scientific publications in 12 reviewed publications:

- Rajevska, O. (2016). Theoretical old-age pension benefits and replacement rates in the Baltic States: A Retrospective Simulation. *Economics and Business*, ISSN 2256-0394. Vol.28, pp. 13–19. Available in **EBSCO**.
- Rajevska, O. (2015). Sustainability of pension systems in the Baltic States. *Entrepreneurial Business and Economics Review*. ISSN 2353-8821. Vol. 3/4, pp. 139-153. Available in **EBSCO**.
- Rajevska, O. (2014). Pension statistics in Latvia: resources and weaknesses. *The Journal of Economics and Management Research*. ISSN 2255-9000. Vol.3, pp. 65-74.
- Rajevska, O. (2014). Adequacy of pensions in the Baltic region. *Regional Review*. ISSN 1691-6115. Vol. 10, pp. 41-51. Available in **EBSCO**.
- Rajevska, O. (2014). Latvian pension system: calibration by crisis. In: International scientific conference "New challenges of economic and business development":

²³ Statistics Estonia (www.stat.ee), Central Statistical Bureau of Latvia - CSB (Centrālā statistikas pārvalde, CSP, <http://www.csb.gov.lv>) and Statistics Lithuania (Lietuvos statistikos departamentas, <http://www.stat.gov.lt>)

²⁴ The Social Insurance Board (Sotsiaalkindlustusamet, <http://www.sotsiaalkindlustusamet.ee>), State Social Insurance Agency, SSIA (Valsts sociālās apdrošināšanas aģentūra, VSAA, <http://www.vsaa.gov.lv>) and State Social Insurance Fund Board ("Sodra", <http://atvira.sodra.lt/>)

²⁵ Estonian Financial Supervision Authority, EFSA (Finantsinspeksioon, <http://www.fi.ee>), Financial Capital and Market Commission, FCMC (Finanšu kapitāla un tirgus komisija, FKTK, <http://www.fktk.lv>) and Bank of Lithuania (Lietuvos Bankas, <http://www.lb.lt>)

²⁶ Online database of EVS is available from <http://www.geis.org/unser-angebot/daten-analysieren/umfragedaten/european-values-study/data-access/>

conference proceedings, 8-10 May, 2014, Riga, University of Latvia. ISBN 978-9984-45-836-6. pp. 307-315. Available also in **Thomson Reuters Web of Science** base.

- Rajevska, O. and Rajevska, F. (2014). Notional Defined Contribution pension scheme experience in Latvia: some lessons. *Studia Humanistyczne AGH (Contributions to Humanities)*. ISSN 2084-3364. Vol. 13/4, pp. 185-197.
- Rajevska, O. (2014). Sociālais taisnīgums un sociālā nevienlīdzība sociālās politikas dizainā. In: Tabuns, A. and Rajevska, F. (eds.). *Latvijas iedzīvotāju identitātes un vienlīdzības vērtības*. Rīga: LU Akadēmiskais apgāds. ISBN 978-9984-45-880-9, pp. 113.-137.
- Rajevska, O. (2014). Social justice in pension systems of the Baltic States – possible inspiration for Eastern Partnership. In: Muravska, T. and Berlin, A. (eds.). *EU Eastern Partnership: from capacities to excellence: strengthening research, regional and innovation policies in the context of horizon 2020*. Riga: University of Latvia Press, ISBN 978-9984-45-901-1, pp. 104-116.
- Rajevska, O. (2013). Funded pillars in the pension systems of Estonia, Latvia and Lithuania. *Economics and Business*. ISSN 1407-7337. Vol.23, pp. 83-89. Available in **EBSCO**.
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- Rajevska, O. (2012). The impact of globalisation and europeanisation on pension systems in the Baltic States. In Kuznetsova, N. et al. (eds.) *Экономическая теория и хозяйственная практика: глобальные вызовы. Материалы международной конференции „Эволюция международной торговой системы: проблемы и перспективы”, 11-12 октября 2012 г., Санкт-Петербург, Российская Федерация*. Санкт-Петербург: Скифия-принт, ISBN 978-5986-20-082-8, pp. 184-196.

Results of the research were presented and discussed at 18 scientific international and local conferences (in Latvia, Lithuania, Poland, Germany, Norway, Italy and Russia).

- Rajevska, O. Tools for Measuring Pension Adequacy and Pension Equity: The Results of European and Baltic Expert Poll. *74th University of Latvia Conference*, Riga, 01.02.2016.
- Rajevska, O. Theoretical old-age pension benefits and replacement rates in the Baltic States: a retrospective simulation. *56th RTU Conference SCEE'2015 "Scientific Conference on Economics and Entrepreneurship"*, RTU, Riga 14-16/10/2015.
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- Rajevska, O. Acquisition of pension rights in the Baltic States pension systems. *International Conference „European Integration and Baltic Sea Region: Diversity and Perspectives -2015"*, University of Latvia and Baltic Sea Region University Network, Riga 11-13/06/2015.
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- Rajevska, O. Social justice in pension systems of the Baltic States. *BIGSSS International Conference 2014 „(UN-)STABLE, (UN-)EQUAL & (UN-)PREDICTABLE: The Link between Social Stratification and the Welfare State"*, Bremen International Graduate School of Social Sciences and Centre for Social Policy Research / Zentrum für Sozialpolitik (ZeS), Bremen 12-13/06/2014.
- Rajevska, O. Pension Trends in Baltic Countries. *International Jean Monnet Conference „EU Eastern Partnership: Capacities to Excellence. Strengthening Research, Regional and Innovation Policies in the Context of Horizon 2020"*, University of Latvia and EU Jean Monnet Centre Programme, Riga 11-13/06/2014.

- Rajevska, O. Latvian pension system: calibration by crisis. *International conference "New challenges of economic and business development - 2014"*, University of Latvia, Riga, 8-10/05/2014. **Best doctoral paper presentation award.**
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Chapter 1. Pension Systems: prolegomena. Theoretical approaches and criteria of assessment

The first chapter is based on the publications of such accredited authorities in the field of pensions as Professor of Public Economics of the London School of Economics Nicholas Barr^{27,28,29,30,31,32,33}, the WB expert in pensions, a reference to whom is a sine qua non for practically any serious publication on pensions. He has also several joint publications^{34,35,36} with Nobel laureate in economics working at MIT Department of Economics, Peter Diamond. The latter author has also his own publications in this field^{37,38}. The conceptual framework for assessing pension systems and their reforms has been gradually elaborated by a group of WB pension experts led by professor of economics Robert Holzmann^{39,40,41,42}. He is also the

²⁷ Barr, N. (2002a). Reforming pensions: Myths, truths, and policy choices. *International Social Security Review*, Vol. 55, pp. 3–36.

²⁸ Barr, N. (2002b). The Pension Puzzle: Prerequisites and Policy Choices in Pension Design', IMF, Economic Issues No. 29, <http://www.imf.org/External/Pubs/FT/issues/issues29/>

²⁹ Barr, N. (2006a). Non-Financial Defined Contribution Pensions: Mapping the Terrain. In Holzmann, R., Palmer, E. (eds.) Pension Reform: Issues and Prospects for NCD Schemes. The International Bank for Reconstruction and Development / The World Bank, pp. 57-70.

³⁰ Barr, N. (2006b). Pensions: overview of the issues. *Oxford Review of Economic Policy*, Vol. 22 (1), pp. 1-14

³¹ Barr, N. (2011). A toolkit for assessing reform of public sector pensions. https://econ.lse.ac.uk/staff/nb/Barr_CARE111119.pdf

³² Barr, N. (2013). The pension system in Finland: Adequacy, sustainability and system design. Finnish Center for Pensions, Vaasa.

³³ Barr, N. (2014). The Role of Public and Private Sectors in Ensuring Adequate Pensions: Theoretical Considerations. In Clements, D. et al. (eds.) Equitable and Sustainable Pensions: Challenges and Experience. Washington, D.C.: International Monetary Fund, pp. 59-86.

³⁴ Barr, N., Diamond, P. (2006). The Economics of Pensions. *Oxford Review of Economic Policy*, Vol. 22 (1), pp. 15-39.

³⁵ Barr, N., Diamond, P. (2008). Reforming Pensions: Principles, Analytical Errors, and Policy Directions. *International Social Security Review*, Vol. 62, pp. 5-19.

³⁶ Barr, N., Diamond, P. (2010). Pension Reform in China: Issues, Options and Recommendations, China Economic Research and Advisory Programme. <http://economics.mit.edu/files/>

³⁷ Diamond, P. (2006). Conceptualization of Non-Financial Defined Contribution Systems. In Holzmann, R., Palmer, E. (eds.). Pension reform: issues and prospects for non-financial defined contribution (NDC) schemes, The World Bank, pp. 76-80.

³⁸ Diamond, P. (2009). Economic Globalisation and Swedish Pensions. Expert report no. 28 to Sweden's Globalisation Council. <http://www.government.se/contentassets/92f0ba5f434945f59e186b6d3b8851c3/economic-globalisation-and-swedish-pensions>

³⁹ Holzmann, R. (2000). The World Bank approach to pension reform. *International Social Security Review*, Vol. 53, pp. 11–35.

author and co-author of many other books and papers dealing with different aspects of pensions^{43,44}. A particular subject of Robert Holzmann's interests are non-financial defined contribution pension schemes: together with Swedish professor of Uppsala Center for Labor Studies and Department of Economics Edward Palmer, Robert Holzmann edited three volumes of collective monographs on this topic (more detailed review of these books is given herebelow). Theoretical considerations of pension systems taxonomy are also generalised by Professor of Sociology, Director of the Mannheim Centre for European Social Research, Bernhardt Ebbinghaus⁴⁵, as well as in OECD-authored monographs^{46,47}. Political economy of pensions is covered in the above mentioned publications of Nicholas Barr, as well as in works of Pierre Pestieau^{48,49,50,51} of the University of Liège. A very valuable source is also a paper by a very prominent economist, formerly working in administrations of Barak Obama and Bill

⁴⁰ Holzmann, R., Hinz, R. P. (2005). *Old Income Support in the 21st Century: An International Perspective on Pension Systems and Reform*. Washington, D.C.: The World Bank.

⁴¹ Holzmann, R., Hinz R. P., Dorfman M. (2008). *Pension Systems and Reform Conceptual Framework*. The World Bank SP Discussion Paper No. 0824, June 2008. <http://siteresources.worldbank.org/SOCIALPROTECTION/Resources/SP-Discussion-papers/Pensions-DP/0824.pdf>

⁴² Holzmann, R. (2012). *Global Pension Systems and Their Reform: Worldwide Drivers, Trends, and Challenges*. Social Protection & Labor Discussion Paper 1213. The World Bank. <http://siteresources.worldbank.org/SOCIALPROTECTION/Resources/SP-Discussion-papers/Pensions-DP/1213.pdf>

⁴³ Holzmann, R., Guven, U. (2009). *Adequacy of retirement income after pension reforms in Central, Eastern, and Southern Europe: eight country studies*. The International Bank for Reconstruction and Development / The World Bank.

⁴⁴ Holzmann, R., Palmer, E. (2012). *NDC in the Teens: Lessons and Issues*. In Holzmann, R., Palmer, E., Robalino, D. (eds). *Nonfinancial Defined Contribution Pension Schemes in a Changing Pension World: Volume 1 Progress, Lessons and Implementation*. Washington, D.C.: The World Bank, pp. 3-29.

⁴⁵ Ebbinghaus, B. (ed.) (2011). *The Varieties of Pension Governance: Pension Privatization in Europe*, Oxford University Press.

⁴⁶ OECD (2011). *Pensions at a glance 2011: retirement - income systems in OECD and G20 countries*. Paris: OECD.

⁴⁷ OECD (2013a). *Architecture of national pension systems*. In OECD. *Pensions at a Glance 2013: OECD and G20 Indicators*, OECD Publishing. http://dx.doi.org/10.1787/pension_glance-2013-6-en

⁴⁸ Cremer, H., Pestieau, P. (2003). *Social insurance competition between Bismarck and Beveridge*. *Journal of Urban Economics*, Vol. 54 (1), pp. 181-196.

⁴⁹ Pestieau P. (2006). *The Welfare State in the European Union: Economic and Social Prospectives*. Oxford University Press.

⁵⁰ Pestieau, P., Ponthiere, G. (2012). *The Public Economics of Increasing Longevity*. *Hacienda Pública Española, IEF*, Vol. 200(1), pp. 41-74.

⁵¹ Artige, L., Cavenaile, L., Pestieau, P. (2014). *The macroeconomics of PAYG pension schemes in an aging society*. CORE Discussion Paper 2014/33, http://uclouvain.be/cps/ucl/doc/core/documents/coredp2014_33web.pdf

Clinton Peter R. Orszag and Nobel laureate in Economic Sciences Joseph Stiglitz (then Senior Vice President and Chief Economist at the WB): “Rethinking Pension Reform: Ten Myths About Social Security Systems”⁵². The paper was first presented at the WB Conference in 1999. Further in 2001 its updated version opened the book edited by him together with already mentioned Robert Holzmann – “New Ideas about Old Age Security: Toward Sustainable Pension Systems in the 21st Century”.

1.1. Institutional design of pension systems: objectives, taxonomy and constituent elements

A pension scheme is an arrangement by which individuals are provided with an income (a regular periodical payment) when they have reached a certain age and are no longer earning a steady income from employment

(definition of International Labour Organisation)⁵³.

All societies, in one way or another, try to meet people's needs as they age and can no longer provide for themselves. As developing countries grow, they face difficult issues about when and how to establish pension systems that their more complex economies require. As post-communist states had to adopt their social security systems to market conditions, they faced similar challenges and have (with different degree of success) carried out drastic pension systems reforms. As developed countries are motivated by ageing societies, they face the need to adjust their too generous pension schemes to grim reality. There are no universal solutions to the complex array of pension issues nor there a simple reform model that can be applied in all settings. On all those aspects are much of academic researches. The focus of this thesis lies on the institutional design of pension systems. According to Ernest Alexander (Professor Emeritus at the University of Wisconsin-Milwaukee, specializing in the theory of planning and institutional analysis), “institutional design means designing institutions: the devising and realization of rules, procedures, and organizational structures that will enable and constrain behaviour and action so as to accord with held values, achieve desired

⁵² Orszag, P. R., Stiglitz, J. E. (2001). Rethinking Pension Reform: Ten Myths About Social Security Systems. In Holzmann, R., Stiglitz, J. E. (eds.). New Ideas about Old Age Security: Toward Sustainable Pension Systems in the 21st Century. Washington, DC: World Bank, pp. 17-56.

⁵³ *World Social Security Report 2010/11: Providing coverage in times of crisis and beyond*. International Labour Office – Geneva: ILO, 2010, p.45.

objectives, or execute given tasks”⁵⁴. Alexander distinguishes three levels of institutional design: at the highest level institutional design is applied to whole societies or addresses significant macro-societal processes and institutions; the meso-level involves the institutional design of planning and implementation structures and processes. This includes establishing and operating inter-organisational networks, creating new organizations and transforming existing ones, and devising and deploying incentives and constraints in the form of laws, regulations, and resources to develop and implement policies, programs, projects and plans. The lowest level of institutional design involves intra-organizational design, addressing organizational sub-units and small semi-formal or informal social units, processes and interactions, such as committees, teams, task forces, work groups etc. Pension systems with their formal structural elements mostly relate to the medium level.

1.1.1. Objectives of pension systems

Rational policy design starts with agreeing on objectives and then proceeds to discussion of instruments for achieving them. Globally speaking, the *objectives* of all pension systems can be described in the following way:

From an individual viewpoint pension is

- (1) a mechanism for *consumption smoothing* – a process which enables a person to transfer consumption from his productive years to his retired years, thus achieving *status maintenance* in declining years; and
- (2) a means of *insurance* - a form of longevity risk pooling (to insure the risk of outliving personal pension savings).

Additionally, pension is an instrument of public policy, and as such is aimed to

- (3) *poverty relief* – the elderly people are a particular group of poverty risk, especially those who have been poor on a lifetime basis and therefore unable to save enough, both through voluntary savings and through mandatory pension schemes; and
- (4) *income redistribution* – the basic security entails a transfer between income groups. The work-based old-age pension redistributes income across the individual’s lifetime. Redistribution takes place between groups at risk in an insured population. In a public old-age pension scheme this entails a transfer from those who live for a shorter time than average to those who live longer than average – typically a transfer

⁵⁴ Alexander, E. R. (2011). Institutional Transformation and Planning: From Institutionalization Theory to Institutional Design. *Planning Theory*, Vol. 4/3, p. 213.

from men to women. A pension system may also entail re-distribution between generations.

Pension policy may also contribute to overall economic growth and market development, though badly designed schemes can create adverse effect.

Relative weights assigned to the above objectives may vary significantly amongst countries, different policy makers within one country, and with the course of time.

1.1.2. Pillars and tiers in pension systems

Pension systems can be organized in different ways, but in terms of these generally recognized objectives a concept of distinct pension pillars have been developed. The three-pillar model first delineated by the WB Policy Research Report ‘Adverting the Old Age Crisis: Policies to Protect the Old and Promote Growth’ in 1994 (Oxford University Press: Oxford, 1994), where its components were categorized into:

- (a) a mandated, unfunded, and publicly managed defined benefit system,
- (b) a mandated, funded, and privately managed defined-contribution scheme, and
- (c) voluntary retirement savings,

— has been later extended to include two additional pillars:

- (d) a basic (zero) pillar to deal more explicitly with the poverty objective and
- (e) a nonfinancial (fourth) pillar to include the broader context of social policy, such as family support, access to health care, and housing.⁵⁵

Experience with low-income countries has brought into focus the need for a basic or zero (or non-contributory) pillar that is distinguished from the first pillar in its primary focus on poverty alleviation in order to extend old-age security to all of the elderly. Experience in low- to middle income countries has heightened awareness of the importance of the design and implementation of the third and voluntary pillar, which can effectively supplement the basic elements of a pension system to provide reasonable replacement rates for higher-income groups, while constraining the fiscal costs of the basic components. Last, but not least, is recognition of the importance of a fourth pillar for retirement consumption, which consists of a mixture of access to informal support (such as family support), other formal social programs

⁵⁵ Holzmann R., Hinz R. (2005). Old Income Support in the 21st Century: An International Perspective on Pension Systems and Reform. World Bank Publications, The World Bank, No. 7336, p.3.

(such as health care), and other individual financial and nonfinancial assets (such as homeownership) and the need to incorporate their existence or absence explicitly into the design of the pension system.

The experience in implementing pension reforms in numerous countries since the early 90-s has also motivated Bank staff to review and “soften” their position by appreciation of the diversity of effective approaches in response to particular circumstances or needs (the number of pillars in use, the appropriate balance among the various pillars, and the way in which each pillar is formulated). Some pension systems may function effectively with only a zero pillar (in the form of a universal social pension) and a third pillar of voluntary savings. In some countries, the introduction of a mandatory second pillar is required to gain popular acceptance for a reform of the first pillar, while the political economy of other countries makes a reformed (first-pillar) public system in conjunction with voluntary schemes the only realistic alternative.

Table 1.1. **Multipillar Pension Taxonomy (World Bank approach)**

Objective	Pillar	Target groups			Main criteria		
		Life-time poor	Informal sector	Formal sector	Characteristics	Participation	Funding/collateral
Elderly poverty protection	0	X	X	x	“Basic” or “social pension,” at least social assistance, universal or means-tested	Universal or residual	Budget/general revenues
Elderly poverty protection and consumption smoothing	1			X	Public pension plan, publicly managed, defined benefit or notional defined contribution	Mandated	Contributions, perhaps w/financial reserves
Consumption smoothing and elderly poverty protection through minimum pension.	2			X	Occupational or personal pension plans, fully funded defined benefit or fully funded defined contribution	Mandated	Financial assets
Consumption smoothing	3	x	X	X	Occupational or personal pension plans, partially or fully funded defined benefit or funded defined contribution	Voluntary	Financial assets
Elderly poverty protection and consumption smoothing	4	X	X	X	Access to informal (e.g. family support), other formal social programs (e.g. health) and other individual financial and nonfinancial assets (e.g. homeownership)	Voluntary	Financial and non-financial assets

Note: The size of x or X, normal or bold, characterizes the importance of each pillar for each target group.

Source: Holzmann, R., Hinz, R.P. *Old Age Income Support in the 21st Century*

Thus, the current taxonomy suggested by the WB experts is as shown in the Table 1.1.

- a non-contributory or “zero pillar” (e.g. in the form of a universal flat benefit, social pension, or general social assistance typically financed by the local, regional or national government), fiscal conditions permitting, to deal explicitly with the poverty alleviation objective in order to provide all of the elderly with a minimal level of protection. This insures that people with low lifetime incomes are provided with basic protection in old age, including those who only participate marginally in the formal economy;
- a mandatory “first pillar” with contributions linked to earnings (to varying degrees) with the objective of replacing some portion of lifetime pre-retirement income. First pillars address, among others, the risks of individual myopia, low earnings, and inappropriate planning horizons due to the uncertainty of life expectancies, and the lack or risks of financial markets. They are typically financed on a pay-as-you-go basis and thus are, in particular, subject to demographic and political risks;
- a mandatory “second pillar” that is typically an individual savings account (i.e. defined contribution plan) with a wide set of design options including active or passive investment management, choice parameters for selecting investments and investment managers, and options for the withdrawal phase. Defined contribution plans establish a clear linkage between contributions, investment performance and benefits; support enforceable property rights; and may be supportive of financial market development. When compared to defined benefit plans they can subject participants to financial and agency risks as a result of private asset management, the risk of high transaction and administrative costs, and longevity risks unless they require mandatory annuitization;
- a voluntary “third-pillar” taking many forms (e.g. individual savings for retirement, disability or death; employer sponsored; defined benefit or defined contribution) but is essentially flexible and discretionary in nature. Third pillars compensate for rigidities in the design of other systems but include similar risks as second pillars; and
- a non-financial fourth pillar which includes access to informal support (such as family support), other formal social programs (such as health care and/or housing), and other individual financial and non-financial assets (such as home ownership and reverse mortgages where available). The availability and type of such support for the aged has a

major bearing on the design and implementation of the other pillars, including target benefit levels.⁵⁶

In the further chapters the above categorization will be used. However, it's worth to mention that different authors read other meaning into the term "pillar" and do differentiate "pillars" and "tiers". According to Bernhardt Ebbinghaus of the University of Manheim, pension policy analysis should "distinguish pillars, that is, the question: 'who provides a pension?', from tiers, that is, the question: 'what function does a pension serve in old age income security?' [...] the concept of 'pillars' provides an analytical tool to delineate the different institutionalized providers (or sponsors) responsible for the production of welfare: the state, a single employer, the social partners, and/or the individual. In addition to pillars, pension systems assume different functions with respect to income security or maintenance which is referred to with the concept of 'tiers' – different layers of income protection.

Table 1.2. **Pillars and tiers in pension systems (according to B.Ebbinghaus)**

Tiers	(I) Public pillar	(II) Occupational pillar		(III) Personal pillar
	State	Social partners	Employer	Individual
Third tier (topping-up)				(3) Personal savings
Second tier (earnings-related)	(a) Earnings-related (b) Second tier	(1) Collective agreement	(2) Firm-level pension plan	
First tier (minimum income)	(a) Social assistance (b) Basic pension			

Notes: (a) Bismarckian pension, (b) Beveridge pension; (1–3) alternative private pensions (grey box), sometimes coexistent.

Source: Ebbinghaus B., *Studying Pension Privatization in Europe*. In "The Varieties of Pension Governance" OUP, 2011, p. 10.

The first, basic social security aim is either a guaranteed minimum to all in need (e.g. social assistance) with a means test or a basic pension for all residents independent of any means test, what T.H.Marshall referred to as a 'social citizenship right'. The second tier aims at status maintenance through earnings-related benefits, following the 'equivalence' principle

⁵⁶ Holzmann R., Hinz R.P., Dorfman M. (2008). Pension Systems and Reform Conceptual Framework. The World Bank SP Discussion Paper No. 0824, June 2008, pp. 5-6.

of paid contribution record and expected benefits [...] The final tier is only a ‘topping-up’ of retirement income thanks to the expected returns on invested savings, for instance a fringe benefit offered by an employer to high-skilled employees or a voluntary personal saving schemes offered by financial institutes.”⁵⁷ The taxonomy offered by this model is shown in the Table 1.2. The author’s intention was not to immerse in retrospective analysis of roots and historical development of pension systems, however, to clarify the above citation some short notes should be made. The term “Bismarckian pension” is named after Otto van Bismarck, the first Chancellor of the German Empire and the founder of Prussian welfare state, and is used to characterize the continental approach to old-age pension as a kind of social insurance, resulting in earnings-related pension benefits. The term “Beveridge pension” is named after William Henry Beveridge, a British economist and social reformer, known as one of the authors of post-World War II welfare state in Great Britain, and is used to depict universal basic flat-rate pension benefits set at low level. Bismarckian systems on the one hand and Beveridgean systems on the other imply specific institutional and administrative arrangements which cannot be overturned in the short run. In countries like France and Germany, the Bismarckian system is solidly anchored in the tradition and concerns not only the benefit rule of social insurance but also the working of the labour market. In the UK, on the other hand, the Beveridgean tradition is also a strong part of the political and social life⁵⁸.

Since pension schemes pursue two different (and often contradictory) goals, namely, poverty alleviation and status maintenance, the former leading to broader development of flat-rate pensions and the latter – to wider expansion of social insurance model, it’s quite hard to find nowadays a pure “Bismarckian” or pure “Beveridge” system, as they are interacting actively.

OECD experts note that “retirement-income systems are diverse and often involve a number of different programmes. Classifying pension systems and different retirement-income schemes is consequently difficult”⁵⁹. They offer a combined taxonomy of tiers and types of pension systems – see Figure 1.1. Pension systems, worldwide, include one or more

⁵⁷ Ebbinghaus B. (2011). *The Varieties of Pension Governance: Pension Privatization in Europe*, Oxford University Press, p. 9.

⁵⁸ H. Cremer, P. Pestieau (2003). Social insurance competition between Bismarck and Beveridge. *Journal of Urban Economics*, Vol. 54, p. 195.

⁵⁹ OECD (2013). Architecture of national pension systems. In OECD. *Pensions at a Glance 2013: OECD and G20 Indicators*, Paris: OECD Publishing, p. 120.

of the various *constituent elements*, in different degrees of importance and size that are integrated parts of the pillars and tiers.

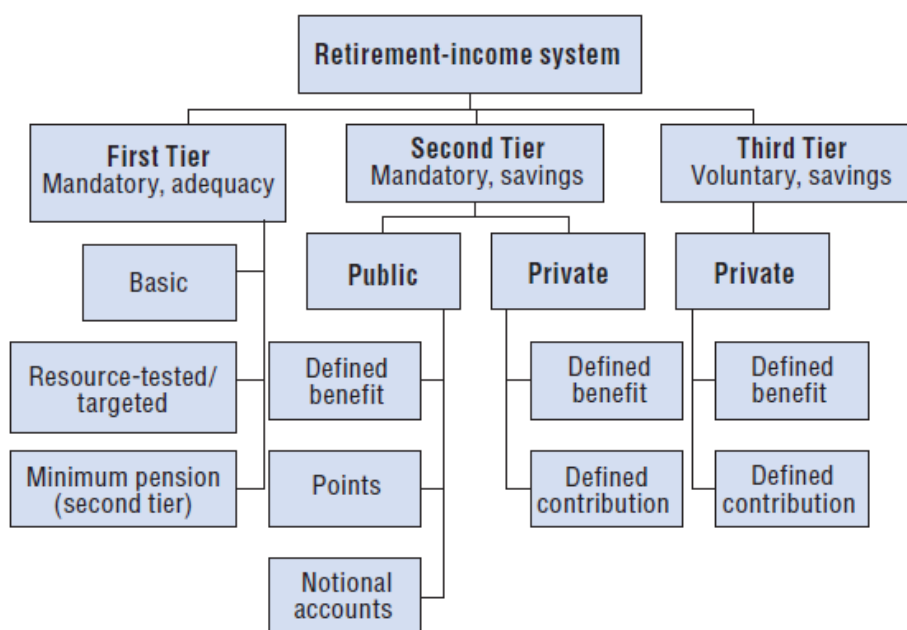


Figure 1.1. **Different types of retirement income provision**

Source: OECD (2013), *Architecture of national pension systems*, in *OECD. Pensions at a Glance 2013: OECD and G20 Indicators*, OECD Publishing. Table 3.2 on page 121.

Pension systems in different countries are made of different sets of these building blocks. The number of blocks varies significantly among countries, either (from one to five or six). The next section looks closer at the characteristics of certain system ‘bricks’.

1.1.3. Elements of pension systems

Non-contributory pensions, minimum-income and minimum-pension guarantees. In many ways the simplest option is a tax-financed pension available to everyone beyond a given age, commonly referred to as a citizen’s pension. As a variant, a tax-financed citizen’s pension can be affluence tested. Alternatively, there can be a guaranteed minimum income available to all poor elderly people on the basis of an income test. The test might look only at income from mandatory pensions, or at total income, or at income and assets. A country can combine a minimum-income guarantee with a higher minimum-pension guarantee.

A non-contributory pension that is tested against the benefit from a contributory pension is mathematically equivalent to a guaranteed minimum pension that is similarly phased out against the contributory pension. The choice of vocabulary is likely to affect the politics of the design of details and may affect the perceptions of workers.

Funded Defined Contribution (DC, FDC) Plans. With funded individual accounts, pensions are paid from a fund built over the years from members' contributions. The contribution rate is fixed, so that a person's pension is an annuity whose size is determined by the size of his lifetime pension accumulation, life expectancy and the rate of interest. Countries with DC systems can use publicly organised investment or private, regulated financial intermediaries.

Defined Benefit (DB) Plans. In a national DB plan, a worker receives a pension based on his history of covered wages and his age at the time he first receives benefits. The pension may be based on the worker's wages in his final few years of work, or on a longer period, up to his entire career. There may be a taxpayer subsidy from general revenues. Most national DB plans are primarily PAYG, with pensions paid out of current revenues with little or no funding, but some have partial funding, well in excess of a minimum reserve, through a build-up of assets held in a trust fund. Some partially funded DB systems hold only government debt. Others hold diversified portfolios (diversified both across assets and across countries). These portfolios can be managed either by government agencies or by private firms hired to handle investment transactions or even to make investment decisions.

There are two important mechanisms in earnings-related schemes that greatly influence the level of benefits that pensioners will eventually receive. The first is the measure of individual earnings used in the benefit formula. Entitlements in these schemes are calculated in relation to the past earnings of the individual worker but the way in which these are measured differs among countries. The measure might be, for example, a period of final earnings, the lifetime average or a number of best years of earnings. When individual earnings increase over a worker's career, as is often the case, using only final or a few last years of earnings will result in a higher benefit than when taking into account early years of the career when earnings were much lower.

The second mechanism is valorisation, which is often over-looked in pension-policy analysis, but has a large effect on pension entitlements. Past earnings are "valorised" to take account of changes in living standards between the time pension rights accrued and the time they are claimed. In final-salary schemes there is obviously no need for valorisation but it is common in schemes where benefits are based on earnings over a longer period.

A simple, generic defined-benefit scheme pays a constant accrual rate, a , for each year of service. It is based on lifetime average revalued earnings. The pension benefit can therefore be written⁶⁰ as:

$$DB = \sum_{i=0}^R w_i(1+u)^{R-i}a \quad (1)$$

where w_i is individual earnings in a particular year, R is the year of retirement and u is the factor by which earlier years' earnings are revalued. In most OECD countries, this is the growth of economy-wide average earnings.

Notional Defined Contribution (NDC) Systems. A fairly recent innovation internationally, pure NDC systems (sometimes also called non-financial defined-contribution systems) are hybrid individual account systems, with elements both of DC and DB. They are conceptually similar to pure DC pensions in that risks are shared by making all adjustments on the benefits side. But they are similar to DB pensions in that they are not fully funded and may be entirely PAYG and determine benefits using formulas in place of market rates of return and mortality projections. NDC systems parallel DC pensions in the approach to pension design:

- Each worker pays a contribution of $x\%$ of his earnings, which is credited to a notional individual account. The contribution rate can be different for workers of different ages and can be changed from time to time;
- The cumulative contents of the account are credited periodically with a notional interest rate, specified by the government in advance, and chosen to reflect what can be afforded;
- At retirement, the value of the person's notional accumulation is converted into an annuity, based on rules for measuring life expectancy and the rules in force for adjusting benefits in payment (for example, for inflation) and using the notional interest rate as the discount rate;
- The account balance is for record keeping only, because the plan does not own matching funds invested in the financial market. This explains the term 'notional'.

At retirement, the pension benefit can therefore be written as

$$NA = \sum_{i=0}^R \frac{w_i c}{A} (1+n)^{R-i} \quad (2)$$

⁶⁰ The equations (1), (2), (4), (5) and (6) are reproduced from OECD (2005). OECD Pensions at a Glance 2005: Public Policies across OECD Countries. OECD Publishing, Paris, p. 71-72.

where, w_i is individual earnings in a particular year, R is the year of retirement, c is notional accounts contribution rate, n is notional interest rate, and A is notional annuity factor, also called the g -value.

More formally, the NDC principles can be expressed by the formula (3) below⁶¹

$$p_t = \frac{(\sum_{k=a}^R \beta w_k I_k)}{G_{A,R,r}} J_t ; t \geq R \quad (3)$$

where p_t is the pension at time t ; β is the contribution rate; w_k is the imposable salary at time k ; a is the time when the individual joins the social security system; R is the time of retirement; $G_{A,R,r}$ is the “ g -factor” (annuity factor) at age A , in time R , given an interest rate r ; I_k is the revalorization factor that affects contributions at preretirement time k ; and J_t is the index that affects the pension at the time of retirement R (post-retirement benefit indexation). Not necessarily all members of the equation (3) must be present in each NDC-system.

Parameters used for defining notional account interest rate (or, in other words, revalorisation factor) vary from country to country. Thus, in Latvia, notional interest rate is set equal to annual growth in wage-bill (i.e. the nationwide total amount of insured wages), valorisation of notional capital in Poland is linked not only to the wage-bill index, but also to consumer price index (and in no case can be lower than inflation), in Sweden, valorisation ratio is linked to average wage growth (3-year sliding average), in Italy – to GDP growth (5-year sliding average).

Despite being developed only recently, NDC pensions have been included as part of the pension system in a number of countries. The very concept of NDC was elaborated by Swedish experts in the beginning of 1990s. This concept was very warmly welcomed by the World Bank, so the Bank counsellors started to recommend NDC to the countries that used the Bank loans (inter alia, to post-socialist countries in Eastern Europe and CIS). Latvia was the first in that list. The country accepted NDC in 1995 and extended it to all working population: everyone retired after 1st of January 1996 (under the normal procedure, not taking into account military and civil servants, etc.) received old-age pension benefit calculated according to the new formula, irrespectively of the age, service record, etc.

Italy also introduced NDC from the 1st of January 1996, but only in respect to those who just was starting their career (in full) and those having service record less than 18 years

⁶¹ the equation (3) is reproduced from Lindeman, D., Robalino, D., Rutkowski, M. (2006). NDC Pension Schemes in Middle- and Low-Income Countries. In Holzmann, R., Palmer, E. (eds). Pension reform: issues and prospects for non-financial defined contribution (NDC) schemes. The World Bank, p. 294.

(partially). Thus, until now nobody in Italy did retire with benefit calculated by that formula. Poland introduced NDC in 1999, and extended it only to persons aged at that time 50 years or younger, so pay-out stage only started there. Sweden launched NDC in 1999, and it fully covers persons born in 1954 and later, (i.e. those who were 45 years old or younger), those between 46 and 60 had part of the pension calculated by old rules, and rest by new formula, persons who were older than 60 in 1999 remained fully in old scheme. The system was also adopted in Russia in 2002 (but quite soon abolished), in Kyrgyzstan (in 1997, only for new entrants to labour markets) and Mongolia (in 2000), some features of NDC can be found in reformed Norwegian pension system and in Brazil.

One of the first extended analyses of the NDC system was made by American researchers John B. Williamson and Matthew Williams (Williamson & Williams, 2003). As they point out, “NDC systems could actually end up redistributing money from the poor to the rich. Pensions are calculated using a uniform actuarial formula that does not take into account lifetime income or longevity risk classes; however, the rich tend to live longer than the poor, which means that the rich will often end up reaping disproportionately more from the system.”⁶² The authors have also noted that another negative effect of an NDC scheme is that, in the absence of a generous guaranteed minimum pension, there will generally be greater income inequality among retirees.

During the last 10-15 years a number of interesting publications came out. The World Bank and the Swedish National Social Insurance Board organised two international conferences on NDC - the Bank wanted to know under what conditions and with what limitations NDC approach can be proposed to its international clients. The first conference in 2003 was devoted to the early experience in pension reforms and to conceptual issues, the second conference took place in 2009 and discussed the lessons learnt during the first decade of NDC practice, including the early effects of financial and economic crises. Both conferences were followed by publishing of collected books based on the papers presented by conference participants. The first book, *Pension Reform: Issues and Prospects for Non-Financial Defined Contribution (NDC) Schemes*, was published in 2006. In the book, prominent pension expert Nicholas Barr stresses that NDC is not the best solution for poor countries: “If the country is poor, the poverty line [...] is relatively close to average earnings.

⁶² Williamson, J. B., Williams, M. (2003). The Notional Defined Contribution Model: an Assessment of the Strengths and Limitations of a New Approach to the Provision of Old Age Security. http://crr.bc.edu/wp-content/uploads/2003/10/wp_2003-181.pdf [accessed 20.05.2015]

Hence there is little gain from an earnings-related pension in general, and NDC pensions in particular”⁶³. Other researchers add that the most effective mechanism to achieve redistribution in an NDC system “is a complementary non-contributory pension that is reduced as the contributory pension increases”⁶⁴.

Annika Sundén⁶⁵ wrote that shift NDC increased the need for general financial literacy. Studies of what people know indicate that they have poor knowledge about the conditions that determine their benefits, and that learning about pensions is difficult. However, six years later⁶⁶ she identified sufficient progress in Swedish respondents’ knowledge and understanding and attributes it to persistent educational campaign.

In 2012-2013 the WB published another two volumes devoted to summing up the lessons from the countries that had implemented the NDC model: *NDC pension schemes in a changing pension world: Volume 1 - progress, lessons, and implementation* and *Volume 2 - gender, politics, and financial stability*. Again, the authors noted that “NDC schemes must be supplemented with special provisions for low-income groups to prevent old-age poverty”⁶⁷. Gender dimension is also very important in any pension system, since men and women are affected differently by the same pension policy because of the more limited labour force attachment of women, their lower earnings when they work, their higher life expectancy, and the likelihood that they will eventually become widows and live alone in very old age. Thus, women face a greater risk of running out of money in their later years. The gender income disparities are also not evened out (and are even amplified) in old age: “fiscal sustainability was achieved in NDC schemes largely by cutbacks on the benefits that were least connected to contributions - disproportionately benefits for women.”⁶⁸

⁶³ Barr, N. (2006). *Non-Financial Defined Contribution Pensions: Mapping the Terrain*. In Holzmann, R., Palmer, E. (eds). Pension reform: issues and prospects for non-financial defined contribution (NDC) schemes. The World Bank, p. 66.

⁶⁴ Lindeman, D., Robalino, D., Rutkowski, M. (2006). *NDC Pension Schemes in Middle- and Low-Income Countries*, in Holzmann, R., Palmer, E. (eds.). Pension reform: issues and prospects for non-financial defined contribution (NDC) schemes. The World Bank, p. 303.

⁶⁵ Sundén, A. (2006). *How Much Do People Need to Know about Their Pensions and What Do They Know?* In Holzmann, R., Palmer, E. (eds). Pension reform: issues and prospects for non-financial defined contribution (NDC) schemes. The World Bank, pp. 325-339.

⁶⁶ Sundén, A. (2013). *The Challenge of Reaching Participants with the Message of NDC*. In Holzmann, R., Palmer, E., Robalino, D. (eds). NDC pension schemes in a changing pension world: Vol. 2 - gender, politics, and financial stability. The World Bank, pp. 257-272.

⁶⁷ Bovenberg, L. (2013). *NDC Schemes Strengths and Weaknesses*. In Holzmann, R., Palmer, E., Robalino, D. (eds). NDC pension schemes in a changing pension world: Vol. 2 - gender, politics, and financial stability. The World Bank, p. 496.

⁶⁸ James, E. (2013). *Gender in the (Nonfinancial) Defined Contribution World: Issues and Options*. In Holzmann, R., Palmer, E., Robalino, D. (eds). NDC pension schemes in a changing pension world: Vol. 2 - gender, politics, and financial stability. The World Bank, p. 29.

Finalising their findings, the authors of the books have identified the following research tasks for the next stage of reflections on NDC:

- Assessing the outcomes of NDC schemes in view of the primary goals of pension systems (coverage, adequacy, sustainability) and in comparison with alternative scheme designs
- Developing better measurements of pension assets and liabilities to guide the introduction, adjustment, and sustainability of NDC schemes
- Clarifying the interaction of NDC (as a central consumption-smoothing pillar) with other pillars and benefits
- Addressing the design and implementation issues of NDC schemes in low- and middle-income countries⁶⁹.

This thesis contributes to some of the above tasks.

Points system (PP – pension points). Workers earn pension points based on their earnings each year. At retirement, the sum of pension points is multiplied by a pension-point value to convert them into a regular pension payment. Pension points are calculated by dividing earnings by the cost of the pension point (k), which can be equal, for example to an average nationwide wage. The pension benefit then depends on the value of a point at the time of retirement, v . Thus, the pension benefit can be written as:

$$PP = \sum_{i=0}^R \frac{w_i v_R}{k_i} \quad (4)$$

where (as in the previous formulae) w_i is individual earnings in a particular year and R is the year of retirement. A significant public-policy variable is the policy for uprating the value of the pension point, shown by the parameter x . By writing the pension-point value at the time of retirement as a function of its contemporaneous value, $v_R = v_i(1+x)^{R-i}$, the equation becomes:

$$PP = \sum_{i=0}^R \frac{w_i v_i}{k_i} (1+x)^{R-i} a \quad (5)$$

where w_i is individual earnings in a particular year, R is the year of retirement, a is constant accrual rate, k is the cost of the pension point, and v is the value of a point at the time of retirement.

⁶⁹ Holzmann, R., Palmer, E., Robalino, D. (eds). (2013). NDC pension schemes in a changing pension world: Vol. 2 - gender, politics, and financial stability. The World Bank, p. xvii.

The last three schemes (DB, NDC and PP) are clearly earnings-related, since their value depends deterministically on individual earnings, w . Furthermore, if the policy for valorising earlier years' earnings is the same as the uprating procedure for the pension point and the notional interest rate, then the structure of the three equations is very similar. In this case, the defined-benefit accrual rate is equal to the ratio of the pension-point value to its cost and to the ratio of the notional accounts contribution rate to the annuity factor, or algebraically:

$$a = \frac{v_i}{k_i} = \frac{c}{A} \quad (6)$$

where a is constant accrual rate, k is the cost of the pension point, v is the value of a point at the time of retirement, c is notional accounts contribution rate, and A is notional annuity factor (the g -value).

The equation (6) has two important implications for the comparison of these different types of pension schemes. First, the effective accrual rate can be calculated for pension-point schemes (the ratio of point value to cost) and notional-accounts schemes (the ratio of the contribution rate to the annuity factor). Secondly, the valorisation procedure in defined-benefit schemes, the uprating policy for the pension-point value and setting the notional interest rate are exactly parallel policies. Different choices of variables have the same effect in the different types of systems.

Although defined-benefit, points and notional-accounts systems can appear very different, they are in fact closely related variants of earnings-related pension schemes.

Public employee pensions. Pension systems set up by government for public employees (civil servants) are widespread. Most are defined benefit systems, although some have been defined contribution or have offered defined contributions as an option. Some public employees are included in the national mandatory system, with the public employee pension being supplementary, as is done for employees of large corporations. Other countries exempt some or all public employees from the mandatory national system.

Voluntary pensions. These are separate from mandatory arrangements, and arise in two ways. An employer may establish a pension fund which is voluntary to the employer, in that it is not mandated by government, although a worker may not have a choice if he joins a firm with a pension that is mandatory for the firm's employees. For workers covered by the mandatory national system, such voluntary pensions can be thought of as supplementary. In addition, in many countries, workers can choose to make contributions to a voluntary

individual plan. Voluntary pensions of both types typically receive favoured treatment for the purposes of income tax.

Countries vary widely in the size of their mandatory systems, and hence in the amount of room for voluntary arrangements. This can be seen in the variation in the rates of mandatory pension contributions. This naturally results in different average replacement rates.

Apart from the major elements shown in the Figure 1.1 and described above, the institutional design of pension systems includes also a set of specific policies, regulating pensionable age and possibilities of early and deferred retirement, taxation and indexation of pension benefits, parental pensions and other policies for smoothing gender disparities, measures for control over private pension funds, etc. In respect of the Baltic States, these peculiarities are covered in details in further chapters. In general, the most essential policies relate to the following aspects:

Ceilings on pensionable earnings. Most countries do not require high-income workers to contribute to the pension system on their entire earnings. Usually, a limit is set on the earnings used both to calculate contribution liability and pension benefits. This ceiling on the earnings covered by the pension system has an important effect on the structure, size and cost of the second-tier systems. The rationale behind such ceilings is the view that higher-income workers can save individually if they want to reach a high replacement rate. High ceilings or the absence of a ceiling means that high-income workers receive a high replacement rate and there is little need for take-up of voluntary private pensions.

Adjusting benefits after retirement (indexation). Once a person has retired, pensions based on a nominal annuity are vulnerable to inflation. A major question, therefore, is whether pensions are protected against inflation, and by what mechanism. Countries vary: some index benefits to prices, others to wages, and others to a weighted average of the two.

Early / deferred retirement. Many countries offer a flexible approach to the time of retirement, allowing persons to choose it within a certain period, stimulating them to retire later with special financial incentives or, contrariwise, imposing a ‘fine’ on those who opt to go on pension earlier.

These various pension elements vary in design and are assembled in very different ways and with different relative importance of certain components across countries.

1.2. Political economy of pensions

Canadian professor Robert Brown defines a pension system as “a social contract that sets out a process to decide what proportion of a country’s gross national product its elderly

residents can consume without any need for them to be in the active workforce. That is its essence on a macroeconomic level. On a microeconomic level it is a process to decide what proportion of each worker's output will be transferred to its non-active elderly population for their consumption"⁷⁰.

There are numerous discussions of what kinds of financial portfolios are safest or most profitable, whether government promises are more secure than assets owned or held in the names of individuals, and what share of the total present public pension expenditures should be covered by each generation. But the key factor is the production and consumption of goods. Individuals must exchange current production for a claim on future production. They may either save part of their earnings to buy goods and services later from younger workers; or they may rely on a promise from children, an employer, or the government to provide adequate goods and services in their retirement years.

Both funded and pay-as-you-go plans are claims on future output, and they are of no use to retirees if the country is not producing enough goods and services to meet those claims. Pensioners are not interested in currency as such, but in consumption - food, heating, medical services, seats at cinemas, and so on. Money is irrelevant unless the goods and services are there for pensioners to buy.

From the point of view of sustainability, the central variable is the level of national output, not the specific methods by which pensions are financed.

With PAYG⁷¹ one can express average pension benefit, p , as

$$p = \frac{\tau w}{d} \quad (7)$$

where τ is the social security contribution rate, w – the average real wage level and d – the effective dependency rate (number of pensioners divided by the number of workers).

In other words,

$$\tau w L = p N \quad (8)$$

where L is the number of workers and N is the number of pensioners.⁷²

The effective dependency rate d differs from the old-age dependency rate (i.e. number of persons in pensionable age to the working age population), as it takes into account both the

⁷⁰ Brown, R. L. (2014). The essence of social security: debunked myths. *Australian Journal of Actuarial Practice*, Vol. 2, p.5.

⁷¹ Since Notional Defined Contribution (NDC) and Pension Points (PP) designs are versions of PAYG, the formulae (7) and (8) below fully refer to them.

⁷² Formula (7) is used by Pierre Pestieau and formula (8) by Nicholas Barr, but mathematically they are identical.

unemployment rate and effective retirement age (which normally is lower than the official pensionable age).

To meet the above constraint when the old age dependency ratio increases, some of the other variables must adjust:

- the contribution rate, τ
- labour participation of the young and of the old, L (and/or N)
- the wage rate, w , that is, the productivity
- the level of pension, p

The last variable, in its turn, can be adjusted by tuning numerous parameters in formulae (1) - (5) discussed above.

As Pierre Pestieau points out, “the heavily reliance on the pay-as-you-go pensions provisions has been justified during decades of rapid growth in population and productivity. However, with the prospect of an unprecedented ageing of the population, combined with a decline in productivity growth, one has the feeling that shifting to fully funded schemes would contribute to avoiding unbearable pressure on public finance.”⁷³ The escape, he believes (and many other economists and social researches share the opinion, among them the already cited above Robert Holzmann and Richard Paul Hinz⁷⁴), is in moving to funded financing and privatization of pensions. He contradistinguishes two polar cases: an ideal system from the ‘Continental’ (Bismarckian) viewpoint widely accepted just after World War II, and an extreme form of privatized social security as in Chile (see Table 1.3).

In most proposed reforms of social security systems, the key issue is that of shifting from the pay-as-you-go method to fully funding in order to allegedly foster savings and meet financial difficulties. It is also anticipated that this shift would bring along a move towards less Intragenerational redistribution, higher rate of return under individual accounts and better labour market incentives.

International organizations such as the World Bank and OECD, and national policy-makers and their economic advisers advocated the above shift, especially fostering the implementation of the second pillar – mandatory, privately managed, funded, defined contribution - pension schemes in many countries.

⁷³ Pestieau P. (2006). *The Welfare State in the European Union: Economic and Social Perspectives*. OUP, p. 111.

⁷⁴ Holzmann R., Hinz, R. (2005). *Old Income Support in the 21st Century: An International Perspective on Pension Systems and Reform*. Washington, D.C.: The World Bank.

Table 1.3. Two polar typical social security regimes

Characteristics	Bismarckian	Chilean
Financing principle	PAYG	funding
Financing sources	mostly contributions	wage related contributions
Intergenerational redistribution	to the benefit of older generations	nil
Universality	universal coverage	restricted coverage
Intragenerational redistribution	earnings-linked benefits	actuarial fairness
Organization	unions & management	private
Accounts	collective	individualized
Efficiency	strong distortions	few distortions
What is defined	defined benefits	defined contributions
Annuisation	mandatory	optional
Trust	low	high in the beginning

Source: Pestieau, P. (2006). *The Welfare State in the European Union: Economic and Social Perspectives*. OUP, Table 10.6 on p. 114.

However, a number of prominent scholars were not so enthusiastic about shifting to funded pensions as panacea. Take an illustration, in 1999 a Nobel laureate in Economic Sciences Joseph Stiglitz (and then Senior Vice President and Chief Economist at the WB) and Peter R. Orszag presented paper called “Rethinking Pension Reform: Ten Myths About Social Security Systems”⁷⁵, where they disproved the arguments of mandatory funded schemes proponents - not putting in question the very need for reforming pension systems.

The ten myths examined in the paper were:

Macroeconomic myths

- Myth #1: Individual accounts raise national saving
- Myth #2: Rates of return are higher under individual accounts
- Myth #3: Declining rates of return on pay-as-you-go systems reflect fundamental problems
- Myth #4: Investment of public trust funds in equities has no macroeconomic effects

Microeconomic myths

- Myth #5: Labor market incentives are better under individual accounts
- Myth #6: Defined benefit plans necessarily provide more of an incentive to retire early
- Myth #7: Competition ensures low administrative costs under individual accounts

Political economy myths

- Myth #8: Corrupt and inefficient governments provide a rationale for individual accounts
- Myth #9: Bailout politics are worse under public defined benefit plans
- Myth #10: Investment of public trust funds is always squandered and mismanaged

⁷⁵ Orszag, P. R., Stiglitz, J. E. (2001). *Rethinking Pension Reform: Ten Myths about Social Security Systems*. In Holzmann, R., Stiglitz, J. E. (eds.). *New Ideas about Old Age Security: Toward Sustainable Pension Systems in the 21st Century*. Washington, DC: World Bank, pp. 17-56.

The paper consistently debunked these myths, implying that the arguments most frequently used to promote individual retirement accounts are often not substantiated in either theory or practice. It therefore concludes that policy-makers must adopt a much more nuanced approach to pension reform. It is worthy of note that debunking does not mean that the respective contrary statements are true instead, it means that the mere introducing of the mandatory funded private pillar does not lead to the promised effects, that are rooted in other reasons and can be achieved by different means.

Debunking the myths about funded pensions became “popular” among the scholars, and in 2000 Nicholas Barr presented his paper ‘Reforming Pensions: Myths, Truths, and Policy Choices’⁷⁶. He also chose ten myths, divided into three sets:

Macroeconomics of pension

- Myth #1: Funding resolves adverse demographic
- Myth #2: The only way to pre-fund is through pension accumulation
- Myth #3: There is a direct link between funding and growth
- Myth #4: Funding reduces public pension spending
- Myth #5: Paying off debt is always a good policy

Pension design

- Myth #6: Funded schemes have better labour market related incentives
- Myth #7: Funded pensions diversify risks
- Myth #8: Increased choice is welfare improving
- Myth #9: Funding does better if real returns exceed real wage growth

Role of government

- Myth #10: Private pensions get governments out of pensions business.

Likewise, Barr admits that those may have an element of truth, but are not strong arguments for a shift towards funding.

After more than a decade, in 2013, Eelco Zandberg and Laura Spierdijk of the University of Groningen, having examined whether changes in the degree of pension funding affect economic growth on the sample of 54 countries during 2001–2010, did not find any effect of changes in the degree of funding on growth in the short-run. For the long-run the evidence is mixed. Although a growth model with overlapping observations suggests that

⁷⁶ Barr, N. (2002). Reforming pensions: Myths, truths, and policy choices. *International Social Security Review*, Vol. 55, pp. 3–36.

there is a positive effect of funding changes on economic growth, they found no effect in a simple cross-sectional model⁷⁷.

Similarly, Robert Brown, have re-assessed those myths in 2014 on the premise that the financing of pension system should be effected in a manner that absolutely minimises the expense burden on the participants and the risks that the participants must assume. He concluded that “the least desirable design for a social security system is an individual account defined contribution system.”⁷⁸

Nicholas Barr continued to vindicate his judgment in his later works, some of those co-authored by Peter Diamond, another Nobel laureate in Economic Sciences. To say, in their 2006 paper “The Economics of Pensions” they demonstrate that both private funded plans and government pay-as-you-go systems are subject to *risk and uncertainty*, which, according to their classification, may be grouped as:

- Macroeconomic shocks affect output, prices or both.
- Demographic shocks affect all pension schemes, by affecting market prices and quantities and pension claims.
- Political risks affect all pension schemes because all depend critically on effective government.
- Management risk can arise through incompetence or fraud, which imperfectly-informed consumers generally cannot monitor effectively.
- Investment risk: private and public pension accumulations held in the stock market until retirement are vulnerable to market fluctuations.
- Annuities market risk: for a given pension accumulation, the value of an annuity depends on remaining life expectancy and on the rate of return the insurance company can expect over those years (and is thus also a form of investment risk).⁷⁹

While governments may renege on pension promises, their pay-as-you-go systems are largely protected from inflation because the inflated pensions they pay are covered by the inflated currencies they take in through taxes.

Funded schemes, whether public or private, are more exposed to inflation risk. And private funded schemes face additional risks, including the incompetence or fraud of fund

⁷⁷ Zandberg, E., Spierdijk, L. (2013). Funding of pensions and economic growth: are they really related?. *Journal of Pension Economics and Finance*, Vol.12, pp. 151-167.

⁷⁸ Brown, R. L. (2014). The essence of social security: debunked myths. *Australian Journal of Actuarial Practice*, Vol. 2, p.11.

⁷⁹ Barr, N., Diamond, P. (2006). The Economics of Pensions. *Oxford Review of Economic Policy*, Vol. 22 (1), p. 25.

managers, market fluctuations in the value of pension accumulations held in equity markets, and the value of annuities, which depend on life expectancies and the validity of actuarial projections⁸⁰.

NDC pensions avoid some of the risks that private pensions face, notably management risk and investment risk. They may also reduce annuities market risk, if only because with a single, nationwide annuities pool, the law of large numbers will reduce the variance facing the insurer (that is, the state). This is an unambiguous advantage. However, the advantage is inherent in state-run PAYG schemes generally, rather than NDC schemes specifically.⁸¹

Since nobody can be well informed about the future, government pension administrators, private fund managers, and individuals all face the issue of imperfect information. For individuals dependent on defined contribution plans, however, the problem is worse because private pensions are complex and based on an array of financial institutions and instruments.

People can be myopic and/or imperfectly informed, giving a justification for compulsion. The problem is nontrivial, and means that the simple assumption of rational utility maximization may not hold. There is a distinction between an *information problem* and an information-processing problem. An information problem can be resolved by providing the necessary information, such as the capacity of different computers, after which the individual can make his or her own choices. With an information-processing problem, in contrast, the problem is too complex for agents to make rational choices, even if the necessary information is provided. The problem can arise where the time horizon is long, as with pensions; or where the good or service involves complex probabilities, including, for example, life expectancy (the failure in this case is an inability to process probabilities); or where the information is inherently complex, as with complicated pension products.

The workings of financial markets are poorly understood, even in the industrial countries with the most sophisticated systems and options.

A funded system makes “a number of assumptions that are patently false.

1. Workers are capable of optimal investing and asset management.
2. If workers are not capable themselves, then they can purchase asset management at a very low expense ratio.

⁸⁰ Barr, N. (2002). The Pension Puzzle: Prerequisites and Policy Choices in Pension Design’, IMF, Economic Issues No. 29.

⁸¹ Barr, N. (2006). Non-Financial Defined Contribution Pensions: Mapping the Terrain. In Holzmann, R., Palmer, E. (eds.). *Pension Reform: Issues and Prospects for NCD Schemes*. The International Bank for Reconstruction and Development / The World Bank, p. 61.

3. Workers, if given investment fund options, will choose wisely and will also follow a life-cycle model of investing where they slowly move from a high equity portfolio to more fixed income as they near retirement (or, even better, they buy deferred annuities as they near retirement).

4. Workers can buy individual life annuities as a fair actuarial price.⁸²

Each of these assumptions is false.

As demonstrated by Annika Sundén, a senior economist at the Swedish National Social Insurance Agency, “previous research has documented that individuals often have limited financial knowledge and know little about the characteristics of their public and occupational pension plans or how much to expect in retirement benefits. This could mean that many workers reach retirement with inadequate resources and as a consequence will need to postpone retirement or lower consumption in retirement.”⁸³ The formulae used in defined benefit schemes are, normally, quite straightforward, making it easy for a worker to estimate the expected benefit and to compare the replacement rate with the advice provided by financial planners about how much of preretirement earnings should be replaced to maintain living standards in retirement. Even when more complicated formulae are applied, it is easy for pension administrators to calculate replacement rates and communicate this information to beneficiaries.

Sundén stresses, that, “in contrast, in a DC plan, benefits depend on the total amount contributed to the plan and the rate of return on those contributions. At retirement, the account balance is converted to an annuity or, in some cases, paid out as a lump sum. Because benefits are not defined but depend on contributions, it is difficult to express the expected benefit in terms of a replacement rate. It is also difficult to estimate benefits because they vary with the rate of return.”⁸⁴

Yet when the state does its best to translate the formulae into “understandable” figures, the people seem not to be fully aware of their meaning. She instances a Swedish experience with so-called “orange envelopes” – annual account statements sent out to all participants of

⁸² Brown, R. L. (2014). The essence of social security: debunked myths. *Australian Journal of Actuarial Practice*, Vol. 2, p.8.

⁸³ Sundén, A. (2006). *How Much Do People Need to Know about Their Pensions and What Do They Know?* In Holzmann, R., Palmer, E. (eds). Pension reform: issues and prospects for non-financial defined contribution (NDC) schemes. The World Bank, p.325.

⁸⁴ Sundén, A. (2006). *How Much Do People Need to Know about Their Pensions and What Do They Know?* In Holzmann, R., Palmer, E. (eds). Pension reform: issues and prospects for non-financial defined contribution (NDC) schemes. The World Bank, p.327.

public NDC and FDC schemes starting from 1998, since the new pension system had been implemented. These statements include information on the account balance; pension credits earned during the year, and the indexation of the account balance—that is, the rate of return. The orange envelope also includes account information on the Premium Pension (FDC). In addition to providing information about expected (projections for three different retirement ages – early, normal and deferred retirement), the orange envelope summarizes how the reformed pension system works and promotes the main message that lifetime earnings determine benefits. Five years later, in 2003, only about 10 percent of respondents looked at all of the information in the envelope and less than half of all participants look at the benefit projection. The results do not reveal any major differences between demographic groups, although women tend to read the materials to a larger extent than men, and low-income and younger individuals are less likely to examine the materials.

Sundén concludes that “it is clear that a large share of participants does not know the details about their pension schemes and that this has negative effects on savings and retirement decisions. [...]The level of complexity of the schemes implies that the costs associated with understanding the pension scheme could appear greater than the benefits, even if information is available. Furthermore, the retirement process is something individuals only go through once, so they do not have the benefit of learning by doing. For many individuals, retirement is seen as something unpleasant and a cause for worry, which means that thinking and planning for retirement can also involve psychological costs. Workers may also fail to learn more about their public and private pensions because they expect that public pension system will provide adequate benefits. As a result of the high costs of learning about pensions, workers often procrastinate about savings and retirement decisions. [...] Information and education leading to improved financial literacy clearly is important, but perhaps equally important is to design pension plans that make it easy for participants to make decisions.”⁸⁵

Any method of arranging for future consumption has *administrative costs*. These include the costs of record-keeping and the costs of transactions insofar as there are accumulations of assets or purchases of benefit streams. Different ways of organizing future

⁸⁵ Sunden, A. (2006). *How Much Do People Need to Know about Their Pensions and What Do They Know?* In Holzmann, R., Palmer, E. (eds). *Pension reform: issues and prospects for non-financial defined contribution (NDC) schemes*. The World Bank, pp. 338-339.

consumption have very different costs and thus provide very different levels of future consumption⁸⁶.

Funded individual accounts, where there is a choice of the provider of investment services or a choice of the individual portfolio directly from the market, have significant transactions costs.

Individual accounts with a government-selected portfolio or limited set of alternative investments can have lower transactions costs, but can easily have a poor rate of return if the government selects investments poorly or in pursuit of some goal other than the accumulation of assets for the provision of retirement income.

The high administrative costs of funded individual accounts with wide choice are largely a fixed overhead per account together with a large fixed cost to set up the network. The charges by private providers of accounts of mutual funds do not typically match the pattern of costs and cover costs in attracting customers as well as profits. Administrative costs erode the rate of return on pension accumulations, and the problem is particularly acute for smaller accumulations, i.e. those of people with lower earnings and, even more so, in countries where most people have low earnings. For example, a charge of 1% of the balance in an account per year would reduce the balance at the end of a 40-year career by roughly 20% because of the reduction in the net compound interest.⁸⁷

Many arguments over pension design or reform can be simplified by separating issues requiring policy makers to make important choices from those where all pensions systems are subject to core prerequisites.

A variety of policies are available for containing the ageing population pressure. The most vital is increasing output, which is the only way of assuring that the financial claims on future output can be converted into enough goods and services to meet pensioner needs. The point is fundamental - the central variable is output; how the finance of pensions is organized is secondary. The argument that funding by itself resolves adverse demographics is a myth.⁸⁸

Demographic changes entail a reduction in production that has a negative effect on PAYG pension systems through the narrowing of the base for collecting contributions and a respective reduction in available resources for paying out pension benefits. In funded pension

⁸⁶ Barr, N., Diamond, P. (2006). The economics of pensions. *Oxford Review of Economic Policy*, Vol. 22(1), pp. 15-39.

⁸⁷ Barr, N., Diamond, P. (2010). *Pension Reform in China: Issues, Options and Recommendations*, China Economic Research and Advisory Programme, p. 22. Available from <http://economics.mit.edu/files/6310>

⁸⁸ Barr, N. (2002). *The Pension Puzzle: Prerequisites and Policy Choices in Pension Design*, IMF, Economic Issues No. 29.

systems, this dependence is also inevitable, though more complicated. It manifests itself through the mechanism of supply and demand either on the commodity market, or the securities market.

If a working-age generation X in one time period is replaced in the next time period(s) by a working-age generation(s) of less numerical strength, there will be a significant accumulation of pension assets held by the older generations, while the labor force will decline. A large number of older people will seek to use their savings to finance the desired level of consumption after retirement. The level of expenditure of this generation X will exceed the level of pension contribution rate of the younger and smaller generations of workers.

Provided that production does not grow, two types of imbalance will occur.

(A) Should pensioners (for a claim on future production) accumulate cash assets such as government bonds, the desired consumption of pensioners will exceed the potential savings of workers. Excess demand in the commodity market will lead to higher prices and reduced purchasing power of retired annuitant.

(B) Should pensioners (for a claim on future production) accumulate cash assets such as shares, the desired volume of the assets sale by pensioners will exceed the desired volume of purchase of these assets by workers. Excess supply in the securities market will reduce prices of pension assets, reduce pension savings and therefore affect the amount of annuity.

In both cases retirees shall not really get the pension they were expecting.⁸⁹

Policies are needed to raise the productivity of each worker, as well as to increase the number of workers. Promoting investment in more and better capital equipment and in training and education for workers can increase their productivity. Labor supply can be enlarged through tax policies that do not penalize part-time employment, by raising the age of retirement, by importing labor directly, and through importing labor indirectly by exporting capital to countries with a young population.

Policies also are required to address the fiscal burdens governments face with a rising proportion of retirees. One approach to reducing future spending is to cut average pensions; another is to reduce the number of pensioners. Cutting pensions, however, may worsen

⁸⁹ The example is taken from - Аналитический доклад «Итоги пенсионной реформы и долгосрочные перспективы развития пенсионной системы Российской Федерации с учетом влияния мирового финансового кризиса.» Министерство здравоохранения и социального развития Российской Федерации, 2010. Available from http://www.minzdravsoc.ru/docs/mzsr/insurance/6/#_ftnref3 [Accessed March 20, 2012]

pensioner poverty as well as create political pressures. A more desirable approach is to reduce the number of pensioners by raising the age of retirement—a policy that helps for both fiscal and social policy reasons, particularly where longevity is rising generally.

Many governments still have the programs encouraging people to take early retirement. And the explanation for existence of such programs lies in feature of the labour market itself. As P.Pestieau pinpoints, “the life-cycle fluctuations in wages do not correspond to fluctuations in productivity. As the start of a person’s working life productivity will tend to exceed wages, whereas at the end the opposite is the case. [...] Employers encourage early retirement programs in order to get rid themselves of expensive labour – costly, above all, in relation to its productivity. Furthermore, in some countries, there is a widespread belief [...] that any early retirement of older workers creates vacancies for younger workers.”⁹⁰ However, it is now widely recognized that apart from temporary, short-run effects, that view is erroneous in a market economy, where it is incorrect to think about the labour market in terms of a fixed number of jobs. The number of jobs in the economy is responsive to the availability of labour.

For government pay-as-you-go-plans, what really matters is total public spending, not pension spending specifically. A second way to contain fiscal pressures, therefore, is to cut other public spending to increase funds available for paying pensions.

A third approach is to set aside resources now to meet future pension spending. Building up pensions funds is one way - but not the only way.

As repeatedly stressed by the scholars, before a country can establish or reform a pension scheme, whether public or private, funded or pay-as-you-go, it must have a strong and effective central government as well as a private sector that is mature enough for the chosen new system or the reform plans. The role of government is to assure both the fiscal and political sustainability of the pension system.

Economic growth must be strong enough to provide for a central goal of government policy everywhere: to increase general living standards.

Public pensions require that the government must be able to collect contributions effectively, to maintain records over the years for workers who will be mobile both geographically and across firms, to make actuarial calculations to adjust benefit levels for the age at which they start, and to pay pensions in an accurate and timely way. Government needs to project future contributions and benefits in order to adapt the system slowly, and with

⁹⁰ Pestieau, P. (2006). *The Welfare State in the European Union: Economic and Social Perspectives*. OUP, p. 108.

significant lead times, to evolving financial capacity. Separately, pensions require effective coordination between central, provincial and local levels of government, if all three are to have a role in supporting the elderly.

Additional technical capacity is needed for fully funded individual accounts, particularly in arranging for workers to select portfolios, as well as investing funds. Also important is the process of educating workers – both about what they have accrued at the time and what they can expect to have at retirement, and about how to think about the choices they can make. In an economy with vast numbers of workers with no experience in making such financial decisions, it is critical to provide education on the implications of different choices.

Private pensions depend critically on government to set rules and to enforce them⁹¹. Government must be able to enforce compliance with contribution conditions, to protect asset accumulations, to maintain the macroeconomic stability which is essential for long-term private accumulations, and to ensure effective regulation and supervision of financial markets – markets that do not function well without significant government regulation and supervision – including the insurance and annuities markets. Such regulation is vital to protect individuals in areas too complex for them to protect themselves. More generally, private markets function best when government, in its legislative role, has put in place clear good rules (avoiding bad ones) and where enforcement is even-handed, non-corrupt, prompt and predictable. As noted by Bernhard Ebbinghaus, “while the state partially retreated from its responsibilities to finance adequate state pensions, the scope of public regulation and control of private pensions increased. [...] This so called ‘paradox of privatization’ led to more state intervention.”⁹²

Political sustainability requires political will strong enough to support the long process of establishing or reforming a pension system and to maintain confidence in private plans. Preserving public confidence in private pension plans requires effective government regulation of financial markets to protect consumers in areas too complex for them to protect themselves. This requires tightly drawn up regulatory procedures and a body of people with the capacity and will to enforce those procedures. This task is particularly difficult because pensions are complex instruments, requiring highly skilled regulators whose abilities command a high price in the private sector.

⁹¹ Barr, N. (2014). *The Role of Public and Private Sectors in Ensuring Adequate Pensions: Theoretical Considerations*. In Clements, D. et al. (eds.). *Equitable and Sustainable Pensions: Challenges and Experience*. Washington, D.C.: International Monetary Fund, p. 74.

⁹² Ebbinghaus, B. (2011). *Studying Pension Privatization in Europe*. In Ebbinghaus, B. (ed.). *The Varieties of Pension Governance: Pension Privatization in Europe*. Oxford University Press, pp. 7-8.

Similar requirements hold for mandatory pensions that rely on private providers.

Countries choosing to base their pensions systems on private financial markets and investments must first have well-established financial markets, as well as adequate public and government understanding of and trust in them. If pension funds, whether public or private, hold only government bonds, these schemes are, in reality, pay-as-you-go, since both the interest payments and subsequent redemption depend on future taxpayers. Private pensions that only use government bonds provide no real budgetary gain, no channeling of resources into productive investment, and considerable extra administrative cost.

Another apparent solution is to use the pension savings of a poorer country to buy Western financial assets. The argument against this approach is that it forgoes the growth of domestic investment and domestic employment.

Private sector capacity is also essential, given the heavy administrative demands of private pensions. A lack of capacity runs the risk that excessive administrative costs will erode the investment return to pensioners. Since there is a fixed cost to running an individual account, the issue is of particular concern for small pensions.

A further prerequisite in private financial markets is *transparency*. It is vital both for political reasons, to ensure the legitimacy and hence political sustainability of reform, and for economic reasons, as a necessary ingredient if pensions are to steer savings into their most productive use⁹³. Private pensions require transparency about the costs of tax relief, and through annual statements giving details of a person's pension accumulation, predicted pension, and administrative charges. Statements, furthermore, must be on uniform standards so consumers can make comparisons easily and accurately.

Although the basic requirements for all sound pension systems are extensive, countries must make a range of difficult, often controversial, choices to meet their varied capacities and needs.

A central question is whether the first pillar should be a guarantee, available only (or mainly) to those who need it, or a base on which other pension income builds. The first-pillar pension could be flat-rate (hence going to all pensioners): it could be a flat-rate below the poverty line, equal to the poverty line, or above the poverty line. Whatever the design of the first-pillar pension, a minimum income in old age can be guaranteed through tax-funded social assistance for those whose income from all other sources leaves them in poverty.

⁹³ Barr, N. (2002). *The Pension Puzzle: Prerequisites and Policy Choices in Pension Design*, IMF, Economic Issues No. 29.

The smaller the pension and the greater the proportionality between contribution and benefit, the less redistribution there is. Pensions strictly proportional to contributions bring about no redistribution between rich and poor except to the extent that the rich may live longer. A flat-rate pension financed by a proportional contribution will be more redistributive.

The second-pillar pension provides for spreading consumption more equally between working and retirement years. The argument for a mandatory second-pillar pension can be couched in a number of ways: as justifiable paternalism; because imperfectly informed younger people will make poor choices from the perspective of their lifetime needs; to ensure insurance against unknowable events; or to avoid moral hazard in the presence of a generous first-pillar pension - if there is a minimum guarantee, low-income people will have little incentive to make voluntary provision.

Individual funded accounts leave the individual facing most of the risk, in particular from differences in pension fund performance. The individual may also face inflation risk, though this can be shared partly or wholly with the taxpayer if the state provides indexation. A major design question, therefore, is the extent to which government offers pensioners protection against inflation and through what mechanism.

From an economic perspective, the difference between pay-as-you-go and funding is secondary⁹⁴. The key variable is effective government, a prerequisite for well-run pensions, however they are organized. It is not possible to get government out of the pensions business. Most fundamentally, government must manage the economy so as to facilitate the growth of output. Then, if pension systems are public, government must inspire confidence that the promises it makes will be kept. To the extent systems are private, government must sustain a regulatory framework that ensures high industry standards and transparency in private capital markets.

1.3. Major criteria for assessment of pension systems and their interdependence

The conceptual framework for assessing the existing pension systems and the degree of the necessity of a reform was developing with time. In 2005, a group of the World Bank experts prepared the report that incorporated the lessons learnt from the Bank's experience and research and was intended to conceptualize and explain the current policy within the Bank and provide a guide to the criteria and the standards applied to the provision of

⁹⁴ Barr, N. (2002a). Reforming pensions: Myths, truths, and policy choices. *International Social Security Review*, Vol.55, p. 31.

pensions⁹⁵. The authors have formulated four primary goals of any successful pension system: it should be adequate, affordable, sustainable and robust:

- An adequate system is one that provides benefits to the full breadth of the population, the benefits are sufficient for preventing old-age poverty on a country-specific absolute level in addition to providing reliable means to smooth down the lifetime consumption for the majority of the population.
- An affordable system is one that is within the financing capacity of individuals and the society and does not unduly displace other social or economic imperatives or have untenable fiscal consequences.
- A sustainable system is one that is financially sound and can be maintained over a foreseeable horizon under a broad set of reasonable assumptions.
- A robust system is one that has the capacity to withstand major shocks, including those coming from economic, demographic, and political volatility.

This concept underwent further development in 2008: the primary evaluation criteria were expanded to include two new parameters: equity and predictability, and they were not merely added at the end of the list, but rather notably ranged prior to the criterion of robustness. The wording of the previously mentioned criteria was not changed, while the criteria of equity and predictability have been formulated as follows:

- An equitable system is one that provides the income redistribution from the lifetime rich to the lifetime poor, it is consistent with the societal preferences in a way that does not tax the rest of society external to the system; and one that provides the same benefit for the same contribution.
- A predictable benefit is provided by a system where (i) the benefit formula is specified by law and not subject to the discretion of policymakers or administrators, (ii) the defined benefit formula is designed to insulate the individual from inflation and wage adjustments prior to retirement or the defined contribution investment policy can insulate the beneficiary from material effects on benefits from asset price adjustments prior to retirement; and (iii) the benefit is automatically indexed during retirement so as to shield the worker from the effects of price adjustments⁹⁶.

⁹⁵ Holzmann, R., Hinz, R.P. (2005). *Old Income Support in the 21st Century: An International Perspective on Pension Systems and Reform*. Washington, D.C.: The World Bank.

⁹⁶ Holzmann, R., Hinz, R.P., Dorfman, M. (2008). Pension Systems and Reform Conceptual Framework. Social Protection Discussion Paper 0824.

In his very recent paper, Robert Holzmann explains that the reassessment of what constitutes a good target for a pension system reform is influenced, inter alia, by the refocus on the basic income protection for the elderly, as reforms of earning-related schemes towards a tighter contribution-benefit link limit the capability to redistribute income towards low-income groups within the schemes⁹⁷.

A similar set of criteria has been developed also by the EU⁹⁸. Member States agreed on a set of objectives for their pension systems:

“Member States are committed to providing adequate and sustainable pensions by ensuring:

(1) adequate retirement incomes for all and access to pensions which allow people to maintain, to a reasonable degree, their living standard after retirement, in the spirit of solidarity and fairness between and within generations;

(2) the financial sustainability of public and private pension schemes, bearing in mind pressures on public finances and the ageing of populations, and in the context of the three-pronged strategy for tackling the budgetary implications of ageing, notably by: supporting longer working lives and active ageing; by balancing contributions and benefits in an appropriate and socially fair manner; and by promoting the affordability and the security of funded and private schemes;

(3) that pension systems are transparent, well adapted to the needs and aspirations of women and men and the requirements of modern societies, demographic ageing and structural change; that people receive the information they need to plan their retirement and that reforms are conducted on the basis of the broadest possible consensus”.

When compared to the above-cited definitions, in the EU list, ‘adequacy’, ‘sustainability’ and ‘affordability’ are named directly (the last one as a precondition of ‘sustainability’); the notion of ‘equity’ appears twice: firstly as a part of ‘adequacy’ (“spirit of solidarity and fairness”), and, secondly, as a part of ‘sustainability’ (“socially fair manner”); ‘predictability’ is expressed in the terms of ‘transparency’ and ‘security’; and ‘robust’ systems are qualified as ‘well adapted’.

⁹⁷ Holzmann, R. (2012). Global Pension Systems and Their Reform: Worldwide Drivers, Trends, and Challenges. Social Protection & Labor Discussion Paper 1213.

⁹⁸ European Commission. (2010). Progress and key challenges in the delivery of adequate and sustainable pensions in Europe. European Economy, No. 71. Brussels: DG Economic and Financial Affairs.

International financial investment groups have also elaborated their sets of criteria for evaluating and comparing pension systems of different countries. For instance, Allianz Global Investors research group are computing what they call a “Pension Sustainability Index” (PSI). Three such reports edited by Dr Renate Finke have been published: in 2009, 2011 and 2014. The authors of the PSI are awarding Latvia and Estonia with the best scores not only among Eastern Europe: Latvia takes the first place and Estonia the second one, then follows Russia (that would lose such high score should the very recent pension reform be taken into account by Allianz experts), and Lithuania takes the fourth place in the region, - but also compared to many developed countries - better than United Kingdom, Canada, Finland Germany, Austria, France, Luxembourg and many others.

For the purpose of this chapter, though, the fundamental issue is not the high scoring, but the meaning of “sustainability” that the above experts are attributing: what factors are taken into account. In the methodology description, the Allianz are providing the “overview of sub- indicators that would weight results positively:

- The national pension system has been designed to meet the needs of an aging society, e.g.:
 - the first pillar PAYG system offers moderate benefits and covers a large percentage of the workforce;
 - the legal retirement age is high and/or is linked to life expectancies;
 - funded pillars are in place to provide additional old-age income.
- National demographics do not put much pressure on reform, e.g.:
 - the old-age dependency ratio is favourable;
 - any changes in the work-to-retirement balance are expected to be moderate.
- The government is in a position to cushion reform pressures, e.g.:
 - public pension payments are low;
 - the state has deep pockets so that it can either take on more debt or increase the burden on the economy to finance rising pension payments.”⁹⁹

Another think tank of pension financial experts, Australian Centre for Financial Studies, starting from 2009, are annually calculating another index: Melbourne Mercer Global Pension

⁹⁹ Finke, R. (ed.). (2014). 2014 *Pension Sustainability Index*, Allianz International Pension Papers 1/2014, Allianz SE, Munich, p. 20, <http://projectm-online.com/media/Project%20M/research/social-security/2014/pension-sustainability-index-2014.pdf>

Index¹⁰⁰. The team of the researchers includes professors from Oxford University, University of Toronto, University of Melbourne, and other institutions. In 2014, it has been calculated for the 6th time, and covered 25 countries across the world (the Baltic States are not included in this short list). The overall index value for each country represents the weighted average of the three sub-indices. The weightings used are: 40% for the adequacy sub-index + 35% for the sustainability sub-index + 25% for the integrity sub-index. Each sub-index is based on a set of indicators (see Figure 1.2. below).

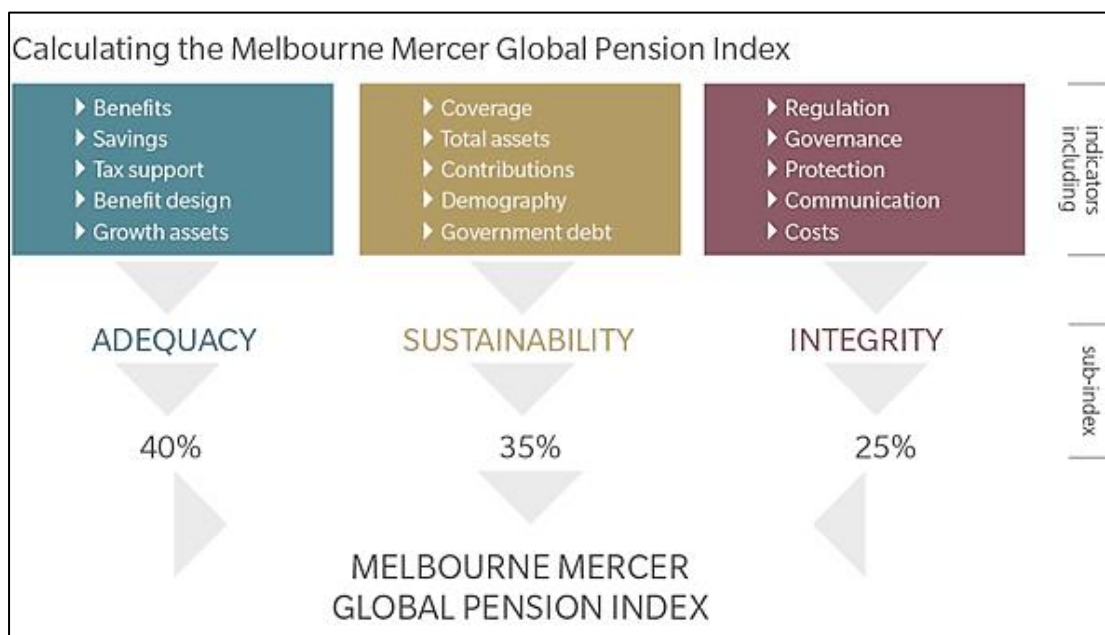


Figure 1.2. **Composition of Melbourne Mercer Global Pension Index**

Source: Australian Center for Financial Studies

<http://www.mercer.com/content/mercer/global/all/en/insights/focus/melbourne-mercer-global-pension-index.html>

The *adequacy* sub-index considers the benefits provided to both the poor and the median-income earner as well as several design features and characteristics which enhance the efficacy of the overall retirement income system. The net household saving rate and home ownership rate are also included as non-pension savings can represent an important source of financial security during retirement. The *sustainability* sub-index considers a number of indicators that include: economic importance of the private pension system, its level of funding, the length of expected retirement both now and in the future, the labour force participation rate of the older population and the current level of government debt. Thus, one

¹⁰⁰ Australian Center for Financial Studies (2014). *Melbourne Mercer Global Pension Index*. available from <http://www.mercer.com/content/dam/mercer/attachments/asia-pacific/australia/retirement/mercer-melbourne-global-pension-index/mercer-melbourne-global-pension-index-report.pdf>

can find practically the same set of parameters of sustainability as are used by Allianz Group. The *integrity* sub-index considers three broad areas of the pension system, namely regulation and governance; protection and communication for members; and costs. This sub-index asks a range of questions about the requirements that apply to the private sector pension plans in each country. After all, well operated and successful private sector plans are critical because without them the government becomes the only provider, which is not a desirable or sustainable long-term outcome. Hence they represent a critical component of a well-governed and trusted pension system, which has the long term confidence of the community.

The same logic can be found in the indicator of financial sustainability gap S2, devised by the European Commission's Working Group on Ageing, with a focus on how population ageing contributes to the fiscal sustainability gap¹⁰¹. The S2 indicator approximates the gap (as % of GDP) that must be closed permanently in order to ensure that governments will be able to finance all future public budget obligations. The indicator provides a compact measure to approximate the size of risks to public finance sustainability when a long-term perspective is taken. The S2 indicator can be decomposed into two components so as to also point to the sources of the risks and appropriate policy response required. Firstly, there is the gap arising due to the starting fiscal position, referred to as the Initial Budgetary Position. Secondly, there are the additional costs related to population ageing and expenditures on pensions, healthcare and long-term care. This component is referred to as the Long Term Changes. While Estonia demonstrated low values (lower than EU average), both Lithuania and Latvia were classified into the group of the countries with high sustainability gap, thus having higher risks of underfinancing future obligations.

Aaron George Grech of London School of Economics argues that “there appear to be four concerns in terms of ensuring pension system sustainability. From a political economy perspective, the adequacy of the system for the average voter needs to be ensured. If a system is not seen as beneficial by the electoral majority, namely by not helping them maintain their pre-retirement living standards, it could be voted out. Similarly, if a system is not seen as able to alleviate poverty, the political pressures that led to the setting up of social assistance to elderly people during the early part of the twentieth century might re-emerge. In the process of achieving these two goals, policymakers need, however, to take into consideration the balance of transfers between different generations. Political pressures for reform can arise

¹⁰¹ Zaidi, A. (2010). Sustainability and Adequacy of Pensions in EU countries: Synthesis from a Cross-national Perspective. *European Papers on the New Welfare*, Vol. 15, pp. 65-76.

either because systems are not achieving the goals that individuals expect of them or because individuals are unhappy about the deal they are getting compared to previous generations. Individuals can be concerned about the level of taxes they pay to finance the system but also by the level of their pension transfers compared to previous generations. Social sustainability can only be achieved if policymakers understand these tradeoffs and optimise pension systems in this light.”¹⁰²

According to OECD definition¹⁰³, fiscal sustainability (including the one of any pension system) implies four main characteristics:

- solvency or governments’ ability to finance existing and probable future liabilities/ obligations;
- growth, or the capacity of government to sustain economic growth over an extended period;
- fairness, or governments’ ability to provide net financial benefits to future generations that are not less than the net benefits provided to current generations; and
- stable taxes, or the capacity of governments to finance future obligations without increasing the tax burden.

ILO experts Krzysztof Hagemeyer and John Woodall note that the understanding of the “fairness” is likely to differ significantly as between different societies, at different times, and in differing economic conditions:

“The designs and shapes of pension systems are usually the result of social contracts, which may be more or less explicit in character. Societies define their objectives through an ongoing debate around a following set of questions:

- What should “retirement” (as a status) represent: simply the condition of a person who is no longer able to work, or rather a well- deserved period of rest after working life?
- At what age or after how many years of a working career should retirement (as an event) typically take place?
- What level of benefits is seen as appropriate by the society as representing an adequate guarantee to its elderly members – should this comprise only the alleviation of poverty for those unable to support themselves, a (defined) minimum income for all residents in old-age, or a guaranteed level of replacement rates (as a proportion of pre-retirement income)?

¹⁰² Grech, A.G. (2010). Assessing the sustainability of pension reforms in Europe. Centre for Analysis of Social Exclusion, London School of Economics, p. 11 Retrieved on November 1, 2014, from <http://sticerd.lse.ac.uk/dps/case/cp/CASEpaper140.pdf>

¹⁰³ OECD (2009). Policy Brief: The Benefits of Long-term Fiscal Projections. Retrieved on November 1, 2014, from <http://www.oecd.org/governance/budgetingandpublicexpenditures/43836144.pdf>

- What is the desired degree of solidarity in financing the incomes of retired persons; should individuals save for themselves, should the younger generation(s) support the elderly as a matter of principle; or should support be restricted to a minimal level for those unable to save enough for their own needs)?”¹⁰⁴.

The term “solidarity” is also very important in pension system characteristics. In the domain of pensions, solidarity can take place at different levels. “A distinction can be made between risk solidarity, subsidizing solidarity and income solidarity. *Risk solidarity* is a consequence of risk sharing, and it implies that ex post the lucky support the unlucky. *Subsidizing solidarity* involves ex-ante value transfers from one group to another – as is the case, for example, when longevity risk is expected to be larger for one group (women) than for another (men). *Income solidarity* usually implies that income is redistributed from the rich to the poor – as is the case, for instance, where contributions are income-dependent, while benefits are not”¹⁰⁵ (like in basic pensions). Many people do in fact have social preferences, a genuine concern for the welfare of others and a preference for a just and fair distribution of incomes and risks, and this thesis is supported by a number of empirical evidence¹⁰⁶.

Furthermore, the EU documents stress that the performance of pensions “ultimately depends on the strength of the underlying economy, such as fewer people working and paying contributions, lower economic growth and depending also on institutional arrangements on national public debt”¹⁰⁷. Therefore, pension systems cannot be assessed in isolation from other parameters of economic life: productivity, competitive ability, embeddedness into global chains, infrastructure, and many others.

¹⁰⁴ Hagemeyer, K., Woodall, J. (2014). How should the adequacy of pension coverage be balanced against financial sustainability? *Australian Journal of Actuarial Practice*, Vol. 2, pp. 21-32.

¹⁰⁵ Tausch, F. et al. (2013). Preferences for redistribution and pensions. What can we learn from experiments?. *Journal of Pension Economics and Finance*, Vol. 12, pp. 298-299.

¹⁰⁶ Tausch, F. et al. (2013). Preferences for redistribution and pensions. What can we learn from experiments?. *Journal of Pension Economics and Finance*, Vol. 12, p. 299.

¹⁰⁷ European Commission (2012b). Pension Adequacy in the European Union 2010-2050, p. 118. Retrieved on November 1, 2014, from <http://ec.europa.eu/social/BlobServlet?docId=7805&langId=en>

Chapter 2. Pension systems of Latvia, Estonia and Lithuania

In the second chapter, the author is analysing pension legislation in three Baltic countries: laws on state pensions, mandatory and voluntary funded pensions, laws on state social insurance, relevant subordinate acts (Cabinet regulations). A detailed review of legislative sources and legal codes is provided in the beginning of Section 2.2. A very valuable source of information on recent development of pension systems are ASISP annual national reports for Estonia, Latvia and Lithuania, that have been prepared for the years 2009-2014 and written by country experts: Andres Võrk, Lauri Leppik, Steven Segaert and Gerli Paat-Ahi (Estonia). Ināra Bite and Ruta Zilvere (Latvia) and Peter B. Gross, Teodoras Medaiskis and Danguole Jankauskiene (Lithuania). The earlier stages of Baltic pension systems evolution are widely described in a voluminous book “Pension Reform in the Baltic States”, especially, the detailed chapters devoted to Estonia¹⁰⁸, Latvia¹⁰⁹ and Lithuania¹¹⁰. The first stages of pension reforms in 90-s are explicitly characterized in Laima Zilīte’s paper¹¹¹ and in the number of articles by Katarina Müller^{112,113} (now Professor of Social Policy at Mannheim University of Applied Science). It is an interesting fact, however, that while Estonian and Lithuanian authors are representatives of academic circles, all Latvian authors are Welfare Ministry and State Social Security Agency officials. The transition period is also covered in a series of articles by Jolanta Aidukaite^{114,115,116,117,118} and in the book of Italian

¹⁰⁸ Leppik, L., Võrk, A. (2006). Pension Reform in Estonia. In Fultz, E. (ed.). Pension Reform in the Baltic States. Budapest, International Labour Office, pp. 17-142.

¹⁰⁹ Vanovska, I. (2006). Pension Reform in Latvia. In Fultz, E. (ed.). Pension Reform in the Baltic States. Budapest, International Labour Office, pp. 143-266.

¹¹⁰ Lazutka, R. (2006). Pension Reform in Lithuania. In Fultz, E. (ed.). Pension Reform in the Baltic States. Budapest, International Labour Office, pp. 267-350.

¹¹¹ Zilīte, L. (2001). Pension Reform in the Baltic States. In OECD (ed.). OECD Private Pensions Conference 2000. *Private Pensions Series* No. 3. Paris: OECD, pp. 139-181.

¹¹² Müller, K. (2002). Old-Age Security in the Baltics: Legacy, Early Reforms and Recent Trends. *Europe-Asia Studies*, Vol. 54 (5), pp. 725-748.

¹¹³ Müller, K. (2006). The Political Economy of Pension Privatisation in the Baltics. In Fultz, E. (ed.). Pension Reform in the Baltic States. Budapest, International Labour Office, pp. 397-420.

¹¹⁴ Aidukaite, J. (2003). From universal system of social policy to particularistic? The case of the Baltic States, *Communist and Post-Communist Studies*, Vol. 36, pp. 405-426.

¹¹⁵ Aidukaite, J. (2006). Reforming family policy in the Baltic States: The views of the elites, *Communist and Post-Communist Studies*, Vol. 39, pp. 1-23.

¹¹⁶ Aidukaite, J. (2009a). Old welfare state theories and new welfare regimes in Eastern Europe: Challenges and implications, *Communist and Post-Communist Studies*, Vol. 42, pp. 23-39.

researcher, then Research Associate at Centre d'Études Européennes (Paris), Alfio Cerami¹¹⁹. The latter, together with Senior Researcher and Policy Analyst of the European Centre for Social Welfare Policy and Research Pieter Vanhuyse were the editors of one more book „Post-Communist Welfare Pathways: Theorizing Social Policy Transformations in Central and Eastern Europe”, containing a chapter on Baltic countries by Jolanta Aidukaite¹²⁰, „The Transformation of Welfare Systems in the Baltic States: Estonia, Latvia and Lithuania”. A valuable source of information, especially on the funded pillars, was also the article by Marcin Kawinski, Dariusz Stanko and Johanna Rutecka (all from Warsaw School of Economics), providing a broader context for comparison¹²¹. Multi-authored „Handbook of European Welfare Systems”¹²² gives the floor for both theoretical and conceptual reflections and factual information. The introductory chapter summarizes the actual debate about welfare states and welfare (state) regimes, gives an overview on current welfare (state) research and analyses the main recent developments necessitating a new focus on European Welfare Systems. The twenty-seven chapters on the welfare systems of the member states are written by experts from the individual states. Concluding chapters analyse the current social and welfare policies of the EU, the interplay and limits between European and national social policies; provide a comparative analysis of all European Welfare Systems and a theoretical reflections on pluralism in European welfare politics.

2.1. Implementation of modern multi-pillar structures

Latvia, Estonia and Lithuania entered their new eras of independence with identical old-age security systems, inherited from the Soviet period. They also faced very similar transition-related challenges: the severe economic turmoil surrounding the collapse of the Soviet Union, leading to extremely high inflation rates and deep recession in all three countries. Today, after

¹¹⁷ Aidukaite, J. (2009c). The Transformation of Welfare Systems in the Baltic States: Estonia, Latvia and Lithuania. In Cerami, A., Vanhuyse, P. (eds.). *Post-Communist Welfare Pathways: Theorizing Social Policy Transformations in Central and Eastern Europe*. Palgrave Macmillan, pp. 96-111.

¹¹⁸ Aidukaite, J. (2011). Welfare reforms and socio-economic trends in the 10 new EU member states of Central and Eastern Europe, *Communist and Post-Communist Studies*, Vol. 44, pp. 211-219.

¹¹⁹ Cerami, A. (2006). *Social Policy in Central and Eastern Europe. The Emergence of a new European Welfare Regime*. Berlin: LIT Verlag.

¹²⁰ Aidukaite, J. (2009c). The Transformation of Welfare Systems in the Baltic States: Estonia, Latvia and Lithuania. In Cerami, A., Vanhuyse, P. (eds.). *Post-Communist Welfare Pathways: Theorizing Social Policy Transformations in Central and Eastern Europe*. Palgrave Macmillan, pp. 96-111.

¹²¹ Kawinski, M., Stanko, D., Rutecka, J. (2012). Protection mechanisms in the old-age pension systems of the CEE countries. *Journal of Pension Economics and Finance*, Vol.11, pp. 581-605.

¹²² Schubert, K. et al. (eds.) (2009). *The Handbook of European Welfare Systems*. Routledge.

more than 20 years of sovereign pension policy, the three Baltic States show a convergence of approaches: in terms of their overall pension design, Latvia, Estonia and Lithuania shifted from single-tiered PAYG schemes to mixed systems, containing a prefunded second tier.

2.1.1. Soviet Heritage and Early Reforms

Social protection system in the USSR was based on the existing political and economic system with state ownership on land and enterprises. The Law on State Pensions of 1956 regulated the situation of employees, while the Law on Kolkhoz Members (1964) covered the farmers.

The Soviet pension system was rather generous and included the following features^{123 124 125}:

- low general pensionable age – 55 for women and 60 for men with minimum working record of 20 or 25 years respectively;
- privileged retirement rules for several occupational groups, including lower pensionable ages (e.g., teachers, workers in public transportation, artists, pilots, those working under hazardous conditions);
- entitlement to a pension based on previous work, benefits linked to the former wage during the last years of working career;
- a relatively high replacement rate ranging from 100 percent for low-income earners down to 50 percent for higher-income earners;
- financing from the general state budget, no individual contributions by workers. The cost of social insurance was included into production cost, the rates varied among the sectors of national economy.

The processes of radical economic and political reforms were accompanied by reforming the old soviet social security system. Some reforms have been commenced already in 1990. The countries were motivated to escape from the legacy of the communist period and to build up new pension systems to suit new political and economic realities.

¹²³ Cerami, A. (2006). Social Policy in Central and Eastern Europe. The Emergence of a new European Model of Solidarity?. Berlin: LIT Verlag, pp. 88-106.

¹²⁴ Zilite, L. (2001). Pension Reform in the Baltic States. In: OECD (ed.): OECD Private Pensions Conference 2000. Private Pensions Series No. 3. Paris: OECD, pp. 139-181.

¹²⁵ Leppik, L., Võrk, A. (2006). Pension Reform in Estonia. In Fultz, E. (ed.). Pension Reform in the Baltic States. Budapest, International Labour Office, pp. 17-142.

However, the features of the Soviet pension system influenced people's image of the optimal pension arrangement, including such features as the pensionable age, benefit rates, and the willingness to pay contributions (or rather the lack thereof). New laws regulating social protection were formulated and enacted. Although these laws provided for guarantees of incomes they neither had the respective financial covering, nor were they economically justified. As the economic situation grew worse, it became clear that, in view of the demographic situation, it was not possible to implement many norms of the newly accepted laws.

Estonia. Early transformation of the pension system in Estonia may be characterised by the following stages:

1) Financial separation of the benefit system (1990)

The adoption of the Social Tax Act in 1990 introduced a social tax of 20 percent of gross payroll to be paid by employers as the financing instrument of the state pension system. Revenues collected by the Social Fund were earmarked for this purpose, and pension expenditures were separated from other budgetary expenditures.

2) Failed attempt to liberalise benefit rules (1991);

The new Pension Act of Estonia, adopted 15 April 1991, had two main objectives – to separate the benefit side of the Estonian pension system from the Soviet system and to increase coverage and the level of benefits. The act prescribed a mixed pension formula – a flat rate base amount supplemented by an earnings-related component. The calculation of pensions was based on two factors: the minimum wage and the worker's former earnings. However, high expectations soon collided with economic reality and the act had a very short life, being implemented for only few months. Because of the total neglect of financial calculations, implementation of the act turned out to be unaffordable.

3) Benefit retrenchment with introduction of flat-rate pensions (1992);

Parliament suspended the Pension Act in February 1992, and pensions were replaced by flat-rate state living allowances. The levels of pensions were linked to the minimum wage.

4) Benefit restructuring with the State Allowances Act (1993).

The 1993 State Allowances Act introduced a gradual increase of the pensionable age by 6 months each year with the target of reaching 65 for men and 60 for women by 2003. The qualification period for old-age pension was equalised for men and women: it was reduced from 25 for men and 20 for women to 15 years for both sexes. The pension formula comprised two elements: a flat-rate base amount and a component depending on the years of pensionable service. Pension amounts still related to the minimum wage, with the individual variable being the length of service.

The pension formula in the 1993 State Allowance Act was broadly considered as a temporary solution for a period of economic transition. The political aim was to reintroduce earnings-related pensions in a period of few years. However, the benefit rules which were established as temporary survived a period of 7 years – from April 1993 to April 2000 – and exerted a heavy influence on subsequent pension rules for the first pillar. Despite the longer-than-expected duration of these rules, the period of their existence was also marked by some important parametric changes.¹²⁶ As will be shown further, the traces of this period reforms are still clearly seen in the today design of Estonian pension system, while the relatively low social tax rate (20%) and imposing this tax on the employer only - in contrast to other two Baltic countries - remains unchanged for more than twenty years.

Latvia. The first wave of reforms in Latvia included the Law on State Pensions and the Law on Social Tax that came into force in January 1991. The social security system was made independent from the state budget and was financed by employee and employer contributions. The retirement age and required length of service were not changed. The replacement ratio was about 55 percent of average monthly earnings, calculated on the basis of any consecutive 5-year period selected by the pensioner during the last 15 years of work, including interruptions of employment, or any 10 consecutive years during the person's working life. For each full year of work in excess of the qualifying period, the old-age pension was increased by 2 percent of covered earnings.

¹²⁶ Leppik, L., Võrk, A. (2006). Pension Reform in Estonia. In Fultz, E. (ed.). Pension Reform in the Baltic States. Budapest, International Labour Office, pp. 30-35.

Although since January 1991 all pensions were calculated according to that law, the financial balance of the newly adopted pension system was upset by the liberalization of prices and the skyrocketing inflation and the government had introduced a price compensation supplement to all pensions. In January 1992, the price compensation payment was replaced by a new basic pension linked to the minimum standard of living. Pensions then consisted of a flat rate (basic) pension and an earnings-related pension. However, as the year progressed, hyperinflation caused the earnings factor to lose its significance; and the flat-rate part of the pension became dominant. In reality, the 1991 pension law ceased to operate.

In November 1993, the newly elected Parliament introduced a set of “Temporary Regulations for Calculating Pensions”, which revised the Law on State Pensions. The calculation based pension amounts on the number of working years, disregarding the individual earnings record. The benefit formula included a guaranteed minimum flat-rate pension of 30 percent of the national average wage, with an increase of 0.4 percent for each year of service. The replacement rate of pensions granted according to “The Temporary Regulations” was 43% of gross national average rate.^{127 128}. Evidently, the approach of Latvian legislators seems to be very similar to the one of their Estonian fellows.

Lithuania. Even prior to the declaration of independence, as early as on 13 February 1990, the Supreme Council (the then parliament of Lithuanian SSR) adopted a Resolution Concerning the Transformation of the Social Insurance System of the Lithuanian SSR. The Resolution provided for the transfer of social insurance from the Soviet trade unions to the Lithuanian authorities.

On 13 March 1990, the third day after the declaration of independence, the State Social Insurance Fund (SODRA) was established under the Ministry of Labour and Social Welfare and was charged with the administration of social insurance. SODRA and its local divisions began registering workers and employers, collecting contributions, and paying benefits.

On 23 October 1990, the Parliament adopted the Law on the Basis for the Social Welfare System, which differentiated social insurance from social care and social assistance

¹²⁷Vanovska, I. (2006). Pension Reform in Latvia. In Fultz, E. (ed.). Pension Reform in the Baltic States. Budapest, International Labour Office, pp. 143-266.

¹²⁸Zilite, L. (2001). Pension Reform in the Baltic States. In: OECD (ed.): OECD Private Pensions Conference 2000. Private Pensions Series No. 3. Paris: OECD, pp. 139-181.

and provided for an independent social insurance budget. In May 1991, the Law on the State Social Insurance of the Republic of Lithuania was enacted. This law provided for independent financing and administration of social insurance.

In contrast with these early changes in pension administration and financing, pension benefits were not reformed comprehensively for some years.

In 1991, flat-rate supplementary amounts were added to all pensions several times on an ad hoc basis; later, pensions were indexed by a percentage or other formula. Due to the 1991 increases of all pensions by equal absolute sums, the disparity among pension levels was greatly reduced. In fact, pensions were flattened. In addition, the formula for calculating pensions compounded this effect. According to the law, pensions were related to wages and to the length of the insured period but with a benefit ceiling. Because of inflation, all employees had already reached this ceiling by 1992. Therefore, all new pensioners claiming pensions from that time received the maximum pension.^{129 130}

Thus, the situation in all three countries by 1993-1994 looked very similar – practically flat pensions, not linked to lifetime earnings, but only to the length of service record.

2.1.2. The second wave of reforms – a move to three-pillar model

Estonia. Starting in 1994, i.e., the year after adoption of the State Allowances Act, pension reform was promised by different political groups. There seemed to be an implicit political consensus that a pension reform was necessary but rather different views on what the reform should accomplish. In 1994–1997, every Minister of Social Affairs – there were 4 different ministers over the period – promised to present a new draft pension law and did so. Two more draft laws were presented by members of Parliament. In total, over the period of 4 years, six different pension bills were presented to Parliament. The main obstacles to reform in the early and mid-1990s were the existence of multiple competing ideas, a lack of political consensus on the aims of pension reform (including conflicts inside the ruling coalition), the short life span of governments, and the absence of background analysis on various proposals. Together these factors created a stalemate that extended to 1997.

¹²⁹ Lazutka, R. (2006). Pension Reform in Lithuania. In Fultz, E. (ed.). Pension Reform in the Baltic States, Budapest, International Labour Office, pp. 267-350.

¹³⁰ Zilite, L. (2001). Pension Reform in the Baltic States. In: OECD (ed.): OECD Private Pensions Conference 2000. Private Pensions Series No. 3. Paris: OECD, pp. 139-181.

Prime Minister Mart Siimann, who headed the minority government that took power in March 1997, quickly took steps to overcome this stalemate¹³¹. By a decree issued on 5 May 1997, the government appointed a Social Security Reform Commission (SSRC) with the mandate to prepare an outline for pension reform. In less than a month, this expert commission elaborated a reform proposal – a policy paper entitled Conceptual Framework for Pension Reform. It proposed to introduce the following features:

- I pillar: a state-managed compulsory pension scheme, operating on the pay-as-you-go principle, financed by the employer-paid social tax, and offering earnings-related benefits;
- II pillar: a privately-managed, compulsory, and fully-funded pension scheme, financed by employees' individual contributions;
- III pillar: privately-managed voluntary pension schemes, in the form of pension funds or insurance policies offered by insurance companies.

The first pillar was to be created by reforming the existing state pension scheme, while the second and the third pillars were to be introduced as new schemes.

The concept paper was strongly backed by the Prime Minister and the leading Coalition Party. Approved by the government on 3 June 1997, it served as a basis for drafting new pension legislation.

The reform of the state pension scheme was initiated by a new Social Tax Act, adopted on 15 April 1998 and implemented from 1 January 1999. Most crucial changes were enacted with the State Pension Insurance Act, adopted on 26 June 1998, with gradual implementation foreseen during 1999–2000. The legal framework for the third pillar was also enacted in 1998 in the Pension Funds Act, adopted on 10 June 1998 and entering into force on 1 August 1998.

It required much more time to elaborate legislation on the second pillar, satisfactory for all parties. The draft Funded Pensions Act was presented to Parliament in April 2001. The Estonian Parliament adopted the Funded Pensions Act on 12 September 2001.

Latvia. In 1993, Jānis Ritenis became the Minister of Welfare. While in exile in Australia, he had worked for private insurance companies. The new Minister began to draft a policy

¹³¹ Leppik, L., Võrk, A. (2006). Pension Reform in Estonia. In Fultz, E. (ed.). Pension Reform in the Baltic States. Budapest: International Labour Office, pp. 48-50.

document based on a private insurance model. These new ideas met with strong resistance, however, and were opposed by the Latvian Association of Free Trade Unions, the Pensioners Federation, and the left-oriented parties. They were also criticized by German pension specialists and visiting specialists from the WB. However, the notion of moving towards a capitalized system gradually gained acceptance in political circles. The ruling coalition supported the idea of an individualized pension system that would relate benefits more closely to each worker's own past contributions. It also supported the formation of mandatory individual savings schemes (provident funds) to encourage savings and growth.

In order to develop the proposals, and as part of a much larger project to reform social protection as a whole, in 1993 the Latvian Government negotiated with the WB for a loan to set up a Welfare Reform Project. As part of the preparation for this, a Pension Reform Concept document was drafted within the Ministry of Welfare. In the early stages of this process, some ideas were provided by Robert Holzmann of the WB. The final Concept document laid out a comprehensive set of proposals for restructuring the pension system. It was submitted to the Saeima late in 1994. The Concept was formally agreed by the Saeima in February 1995.

However, by that time ideas had moved on. Although the Concept was never formally withdrawn by the Government, the legislation which followed took a rather different shape.

In the autumn of 1994, the WB contacted the Government of Sweden to ask for assistance in developing the new pension system for Latvia. The Swedish experts visited Riga in December 1994, in January 1995 Swedish and Latvian teams of experts met together in Stockholm and as a result, the Latvian delegates became fully convinced that the first-pillar scheme proposed in the Concept would not fulfil its stated goal of providing income security.

Work continued at a 1-week joint meeting of the Latvian and Swedish teams in Stockholm in March 1995. At this point, a joint paper was given presenting a notional defined-contribution (NDC) alternative to the proposals in the Concept for the first tier, modelled on the new Swedish system. Ministers Berzins and Makarovs decided that a new law would be prepared and presented to Saeima in June, following the principles of the alternative NDC proposal¹³².

¹³² Vanovska, I. (2006). Pension Reform in Latvia. In Fultz, E. (ed.). Pension Reform in the Baltic States. Budapest: International Labour Office, p. 165.

The Swedish team, now expanded to include legal expertise, worked with the Latvians throughout the spring. Large banking crisis took place in Latvia in spring 1995 and stimulated the removal of 4th (transitional) pillar from the Concept of Pension reform. In the context of banking crisis and national pre-election atmosphere, the government was insisting on the soonest possible elaboration of new legislation, so the Law on State Pensions was submitted to the Saeima in July 1995 and approved in November 1995, with implementation to begin in January 1996 without any wider debates even among politicians in the parliament.

In contrast to Estonia, whose policymakers specifically stated that their system was developed independently and did not copy any existing systems place in other countries, Latvia implemented a pension system developed for Sweden. From the very beginning, the working group established for the preparation of the pension reform consisted only of two experts from the Ministry of Welfare and three Swedish experts. Despite that, all political parties in the Saeima supported the principles of pension reform. The Swedish pensions experts had been working on reforms to their own system already for years. However, the implementation process in Sweden was planned to take place gradually over many years, making Latvia the "laboratory" for Swedish pension reform¹³³.

Introduction of the two funded pillars was a more complex task. Launch of the second pillar, originally planned for 1998, was postponed. Instead, the working group dealing with pensions decided to make the development work on the regulatory and institutional framework necessary for the third pillar into the pilot stage for the second pillar. This would also allow time for the development of capital markets and the accumulation of a reserve in the first pillar to offset the loss of contribution revenues. The Law on Private Pension Funds was accepted by Saeima in June 1997 and came into force from July 1998. The Law on State Funded Pensions was finally approved by the Saeima in February 2000 and came into force on 1 July 2001.

Lithuania. In 1995, the Law on Social Insurance Pensions enacted by the Parliament on July 18, 1994, came into force. Responding to changes that had taken place in the first part of the decade, this law provided for strict conditions of pension entitlement based on contributions paid. The new law confirmed mandatory participation in the pension insurance scheme for all

¹³³ Tavits, M. (2003). Policy Learning and Uncertainty: The Case of Pension Reform in Estonia and Latvia. *The Policy Studies Journal*, Vol. 31 (4), pp. 645-646.

residents employed under labour contracts and for the self-employed. The 1995 law also introduced a new pension formula. It included two parts, a basic pension and an earnings-related supplement. Basic pensions were almost flat, depending slightly on the length of a person's insurance record. The supplementary pension reflected each individual's work history and earnings.

In 1999, following long discussions, the Government prepared the Pension Funds Law. It was adopted later that same year and came into force on 1 January 2000. The law provided a legal framework for the establishment of funded pensions. Not a word was mentioned concerning compulsory participation in these funds, nor was anything said about the use of social insurance resources to finance them. In fact, the title of the law did not even include the word private. It authorized public institutions, as well as private ones, to establish fully funded pension funds. According to the law, pension funds would operate as financial institutions managing and investing contributions accumulated in personal accounts. However, after the adoption of this law, not a single institution came forward to establish a pension fund. Perhaps this was because of the rigid rules imposed by the law. For example, it required pension funds to provide participants with a minimum yearly investment return (this requirement was lifted in early 2001). Most likely, though, the key obstacle was related to an unfavourable tax structure if compared with the one applied to life insurance.

On 6 February 2001, the Government approved an Action Plan for the Preparation of the Pension Reform for 2001–2002. This was followed by the preparation of a draft Law on the Pension Reform, which was presented to Parliament in late May 2001. Upon submitting the draft law to Parliament, the Government nominated the Social Affairs Committee as the key committee of jurisdiction and the Finance and Budget Committee as secondary. The latter backed the draft law; however, after long discussions, the former did not.

For the next time the draft Law on Pension Reform was submitted it to the Parliament in September 2001. Parliamentary readings of the draft law continued for 9 months. In May 2002, Parliament finally returned the draft to the Government. In doing so, it suggested that compulsory participation in the second tier be abandoned in favour of further incentives for voluntary savings in supplementary pensions.

In August 2002, the Strategy Committee decided to present a new draft of the Law on Pension Reform to the Government. In this proposal, participation in the second pillar was

voluntary. The Government in turn submitted this draft to Parliament in November 2002. On 3 December 2002 the law was enacted by Parliament.

2.2. Evolution of pension legislation over the recent decade and status quo

The Laws named in the previous section have been subjects to numerous amendments. For instance, the Latvian law “On State Pensions” has been amended more than 30 times since its adoption in 1995. Therefore, the below review of the current regulations is noting mainly the most recent changes that have been made in the years of crisis and afterwards. This section is the author’s compilation of data from a wide range of sources, namely:

1. ASISP (Analytical Support on the Socio-Economic Impact of Social Protection Reforms) annual national reports on pensions, health and long-term care for Estonia, Latvia and Lithuania for the years 2009-2014 and have been written in different years by country experts: Andres Võrk, Lauri Leppik, Steven Segaert and Gerli Paat-Ahi (Estonia). Ināra Bite and Ruta Zilvere (Latvia) and Peter B. Gross, Teodoras Medaiskis and Danguole Jankauskiene (Lithuania) (available also in <http://socialprotection.eu/>).

2. Information from the specialised web-sites:

- www.pensionikeskus.ee (held by the Central Depository of Estonia) – numerous pages within this site, visited on repeated occasions in 2012-2015;
- www.manapensija.lv (held by the Central Depository of Latvia) - numerous pages within this site, visited on repeated occasions in 2012-2015;
- www.pensijusistema.lt (held by the Ministry of Social Security and Labour of Lithuania) - numerous pages within this site, visited on repeated occasions in 2012-2015, regretfully, this web-site is being updated very seldom (especially, its English and Russian versions);
- www.sotsiaalkindlustusamet.ee (formerly - www.ensib.ee) (held by Social Insurance Board of Estonia) - numerous pages within this site, visited on repeated occasions in 2012-2015;
- www.vsaa.lv (held by State Social Insurance Agency of Latvia) - numerous pages within this site, visited on repeated occasions in 2012-2015;

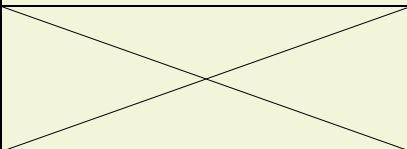
	Latvia	Estonia	Lithuania
0 pillar	NON-CONTRIBUTORY PENSIONS		
	Social security benefit	National pension	Social assistance pension
	<ul style="list-style-type: none"> • amount • eligibility • indexation 		
I pillar	PAY-AS-YOU-GO SCHEMES		
	NON-CONTRIBUTORY COMPONENT		
		Basic pension	
	<ul style="list-style-type: none"> • bonus for length of service 		
	INSURANCE COMPONENT		
	NDC	Pension Points system	
	<ul style="list-style-type: none"> • balancing mechanism • denominator (G-value) • notional capital valorisation 	<ul style="list-style-type: none"> • denominator • point monetary value 	
PRE-REFORM SERVICE RECORD COMPONENT			
<ul style="list-style-type: none"> • initial capital 	<ul style="list-style-type: none"> • rules for conversion of pre-reform record into pension points 		
<ul style="list-style-type: none"> • contribution rates • early / deferred retirement • eligibility • indexation • minimum amount • treatment of non-productive periods 			
II pillar	FULLY FUNDED PRIVATE PENSION FUNDS		
<ul style="list-style-type: none"> • administrative costs • allowed investment strategies • contribution rates • eligibility • pay-out options • succession 			
III pillar	VOLUNTARY PRIVATE PENSION FUNDS + PENSION INSURANCE		
<ul style="list-style-type: none"> • eligibility • investment strategies • tax incentives 			

Figure 2.1. Elements of institutional design in pension systems of the Baltic States

Source: author's compilation of national pension legislative acts

- www.sodra.lt (held by State Social Insurance Fund Board of Lithuania) - numerous pages within this site, visited on repeated occasions in 2012-2015, regrettably, the English and Russian versions of this web-site have not been updated for several years;
- www.socmin.lt (web-site of the Ministry of Social Security and Labour of Lithuania) - numerous pages within this site, visited on repeated occasions in 2012-2015.

3. Laws

- State Pension Insurance Act (Republic of Estonia), RT I 2001, 100, 648;
- Social Tax Act (Republic of Estonia), RT I 2000, 102, 675;
- Funded Pensions Act (Republic of Estonia), RT I 2004, 37, 252;
- Income Tax Act (Republic of Estonia), RT I 1999, 101, 903;
- Law on State Pensions (Republic of Latvia), adopted on 02/11/1995;
- Law on State Social Insurance (Republic of Latvia), adopted on 01/10/1997;
- Law on State Funded Pensions (Republic of Latvia), adopted on 17/02/2000;
- Law on Personal Income Tax (Republic of Latvia), adopted on 11/05/1993;
- Republic of Lithuania Law on State Social Pension Insurance Pensions, No. I-549 adopted on 18/07/1994;
- Republic of Lithuania State Social Insurance Law, No. I-1336 adopted on 21/05/1991;
- Republic of Lithuania Law on Personal Income Tax, No. IX-1007 adopted on 02/07/2002.

4. In-depth interviews with European Social Policy Network (ESPN) experts professor Feliciana Rajevska (Latvia) and professor Romas Lazutka (Lithuania).

The institutional design of old-age pension systems and their elements regulated by national pension legislation are summarised in the Figure 2.1. The detailed analysis of all the elements is set out herebelow in the following sub-sections 2.2.1 – 2.2.10.

2.2.1. Pensionable age

All three Baltic States have started with the same pre-reform retirement age - 60 years for men and 55 years for women – inherited from the previous Soviet scheme. In the mid 1990-s all three countries have started to increase the statutory pension age, although at a different pace (with the most rapid increase for women in Latvia).

Table 2.1. Changes in the official pensionable age in the Baltic States in 1994-2026

	1 st increase	Year of completion of change (M/W)	Final retirement age (M/W)	2 nd increase	Year of completion of change (M/W)	Final retirement age
Estonia	1994 - 2016	2001/2016	63 / 63	2017 - 2026	2026	65
Latvia	1996 - 2008	2003/2008	62 / 62	2014 – 2025	2025	65
Lithuania	1995 - 2006	2003/2006	62.5 / 60	2012 – 2026	2026	65

Source: 1st increase figures – Zilite, L. “Pension Reform in the Baltic States”, pp.18-19, 2nd increase - author’s compilation of national social insurance agencies information

In 2010-2011 all three countries took a decision on further gradual increase of the retirement age. The targeted figure – 65 years for both men and women – is the same across the three states, but the schedules differ.

2.2.2. Funding

Pensions are financed from social budgets replenished by social insurance contributions made by insured persons and their employers. For some categories (e.g., self-employed, unemployed persons, those on sick-leave or maternity or child-care leave, working pensioners, etc., the contributions are made in accordance with special rules). Generic rates for persons participating / not participating in the 2nd mandatory funded pillar are given in the below two tables.

Table 2.2. Rates of social tax (social insurance contributions) for persons NOT participating in II pillar (generic case) in the Baltic States, as in July 2015

	Social insurance contributions (% of gross earnings)			
	paid by		total	of them to pensions
	insured person	employer		
<i>Estonia</i>	-	33	33	20
<i>Latvia</i>	10.5	23.59	34.09	20
<i>Lithuania</i>	9	30.8	39.8	26.3

Source: author’s compilation from national social insurance agencies data

The highest rate of social insurance contributions is observed in Lithuania, but at the same time this country has the lowest income tax on employees’ salaries, so the total tax burden on wages is the heaviest in Latvia.

Table 2.3. Rates of social tax (social insurance contributions) for persons participating in II pillar (generic case) in the Baltic States, as in July 2015

	Social insurance contributions (% of gross earnings)					
	paid by		total	of them to pensions		
	insured person	employer		total	1 st pillar	2 nd pillar
<i>Estonia</i>	2	33	35	22	16	6
<i>Latvia</i>	10.5	23.59	34.09	20	15	5
<i>Lithuania</i>	10	30.8	40.8	27.6	24.6	3

Source: author's compilation from national social insurance agencies data

In Estonia and Lithuania, 2nd pillar participants make additional contributions. Besides that, in Lithuania the state makes extra payments to II pillar pension fund from general budget (financed by other taxes). The division of contributions between employees and employers is the least beneficial to Latvian employees.

More specific cases and chronological variations (the proportion between 1st and 2nd pillar contributions was changing and today rates are scheduled for future alterations) are considered in further sections – in the detailed description of the II pillar.

2.2.3. Minimal old-age pension benefit

The eligibility for an old-age pension is restricted by minimum mandatory period of work experience. This period now equals 15 years in all three countries (before 2014, this period made 10 years in Latvia, and is planned for further increase 20 years in 2025). In Latvia, the minimum guaranteed amount of pension depends on the length of service, increasing with the years of working career.

Table 2.4. **Minimal amounts of old-age pension benefit in the Baltic States (July 2015)**

Estonia	Latvia		Lithuania
	Length of service	Amount	
158.37 EUR	15-20 years	70.43 EUR	97.20 EUR
	21-30 years	83.24 EUR	
	31-40 years	96.05 EUR	
	>40 years	108.85 EUR	

Source: the author's compilation of the national social insurance agencies data

Minimum pensions are below subsistence levels in all three countries, with Latvia demonstrating the lowest minimums, especially for persons with short records.

2.2.4. Zero pillar pensions

These are the benefits for persons of pensionable age who do not qualify for a social insurance old-age pension. In Latvia age restrictions are stronger – only those whose age exceeds the pensionable age by 5 years are eligible for social security state benefit.

Table 2.5. **Zero pillar benefits in the Baltic States (July 2015)**

Estonia	Latvia	Lithuania
national pension 158.37 EUR	social security state benefit 64.03 EUR	social assistance pension 97.20 EUR
<i>Must have resided in Estonia for at least 5 years before applying for the benefit</i>	<i>Must have resided in Latvia for at least 5 years, 1 year of which directly before applying for the benefit</i>	<i>No qualification requirement respecting the period of residence</i>

Source: author's compilation from national social insurance agencies data

Again, such amounts can hardly prevent anybody from absolute poverty in none of the three countries, and Latvia exhibits the figure that is absolutely remote from reality.

In Estonia, the amount of national pension is indexed annually in line with all pensions in payment (see next section for more details). In Latvia, there are no rules prescribing any uprating of the amount of social security state benefit (at it has not been revised since 2006). In Lithuania, the amount of social assistance pension is linked to the basic pension (namely, 90 percent of the basic pension).

2.2.5. First pillar – PAYG schemes

The first-pillar benefit in Estonia and Lithuania comprises two main components: a basic non-contributory (i.e. not depending on the actual amount of the contributions paid from a person's earnings) component and insurance component (related to paid contributions). Latvia lacks the first member of sum and has only insurance pension.

2.2.5.1. Basic non-contributory component

In *Estonia* the basic pension is absolutely flat and presently (July 2015) equals 144.2585 EUR. This amount is indexed annually (see the section devoted to indexation rules below).

In *Lithuania* the non-contributory component is not flat for everybody, but depends on the length of service record. The “basic pension” amount set by the government (presently – July 2015 – it is 108 EUR) is used as a basis for further calculations: persons with 30 years of work experience receive 110% of the basic, those with less than 30 years record are “punished” by reducing this amount by 3.3% for each ‘missing’ year below 30 (15 years being the mandatory minimum, nevertheless); those having working experience more than 30 years get extra 3% of the basic for each full additional year. Thus, the non-contributory component may vary from 55% of the basic (59.40 EUR) for a person with 15 years qualifying period to 155% of the basic (167.40 EUR) for a person with 45 years of service record. It is worth to mention, that if a person's earnings in a certain calendar year were below the official minimum wage, the record for that year shall be proportionally shorter (e.g., if a person's yearly earnings in year t were equal to one half of the sum of twelve official minimum wages – s/he gets only half-year to his service record).

2.2.5.2. Insurance component

The insurance component of the first-pillar pension depends on how much social tax has been paid on the salary of the pensioner throughout his/her working life, but is also calculated in different manners: Estonia and Lithuania are using pension points schemes (see Section 2.1), while Latvia has NDC system. As was discussed earlier, in a PP system each insured person is annually awarded with a number of points (also called annual factors, or coefficients) that are equal to the ratio between his/her salary and nationwide average insured wage¹³⁴ in the respective year (average insured wage differs from average wage, since the first

¹³⁴ To be more precise, the ratio between the amount of social tax directed to state social insurance budget from person's earnings and average nationwide amount of social tax among all tax-payers in the respective period. For instance, if a part of social insurance contributions is directed to a II pillar pension fund the number of accumulated points is lower than for a person with the same salary but participating only in I pillar scheme.

is taking into account those unemployed, on sick-leave, on maternity or child-care leave, etc.). Thus, if one's salary was equal to the average insured wage – s/he gets one point, if it was twice higher than average – two points, if twice lower – 0.5 points, and so on. The points earned throughout the working career are then summarized, and the sum multiplied by the monetary value of one point.

In *Estonia*, the monetary value is presently (July 2015) set at 5.245 EUR (this means that one year of employment with average salary adds 5.245 euro to future monthly pension benefit).

In *Lithuania*, the points are calculated by dividing individual's salary by the so called "insured income". When the pension calculation formula was introduced in 1994, the value of insured income was calculated according to the social insurance average contribution base data. Later, the government decided to discretionarily approve both components – basic pension and insured income. Due to this decision, the weight of one point is "devaluating" with the time going, while the salaries are growing. The monetary value of one point is presently (July 2015) set at 2.17 EUR (0.5% of the so called "insured income" amount - 434 EUR). A person may not be granted with more than 5 points per year in average (e.g., more than 150 points for 30 years of service), that means that persons with average lifetime earnings higher than 5-fold "insured income" are treated as if their earnings were exactly 5 times higher.

In both countries, if a person has opted or was mandated to join a second-pillar funded pension scheme, the amount of his/her first pillar pension benefit is reduced respectively: the points earned for each year of participation in a second pillar scheme are proportionally reduced.

In *Latvia* the insurance pension component is calculated according to a variation of NDC formula (see formulae (2) and (3) in Chapter 1.1 above). It is depending on the insured's contributions, notional interest rate, and average life expectancy at retirement age (G). The benefit is earned by insured individuals by "directing" part of their social insurance contributions to the personalized notional pension capital account. No actual money transfer takes place; this capital exists only as a record in State Social Insurance Agency database. The pension value is the sum of notional capital at retirement divided by the projected life expectancy at retirement age. The accrued notional capital is annually valorised (uprated) in line with increase in the covered wage bill. These annual indices imitate the role of interest rates. When the total amount of wages on a nationwide scale drops below the last year figure – the interest rate is negative, and all prospective pensioners will suffer lower pensions. This

mechanism was incorporated into the system in order to maintain financial sustainability in the times when the cardinality of cohorts entering the labour market is lower than the cardinality of cohorts retiring from the labour market, and it was anticipated that the constant growth in wage rates and labour productivity would neutralise the effect of decreasing working population and the index therefore would manage to remain above 1. Massive emigration, accompanied by wage-cuts and sharp rise in unemployment in the crisis years resulted in negative pension capital indexation in three successive years 2009-2011.

When this chapter was practically written, on 27/06/2015 the Latvian parliament adopted amendments to the Law on State Pensions, introducing additional rules for calculation of annual indices – the index will not be allowed to fall below one (but, on the other hand, will not be allowed to rise above 1.15). Should the result of calculation for a certain year t be below one, exactly one would be used for pension capital indexation. Balancing would be achieved in the years following year t : should the result of calculation for year $t+1$ be above one, for pension capital indexation would be used not this figure, but the product of calculated indices for both years. If the product is still below one – the capital in year $t+1$ is again indexed with 1.00 and the next year $t+2$ shall also be included into balancing, and so on, until all negative indices are compensated by positive indices. This rule has retroactive effect, and shall be applied to valorisation indices from 2009 and further, and all pensions granted in 2010-2015 shall be recalculated (the terms are not defined yet and shall depend on state fiscal situation). By now, although three negative indices in 2009-2011 were followed by three positive indices in 2012-2014, their total product is still below 1, which means that all six figures will be replaced with 1. To get pension capital growing at long last, the index for 2015 should be higher than 1.065 (and this will most likely be the case).

2.2.5.3. Pensionable service period component for the pre-reform period

While all three countries have implemented special mechanisms of translating the pre-reform earnings into post-reform pension benefits, their design is very different.

In *Estonia* the pre-reform service component depends only on the length of employment up until December 31, 1998 (i.e. years of employment and years deemed equal to employment, e.g. raising of children, compulsory military service, etc.). For one full year a person receives one pension point, irrespectively of actual earnings s/he had. These pension points are summarized with ‘normal’ pension points, earned after 1998 in accordance with the rules described above (insurance component), and have the same monetary value.

In *Latvia* the pensionable service period component depends on the length of employment (and years deemed equal to employment; only full years count) up until December 31, 1995 *and* average earnings of the individual during the period January 1, 1996 till December 12, 1999 from which social tax had been paid. The individual's average insured wage in 1996-1999 then is used for calculations and treated as if it were the person's wage during all pre-reform years taxed with 20% 'pension tax'. That is, 20% of the 'theoretical' cumulative pre-reform wage form the so called 'initial pension capital', which is each year up-rated with the same valorisation indices as the 'normal' notional pension capital.

An individual's average insured wage is calculated by dividing the total sum of his/her insured earnings (salary, unemployment benefit, sickness pay, etc.) in this four year period by 48. That means that if a person had interruptions in employment and was receiving no insured earnings during some period within these four years, the average insured wage would be lower. In a point of fact, those years 1996-1999 were quite hard to Latvian economy and to many Latvian individuals who suffered from low wages, long-term unemployment without benefits, grey under-the-table salaries, being unaware of the importance of this period for the amount of their future pension. Therefore, the rules were complemented with two amendments:

- 1) For persons, whose average insured wage used for calculation of initial pension capital was lower than the average countrywide insured wage, this countrywide average is used instead of individual one, provided that such persons have accumulated at least 30 year-long service record. If their service record is shorter, and the average insured wage used for calculation of initial pension capital uprated by valorisation indices is lower than 40% of the average countrywide insured wage in the year preceding the year of retirement, then the latter figure is used for calculating the initial capital.
- 2) In 2006, the supplements for each pre-reform year of service amounting to 1 EUR per year were introduced. Initially, they were granted only to persons with low pensions and long service record, but later, as a result of organized mass protests of pensioners in 2008, the government - just before the break out of the crisis - has decided to extend the supplements to all pensioners starting from 2009. This was the only example of egalitarian approach in the Latvian pension system. However, since 2012 the assignment of those supplements has been cancelled: those who retired before 2012 are still receiving the supplements, but posterior pensioners are not. In 2014, the payment of the supplements is effected not from the special (social insurance) budget, but from the general state budget.

In *Lithuania* there are two options for calculation of the pre-reform component:

- 1) for each year of pre-reform employment (until December 31, 1993) an individual gets as many pension points (called annual earnings coefficient- a ratio between the individual wage and average nationwide insured wage in a given year) as is his average annual number of pension points in the period from January 1, 1994 until the date of retirement; or
- 2) for each year of pre-reform employment an individual gets as many pension points as were his/her best 5 best consecutive years between January 1, 1984 and December 31, 1993 (but not more than 5 points per year), provided there are reliable data on the individual's earnings in that time.

The first (simplified) option has been introduced in 2013, because the second option required much paper work in archives, since the data for 1984-1993 was often not so easy to be found. Initially, the legislators planned to substitute five best consecutive years before 1994 with five best consecutive years after 1994, such law-in-draft was prepared in 2008, but due to crisis has not materialised. The simplified rule, adopted instead, is criticised by experts¹³⁵ for discouraging people in their pre-retirement age from working on jobs with low salaries, since it becomes more 'profitable' not to work at all (contrary to Latvian case, periods with zero earnings are not counted). Secondly, since pension benefits are recalculated also for the persons who continue to work after retirement, the same effect can manifest itself for a person whose post-retirement salary is lower than average pre-retirement one.

Thus, Estonia has chosen the most egalitarian approach, which is at the same time the most simple, transparent and understandable for population. The Lithuanian method seems to be the most fair, but quite laborious and time consuming. Latvian way of translation pre-reform service record is the most biased and discriminatory.

2.2.5.4. Indexation of first pillar pensions

Estonian pension law prescribes yearly indexation of basic pension and monetary value of one year of employment. Benefits are adjusted annually in April according to changes in the consumer price index and the annual increase in social tax contributions. The yearly CPI increase is multiplied by 0.2, the yearly increase in receipt of the pension insurance part of social tax is multiplied by 0.8 and the results are be added together (before 2008 the proportion was 0.5 to 0.5). The obtained figure *K* is then used for indexing the main

¹³⁵ Medaiskis, T. (2013). ASISP country document 2013. Pensions, health and long-term care. Lithuania.

parameters of first pillar pension. Should K be lower than 1, no indexation takes place.

Otherwise:

- national pension is multiplied by K ;
- basic pension is multiplied by $K \times 1.1$
- monetary value of one pension point is multiplied by $K \times 0.9$.

Thus, the basic pension is increasing relatively higher in order to strengthen redistribution in favour of less paid employees. During the crisis and early post-crisis years in 2009-2014, the Estonian government made ad hoc amendments to indexation rules (a smaller increase than prescribed by formula in 2009 and in 2012-2014, but no decline in 2010 and 2011).

Pension indexation rules have been recently amended in *Latvia*. The pre-crisis formula was prescribing annual indexation according to changes in the consumer price index, but it was revoked in 2009, and since then the government has only made ad hoc indexation of small pensions (not exceeding 285 euros) in 2013. It actually led to confusing cases when a person with a benefit equal to, to say, 284 euro after indexation started to receive a higher pension than his fellow with 286 euro benefit whose pension was not indexed at all. In 2014, another ad hoc indexation took place: indexation applied to all pensions, but only to the part under 285 euros. Further on, the threshold amount for indexation will be set at 50% of average insured wage and the indexation ratio is to be based on both the consumer price index (75%) and increase in the covered wage bill (25%).

The underlying idea is similar to Estonian principle: to provide better price increase compensation for people with smaller pensions. However, the lack of any indexation of the amounts above a certain threshold makes pension benefits to erode significantly with the time.

In *Lithuania*, no rules for pension indexation exist. The levels of basic pension, insured income and other multipliers are revised and approved on discretionary basis.

2.2.6. Second pillar – mandatory privately managed funded pensions

Participation in the second pillar is mandatory in Estonia to the persons born in 1983 and later and in Latvia for the persons born on July 1, 1971 and later. This means that funded pensions' significance is much higher in Latvia, because those persons born in between 1971 and 1983 have been automatically included here into financing the compulsory funded tier. Participation is voluntary (or, rather, quasi-mandatory) in Lithuania (irrespective of age), voluntary for those born between July 2, 1951 and June 30, 1971 in Latvia, and was open for voluntary subscription until October 31, 2010 for those born in 1942-1983 in Estonia. Those who have joined the 2nd pillar voluntarily do not have right to “change their mind” and leave

the pillar in all three countries (except for the Lithuanian case, where II pillar plans participants had a “window” in 2013 to decide whether they stay in the scheme, or stop their participation).

2.2.6.1. Contribution rates

The proportion of social insurance contributions that go to the 2nd pillars were altering and respective schedules are shown in the below tables.

Estonia has the most diversified structure of contributions split (see Table 2.6).

Table 2.6. 2nd pillar contributions in Estonia and partition between employee (augend) and employer (addend) in 2001-2018

<i>Choice in 2009</i>		<i>Continued contributions</i>		<i>Suspended contributions (default option)</i>	
		<i>1942-1954</i>	<i>1955 - ...</i>	<i>1942 - 1954</i>	<i>1955 - ...</i>
2001 - 05.2009		2 + 4			
06.2009 - 12.2009		0 + 0			
2010		2 + 4	2 + 0	0 + 0	
2011		2 + 4	2 + 2	1 + 2	
2012 - 2013		2 + 4			
2014-2017	Default case	2 + 4	2 + 6	2 + 4	
	Optional case	N / A	3 + 6		
2018		2+4			

Source: Central Depository of Estonia

The initial scheme in Estonia provided the 6% rate (2+4) to be constant, however the financial situation worsened and it was decided to stop all payments to the 2nd pillar in June – December 2009 and offer the participants two options: to make or not to make contributions in 2010 with different compensation proportions in the subsequent periods. In 2013, participants were offered one more choice – to increase personal contributions from 2% to 3% in 2014-2017 in return for the state reciprocal increase of its part to 6%.

Latvian legislators did not offer any choice to II pillar participants (see Table 2.7).

Table 2.7. 2nd pillar contributions in Latvia in 2001-2016

2001-2006	2007	2008	2009-2012	2013-2014	2015	2016
2%	4%	8%	2%	4%	5%	6%

Source: State Social Insurance Agency of Latvia

It was envisaged initially that the contributions in Latvia will make 9% in 2009, and become 10 % starting from 2010 (the highest target proportion among the three countries). However, the crisis caused dramatic shortage of the social budget and the rates in 2010-2012 returned to 2%. It is planned to raise the rate to 6% in 2016 without further increase.

The initial plan in *Lithuania* was to keep the contributions to the 2nd pillar at 5.5% rate from 2007 onwards, but, similarly to Estonia and Latvia, the crisis has resulted in gradual reduction of the rate to as low as 1.5% in 2012.

Table 2.8. 2nd pillar contributions in Lithuania in 2004-2013

2004	2005	2006	2007-2008	01-06.2009	07-12.2009	2010-2011	2012	2013
2.5%	3.5%	4.5%	5.5%	3%	2%	2%	1.5%	2.5%

Source: Ministry of Social Security and Labour of Lithuania

In the end of 2012 the system in Lithuania has undergone substantial reform. It was decided, that from the year 2014, the second pillar would be financed by three sources: in addition to the part of person's obligatory social insurance contributions, personal contributions should be made by workers (like in Estonia), and that the state would also subsidize pension funds from state budget (the amount of state subsidy is the same for all, irrespectively of the actual personal wage, it is calculated from average wage in the country and in 2015 it is 6.61 EUR per month per person). The contribution rates are presented in the Tables 2.8 – 2.9. It was intended to reduce the part taken away from the current PAYG system on the one hand, but to make contributions big enough to enable saving an amount which would be an essential supplement to the general PAYG pension on the other hand. The new rules are fully applicable for the persons who join(ed) the system in 2013 and later.

Table 2.9. **2nd pillar contributions in Lithuania after 2013**

	2014-2015	2016-2019	2020-...
Percentage points of obligatory pension insurance contributions	2%	2%	3.5%
Additional personal contributions as percentage of <u>person's wage</u>	1%	2%	2%
State subsidy as percentage of <u>average wage</u> in the country of the year before last (paid to the pension fund from the state budget)	1%	2%	2%

Source: Ministry of Social Security and Labour of Lithuania, ASISP

Participation is voluntary – every person insured for full pension may decide to join the system or to stay only in the general social insurance (PAYG) system. In this case, no part of his/her contributions is directed to the personal account, but also no personal contribution is required and no state subsidy granted. Second-pillar participants who joined the system before 2013 were additionally allowed to choose other options. They might decide to stop their participation in the second pillar at all. In this case, their accumulated accounts remain in II pillar schemes until the former participant reaches retirement age (no further contributions are being paid, but no immediate money withdrawal) - this option was chosen by 2.3% of those who had this right (ca. 24 thous. persons have made this choice). Another option (the default one) - was to continue participation in the second pillar under old rules, i.e. with no additional personal contribution (and with no state subsidy), it was chosen by 64.5% (684 thous.). 33.2% of pre-reform participants (352.5 thousands) of the second pillar have joined new scheme: increased personal contribution in return for additional state subsidy.¹³⁶

One can see, that Estonian and Lithuanian legislators allowed much more flexibility to II pillar participants, offering more than one scenario to the participants.

2.2.6.2. Payments from the funded pension

Upon reaching the pension age the 2nd pillar pension benefit can be received in several ways. The most elaborated system is observed in *Estonia*.

A person in Estonia is entitled to receive payments from the funded pension after he/she has attained the old-age pension age. It is not possible to receive the funded pension before the state pension. However, if one has accepted that to be provided with the state pension, but still continues his/her employment, he/she may postpone withdrawal of the funded pension.

The amount of the funded pension depends, on one hand, on the contributions (i.e. the amount of the salary and on how long the contributions have been made). On the other hand,

¹³⁶ Figures from SoDra - <http://atvira.sodra.lt/en-eur/index.html> (retrieved 02/05/2015)

the amount of such pension depends on the rate of return of the chosen pension fund or on the amount of interest that the contributions have borne. The payment options depend on the total value of the units belonging to the owner of the units:

Table 2.10. Redemption of II pillar pension in Estonia

Total value of the units	Available options
≤10 NP*	- Entire sum at once - Regular payments from the Pension Fund - Lifetime payments from an Insurance Company**
10 NP - 50 NP	- Entire sum at once is not allowed - Regular payments from the Pension Fund - Lifetime payments from an Insurance Company
≥50 NP	- Entire sum at once is not allowed - Regular payments from the Pension Fund is not allowed - Lifetime payments from an Insurance Company
≥700 NP	- Lifetime payments from an Insurance Company for the full amount - Lifetime payments from an Insurance Company up to 700 NP; the remaining amount: regular payments from the Pension Fund, or entire sum at once if the conditions are met, or second lifetime payment contract from an insurance Company

* NP – national pension, in April 2015 NP amount is set at 158.37 EUR

** - however, if the accrued sum is less than 50 times the rate of the national pension, the insurer has the right to refuse to conclude the pension contract.

Source: Central Depository of Estonia

As can be seen from the Table 2.10, there are four available options of converting the accumulated fund units to money:

1. Entire sum at once (bulk payment).
2. Regular payments from pension fund (funded pension contract).

A pensioner should choose a suitable schedule in respect of the overall duration on the contract and frequency of payments. The older the person, the shorter the period across which the payments can be distributed (see Table 2.11 below). The payments can be arranged monthly, quarterly or annually.

Table 2.11. Minimum calculated total duration of the fund pension in Estonia

Age (years)	60	61-62	63-64	65-66	67-68	69-70	71-72	73-74	75-76	77-78	79+
Min period, years	12	11	10	9	8	7	6	5	4	3	2

Source: Central Depository of Estonia

3. Lifetime payments from insurance company.

As a rule, a person concludes a funded pension insurance contract with an insurer for payment of the amounts contributed to a pension fund, and after the conclusion of the contract the fund transfers the amount contributed by the person to the insurer selected by such person. If the accrued sum is not sufficient (is less than 50 times the rate of the national pension), the insurer has the right to refuse to conclude the pension contract. The payments are made on the basis of the pension contract as lifetime annuities, i.e. until the death of the person receiving the pension or the policyholder. The payments made until the death of the policyholder are calculated by the insurer, using the annuity formula. The payments can be taken as monthly or quarterly payments. The sums may be in equal or increasing amounts and the payments can be received at least once in a quarter.

4. Lifetime payments from insurance company AND from pension fund.

If the total value of the units accrued to a pension account is 700 times the rate of the national pension, upon concluding a pension contract with an insurance premium corresponding to at least the 700-time rate of the national pension, the owner of the units has the right to keep the remaining units at their pension account. The remaining units may be:

- taken out as a single payment if the sum remaining on the pension account is less than 10 times the rate of the national pension,
- taken out as periodical payments from the pension fund (fund pension),
- used for concluding another pension contract,
- or paid as an additional insurance premium later.

If the fund pension agreed on for additional payments, the minimum calculated duration of the fund pension will be shorter.

Table 2.12. Minimum calculated duration of the additional fund pension in Estonia

Owner of the unit is 60-64 years old	5 years
65-69 years old	4 years
70-74 years old	3 years
75 years old or older	2 years

Source: Central Depository of Estonia

Although the active pay-out phase has not yet started at full capacity, and personal accumulations are quite modest yet because of short experience of II pillar, the regulatory system is elaborated thoroughly in detail.

In *Latvia*, a person is entitled to receive payments from the funded pension after he/she has attained the old-age pension age, but it is not possible to receive the funded pension before the state pension.

Similarly to Estonian rules, the pension benefit is based on the insured's contributions plus accrued interest. At retirement, the insured can purchase an annuity or have the funds credited to his or her NDC account, adding them to the first-pillar pension capital – in the latter case the general benefit formula reviewed above shall be applied to the both parts of the capital. However, the first option is practically not in use yet, since the only three insurance companies offering those policies require the applicant to have at least 4,500-5,000 EUR accumulated in a second pillar pension fund. Starting from 15/04/2015, one of these companies (Compensa Life) reduced the threshold from 5,000 to 3,000 euro¹³⁷. Only 1.65% of those who retired in 2014 and who were participating in II pillar did use the option to buy an insurance in exchange of the pension accumulations¹³⁸. Very few Latvian residents have managed to accumulate the sufficient amount of money: on 31/12/2014 the average accumulated capital was 1,607.88 EUR and even those with the longest possible record (13 years of participation) had on average 2,505.62 EUR¹³⁹.

In general, Latvian legislation regulates payments of funded pensions to a much lesser degree than Estonian one.

Similarly, in *Lithuania*, the benefit from a II pillar pension fund will be paid only when a person reaches his/her old-age pension age, the same as for the social insurance pension.

Regulation of payments is similar to that in Estonia, and also offers three ways of capital redemption: entire sum at once, periodical payments from pension fund, or lifetime payments from insurance company. Alternatively to NP-scale in Estonia, the reference frame is defined in terms of the “basic pension annuity” - an indicator of the preliminary amount of pension benefit payable every month for term of life. This indicator is calculated according to

¹³⁷ VSAA (2015). On-line news announcement “2.pensiju līmeņa uzkrātā kapitāla izmantošana” <http://www.vsaa.lv/lv/pakalpojumi/stradajosajiem/2pensiju-limenis/2pensiju-limena-uzkrata-kapitala-izmantosana> [retrieved on 20/05/2015]

¹³⁸ VSAA (2015). Pārskats par valsts fondēto pensiju shēmas darbību 2014. gadā. http://www.vsaa.lv/media/uploads/UserFiles/vfps_statistika/parskati/vfps_2014_gada_parskats_06072015_.doc [retrieved on 27/07/2015]

¹³⁹ VSAA (2015). Pārskats par valsts fondēto pensiju shēmas darbību 2014. gadā. http://www.vsaa.lv/media/uploads/UserFiles/vfps_statistika/parskati/vfps_2014_gada_parskats_06072015_.doc [retrieved on 27/07/2015]

the procedure laid down by the regulatory authority. Then the result is compared to the ‘basic pension’, which is presently (July 2015) equal to 108 EUR. Depending on the comparison, the pension company determines how savings, in full or in part, can be paid out to the pension system member. If calculated amount of basic pension annuity is lower than ½ of the basic pension (in July 2015 it means 54 EUR and corresponds to personal accumulations in II pillar pension funds of 10,874 EUR or less¹⁴⁰), then a person can take the money as a one-time lumpsum benefit, or split it into drawdown payments. Participants with larger savings in the II pillar are obliged to by a lifetime annuity from an insurance company with at least quarterly payments. On the opposite side of the savings scale, if the calculated amount of basic pension annuity is three times higher than the basic pension (315 EUR, or, respectively, more than 63,434 EUR¹⁴¹ accumulated on pension fund accounts), the share of assets in excess of the lump-sum payment for the basic pension annuity which is triple the amount of the basic state social insurance pension can be paid out as a lump-sum pension benefit or in periodic instalments.

2.2.6.3. Succession of funded pensions

In *Estonia*, if a participant dies before reaching the pension age and starting receiving payments from the 2nd pillar fund units of mandatory funded pensions are inheritable. An application for inheriting units must be submitted to a relevant bank office. In case of inheritance, the inherited units may be transferred to the heir’s pension account (when the heir has joined the mandatory funded pension) or cashed out. Income tax must be paid on cashed out units.

The same applies also to when the pensioner opted to receive payments from the pension fund without entering into an insurance contract and dies before “depletion” of his fund units.

Since 01.01.2014, legal entities have the right to inherit the units of the mandatory funded pension. In case of succession, the legal entity may take the inherited units out in cash.

As a rule, when the pensioner opted to receive payments on the basis of an insurance contract, those annuities are not inheritable. However, there are joint insurance contracts and insurance contracts with fixed duration of guaranty that can be, to some extent, considered as inheritable.

¹⁴⁰ Central Bank of the Republic of Lithuania (2015). http://www.lb.lt/pensiju_anuitetas [retrieved on 27/07/2015]

¹⁴¹ AB SEB Bankas (2015). <https://www.seb.lt/eng/private/pension/building-pension-savings/second-pension-pillar/payment-pension-benefits> [retrieved on 27/05/2015]

In contrast, in *Latvia*, neither fund units (shares) of mandatory funded pensions nor the benefits are hereditary. On a contributor's death, funds are returned to the first pillar 'pool' and subsumed in the overall pensions budget¹⁴². For example, in 2014 the budget received 4,858,619 EUR for 4,768 deceased participants (i.e. slightly more than one thousand euro per person). This amount made almost a quarter (23.9%) of all pension capital payments from pension funds.¹⁴³

Should a person opt not to append the second pillar capital to the one accumulated in NDC scheme, but to buy an annuity – joint insurance contracts are possible with fixed duration of guaranty that can be considered as hereditary.

In *Lithuania*, if a participant dies before reaching the pension age and starting receiving payments from the 2nd pillar fund, units of mandatory funded pensions are inheritable.

If a participant dies after reaching the pension age whether the sum left after the person's death can be inherited will depend on the type of annuity he/she chose – with or without succession rights.

2.2.6.4. Investment strategies

Each II pillar pension fund may offer one or several pension plans fitting under certain classification: the plans are divided into three or four groups in accordance with the investment strategy they use:

- conservative (not investing in stocks)
- balanced or small equity funds
- active or medium equity funds
- aggressive (investing in stocks mainly)

The borderlines among groups vary, e.g., in Estonia the proportion of stocks in fund portfolios is set in increments of 25% for the four groups (zero; < 25; 25–50; 50–75), while in Lithuania the limits are settled as follows: zero; < 30%; 30%–70%; > 70%. In Latvia up to 2007 the permitted share of stocks was defined as < 15% for the balanced plans and 15%–

¹⁴² It is worth of mentioning, that although this clause is unambiguously perceived as unfair one, and Latvian scholar Edgars Voļskis noted a violation of Civil Law principles and recommended to alter this clause as far back as in 2008 (Voļskis 2008: 81), no public discussion of this topic took place and no legislative drafts appeared.

¹⁴³ VSAA (2015). Pārskats par valsts fondēto pensiju shēmas darbību 2014. gadā. Retrieved from http://www.vsaa.lv/media/uploads/UserFiles/vfps_statistika/parskati/vfps_2014_gada_parskats_06072015_.doc on 27/07/2015

30% for the active plans; however, since 2008 the rules have been the same as in Estonia: < 25% for balanced plans and <50% for active plans. Therefore, for instance, a plan having 35% of its assets as stocks in 2007 was considered “balanced” in Lithuania, “active” – in Estonia and not-permissible at all – in Latvia, making the terminology misleading.

The group of “aggressive” plans has been added in Estonia since 2010, earlier three first groups existed only (as they still are remaining in Latvia). Conservative plans have lower administrative costs than more active ones.

The Baltic States are not providing any protection to funded pillar participants in the way of setting minimum guaranteed rates of return, unlike other CEE countries. Such guaranteed yield may be expressed in relative value – when minimum required rate is calculated on the basis of industry’s average (as in Bulgaria, Croatia, Poland and Romania); or in the form of absolute return guarantee of protection of nominal rate of return („at least zero” – Czech Republic, Romania, Slovak Republic) or real rate of return („at least real value of accumulated assets” - Hungary)¹⁴⁴. During financial crisis negative yields were observed in all three countries.

2.2.6.5. Administrative costs

The administrative costs of asset managers in Estonia are included into the net value of a share: the management fee is deducted from the market value of the assets of the fund daily and the net asset value of a unit or the value of the investment made by the owner of the unit into the pension fund is decreased by it. The management fee varies from 0.7% to 2% (conservative plans being the ‘cheapest’ while active and aggressive – the most ‘expensive’ for their participants). There is also a special redemption fee – 1%, but Estonian legislation in contrast to Latvia and Lithuania allows a person to participate in several funds simultaneously to diversify his/her risks.

In Latvia in 2014 (as well as in 2013) the average management fee was equal to 1.52% (average for conservative plans – 1.21%, average for active plans – 1.65%)¹⁴⁵. Starting from 2015, the fee is linked to the actual performance of the fund and now consists of two parts: a fixed part being 1% plus a variable part depending on rate of return, but the total fee should be not more than 1.5% for conservative pension plans and 2% for other plans.

¹⁴⁴ Kawinski, M., Stanko, D., Rutecka, J. (2012). Protection mechanisms in the old-age pension systems of the CEE countries. *Journal of Pension Economics and Finance*, Vol.11, p. 590.

¹⁴⁵ FKTK (2015). Valsts fondēto pensiju shēmas līdzekļu pārvaldīšana 2015. gada 1. ceturksnī. Available from <http://www.fktk.lv/lv/statistika/pensiju-fondi/ceturksna-parskati/5152-valsts-fondeto-pensiju-shemas-lidzeklu-parvaldisana-2015-gada-1-ceturksni.html>

In Lithuania the management fee is consisting of two parts: 1) assets fee (like in Estonia and Latvia described above) capped at 1% for all pensions plans except for conservative ones (for them the limit is lower: 0.65%), and 2) contribution fee – charged on contributions: in 2013 the upper limit was reduced from enormously high 10% (although real market fees were significantly lower - about 3%) to 2% with further annual decrease by 0.5% (thus, today, in 2015, it equals 1%), totally disappearing by 2017.

Latvia has one more administrative fee levied on contributions – taken not by fund manager, but by State Social Insurance Agency! The maximum amount is set at 2.5%, but so high rate was applied only once – in 2004. In the last 5 years it reached its peak in 2011 (0.79%) with the lowest rate in 2014 – 0.32%. These rates are extremely high. For example, in the case of pension fees for the latest available data, the average in the sample of 53 countries is 1.14%¹⁴⁶. The highest rates are observed in Latin America, Eastern Europe and other emerging economies. At the other end are countries such as Norway, Italy and The Netherlands, where average fees in the whole studied period 1990-2011 were under 0.2%. Another research shows, that while pension fund fees in Sweden, UK, Denmark and USA range from 0.1% to 0.5%, funds in Latin America and Eastern Europe charge 1.6% and 1.3% (respectively) as average¹⁴⁷. Reasonable fees, in the opinion of H. Rudolph, lie in the interval from 0.16% to 0.70%.

Edward Whitehouse has demonstrated, that quite low charges on assets build up over the long period of a pension investment to reduce the pension value substantially (see Fig. 2.1): e.g., 1% of administrative fees may result in 20% decrease in final pension benefit after 40 years of contributions¹⁴⁸ (the baseline assumptions for this simulations are that individual earnings grow by 3% a year and annual investment returns are 5%). Similarly, Creighton and Piggott ascertained that a fee of 1% of the assets under management may reduce pension returns by between 19% and 22%¹⁴⁹.

¹⁴⁶ Tuesta, D. (2014). Factors behind the administrative fees of private pension systems: an international analysis. *Journal of Pension Economics and Finance*, 13, p. 95.

¹⁴⁷ Rudolph, H. (2012). Fee structure: does it matter? World Bank V Contractual Savings Conference, Washington, DC, Jan. 9–11. <http://siteresources.worldbank.org/FINANCIALSECTOR/Resources/session7.pdf>

¹⁴⁸ Whitehouse, E.R. (2001), Administrative charges for funded pensions: comparison and assessment of 13 countries, in OECD, *Private Pension Systems: Administrative Costs and Reforms*, Private Pensions Series, Paris., p. 8-9.

¹⁴⁹ Creighton, A., Piggott, J. (2006). The structure and performance of mandated pensions. In Clark, G., Munnell, A., Orzag, M. (eds). *The Oxford Handbook of Pensions and Retirement Income*. Oxford: Oxford University Press, pp. 241–267.

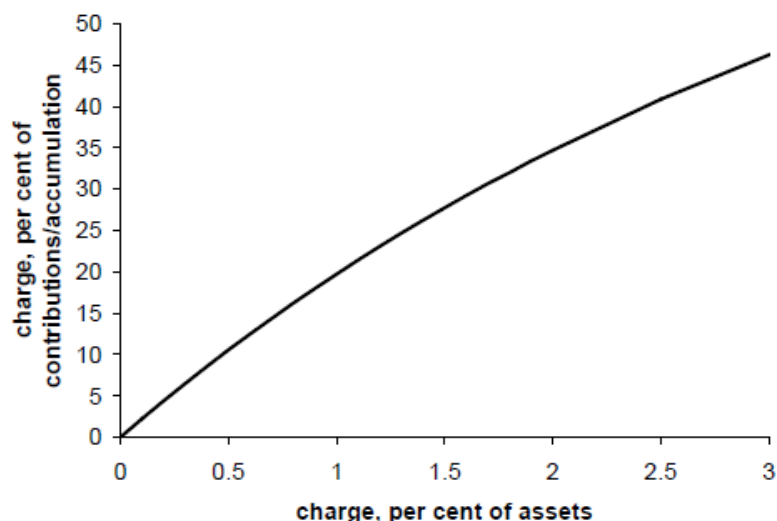


Figure 2.2 **The relation between asset charge and charge ratio**

Source: Whitehouse, E. (2001). *Administrative Charges for Funded Pensions: Comparison and Assessment of 13 Countries*. Fig.1 on p.9.

Meanwhile, Latvian legislation allows the administrative fee up to 4.5% (actual average historical figures being about twice lower), Lithuanian legislation today allows 2.5%, and Estonian – 2%. Small countries have limited options for economies of scale, and even more so in countries where most people have low earnings.

2.2.7. Third pillar – voluntary funded pensions and pension insurance

Voluntary funded pension schemes function almost uniformly in all three countries. In Latvia, contributors are eligible to start receiving a III pillar pension benefit as early as from 55 years, in Estonia and Lithuania – at any age, but tax exemptions are not applied before 55. Legislations are designed to motivate people to save in the third pillar, what differs are the rates and bases for return of income tax on the contributions paid to private pension funds.

Table 2.13. **Tax incentives for 3rd pillar contributions in the Baltic States (rates in 2015)**

Estonia	Latvia	Lithuania
For contributions of up to 6,000 EUR or 15% of gross earnings income tax (20%) is returned	For contributions of up to 10% of gross earnings income tax (23%) is returned	For contributions of up to 25% of gross earnings income tax (15%) is returned

Source: information from III pillar pension plan providers: SEB and Swedbank web-sites in Estonia, Latvia and Lithuania

Although the figures in the above table slightly vary between countries, the overall approach is absolutely similar.

Voluntary pension funds are also providing plans with different investment strategies: aggressive, active, balanced and conservative. A person may accumulate savings in more than one fund at the same time, put contributions on hold and resume them afterwards.

Third pillar may also take the form of pension insurance. Life insurance companies offer pension products with guaranteed interest rate or with investment risk.

2.2.8. Taxation of pensions

In *Estonia* all pensions are taxed by income tax (in 2015 – 20%), but there is an additional tax allowance for pensions. The tax-free income for pensioners is 374 EUR per month [July 2015], so the effective tax rate on pensions is very low.

3rd-pillar pension benefits are taxed at 10% or 20% rates depending on the duration of the participation in the scheme, age of retirement and way of taking out the benefit. Lifetime payments from an insurance company (annuity) are not taxed with income tax if more than 5 years have passed since the conclusion of the contract or first acquisition of units redeemable on the basis of the sum transferred to the insurance contract.

In *Latvia* state pensions are subject to income tax – 23%. The tax-free income for pensioners is higher than for those in working age and amounts to 235 EUR. Benefits, received in the 3rd-pillar pension plans are taxed with income tax at 10% rate. Pensions, assigned before 1996 (i.e. in accordance with the former Law on State Pensions) are not taxed irrespectively of the amount.

In *Lithuania* no income tax is levied on pension benefits paid from statutory schemes. Benefits from III pillar voluntary funds are levied with 15% income tax, but become tax-free if a person:

- holds savings in a third-pillar pension fund for at least 5 years and reaches the age of 55 at the time of payment of the benefit (and the pension savings agreement was concluded before 31 December 2012); or
- holds savings in a third-pillar pension fund for at least 5 years and reaches the age which is five years earlier than the threshold for the old-age pension at the time of payment of the benefit (if the pension savings agreement was concluded after 1 January 2013).

2.2.9. Early / deferred retirement

In *Estonia* a person can retire with the early-retirement pension up to three years before the legally stipulated retirement age, but in such case the amount of pension is reduced by 0.4% for each month falling short of the legally stipulated retirement age (4.8% per year, total

maximum reduction is therefore 14.4%). As to the postponed retirement pension, the pension is increased by 0.9% for each month by which a person postpones his or her application for the pension (that is 10.8% per year).

In *Latvia* a person having the insurance period of minimum 30 years can request premature pension benefit 2 years before reaching retirement age. Early retirement benefit is calculated using the same NDC formula and dividing the obtained result (called “granted pension”) by 2, leaving 50% of the amount (the proportion was 80% before July 1, 2009). This benefit does not depend on the actual number of month remained until statutory pension age. It is worth to mention that the real proportion is even lower due to the influence of the *G*-factor (average remaining life expectancy), which, naturally, is greater for those retiring earlier. When a person reaches statutory pension age, the “granted amount” is automatically becoming his/her ‘normal’ old-age pension. As for stimulating the late retirement, there are no any additional incentives, since the factor of average life expectancy (*G*) is already a part of general formula, and the benefit is automatically increased with decrease of *G* (which happens if a person opts to retire later than the official pensionable age). Before 2013, *G*-value was defined by the Government on the basis of the conceptual approach of male and female life expectancy and long-term trends elaborated by the leading Latvian demographic experts. Starting from 2014, this order was changed, and now the *G*-value is linked to actual historical data: namely, the average life expectancy (aggregate ratios for both sexes) at ages 40-90 observed in Latvia in the calendar year 2 years before computation (or re-computation) of person’s pension. That is, for computation a pension in 2015, the corresponding age average life expectancy in 2013 is used.¹⁵⁰

In *Lithuania* early retirement is possible five years before the official retirement age for a person who was registered as unemployed during the entire previous year and had acquired a minimum of 30 contributory years. The pension is decreased by 0.4% for every month of retirement before the official pensionable age (4.8% per year, total maximum available reduction is therefore 24%). It is also possible to postpone the beginning of pension payment, with an increase of pension value by 8% for each full year of postponement. If an application for the pension is deferred for more than five years, the pension shall be increased only for five years of deferment. In Lithuania, a person may even start to receive old-age pension, but at a later stage decide to suspend receiving a pension and request a deferred payment. In this

¹⁵⁰ Dārziņa, L (2014). Mainīta pensijas aprēķina koeficienta *G* noteikšanas kārtība. „Latvijas Vēstneša” portāls „Par likumu un valsti”, 14/01/2014 <http://www.lvportals.lv/visi/skaidrojumi/260283>

case, his pension shall be calculated anew according to the data at the moment of the application and shall be increased by 4 percent of the calculated amount for each full year lapsed after the deferment of payment.

So, Latvian pensioners are the most severely “punished” for earlier retirement, and least “remunerated” for postponing the pension. The legislation in Latvia is less flexible and less friendly to persons. Pension regulation of all three Baltic countries allows pensioners to continue employment after retirement and combine full or partial wage with full pension benefit, therefore, deferred retirement incentives are practically insufficient and do not encourage people to defer their retirement.

2.2.10. Treatment of non-productive periods

The three Baltic states are distinguished by the manner of treating the unproductive periods, when a person is not employed: is a military conscript, or having maternity/paternity and child-care leave, sick-leave, receives unemployment benefit.

As of today, Estonia is the only Baltic country having compulsory military service, Latvia and Lithuania abandoned conscript armies. When the latter two countries had conscripts, the state was paying social insurance contributions to I pillar for them from minimum wage. In Estonia, the state is paying social tax for soldiers not from minimum, but from countrywide average insured wage (this amount is revised once a year based on the previous year statistics).

Likewise, Estonians are the most generous in granting pension points to the parents of young children. In 2013, this country has introduced a whole system of parental pensions.

The State makes contributions (pays social tax) for one parent of a child under three years from the countrywide average insured wage (this figure is calculated by the Estonian National Social Insurance Board annually on the basis of the social tax information of the previous calendar year). At the time of writing these lines (July 2015), this yardstick equals €792.75. That means, that a person gets one pension point per year to his/her I pillar account.

The State makes additional contributions from the general budget to II pillar pension funds for one parent (either a mother or a father, and also a guardian or a caregiver) of a child born on 01/01/2013 and later. The amount of the contribution is set 4% of the countrywide average insured wage (presently - €31.71), this is the amount that the state transfers to pension funds for one parent. Such additional contribution is paid from the date of childbirth until the child becomes three years old, regardless of the fact whether the parent has returned to work or not.

If a child's parent was born before 1983 and is not therefore participating in the II pillar (unless s/he had joined it voluntarily), s/he will get a supplement to the I pillar pension – by adding three pension points to a monthly pension benefit, provided this parent would have been raising the child for at least 8 years.

Before 2013, parents received less than one pension point per year: the state did pay social tax for parents only from minimum tax base that was considerably lower than the average taxable earnings. In order to remunerate the parents who raised children in those years, they are now granted with additional pension points: one parent (spouse of a parent, guardian or foster parent) for each child born during the period 31.12.1980-31.12.2012, whom they have been raising for at least eight years gets a supplement in the value of two pension points (from 2018 will become one pension point).

In addition to the pension points, for the parent who received parental benefits, 1% of the value of parental benefit was additionally transferred to the funded pension scheme in 2004-2012. It was estimated that on average a parent with two children may receive an increase of their pensions of around 4-10%¹⁵¹. Accordingly, this would decrease the gender pension difference, as in most cases it is a mother who is eligible to the pension supplement.

Latvian mothers/fathers are accumulating notional pension capital during receiving maternity/paternity benefit – social insurance contributions (including pension contributions) are paid from these benefits (the maximum length of receiving maternity benefit is 140 days, paternity benefit – 10 days). Then, a parent may start to receive a child-care benefit or a parental benefit until the child becomes 1.5 year old – during this period social insurance contributions are paid for the benefit recipient only from the amount of 142.29 EUR (formerly 100 lats) irrespectively of the actual amount of the benefit. No transfers to II pillar funds are made, pension rights are accumulated only in I pillar.

In *Lithuania*, maternity/paternity and child-care benefits are treated like wages for pension point calculation (i.e. full amount counts). No transfers to II pillar funds are made, pension rights are accumulated only in I pillar.

In all three countries, during the period of unemployment a person gets as many pension points / notional capital as if his unemployment benefit were his/her wage. If a person retains the status of unemployed but is not any more entitled to receive the benefit – no pension rights are accumulated.

¹⁵¹ Vörk, A. (2013). ASISP Country document 2013: pensions, health and long-term care. Retrieved from http://socialprotection.eu/files_db/1372/EE_asisp_CD13.pdf on 20/04/2015

2.3. Lessons of crisis and development trends

Any system robustness is better tested when the system is put into a critical situation: bottlenecks, imbalances, latent stress points become detectable. The recent global financial and economic crisis 2008-2010 was the first serious test for reformed pension systems in the Baltic States, which brought along various consequences for various elements of those systems. Pension systems in the Baltic States have three major participants:

1. State (legislative and executive bodies)
2. Private pension funds (mandatory and voluntary)
3. Population covered by social insurance schemes

As a rule, the first two are viewed when studying the effects of crisis on pension system (e.g., rise of budget expenditures, drops in assets values). The author of this thesis is paying the main attention to the third participant: what price the crisis years did take and still are taking from “a-man-in-the-street” pension. For the purpose of the analysis, it is instructive to distinguish three subgroups within this group: 1) those retired before the beginning of crisis; 2) those went on pension during the crisis years; 3) future pensioners that are now in preretirement age. The effect of crisis shows up in different ways, as the role of certain socio-economic factors varies between those subgroups significantly. Thus, the next step is to determine those factors and look how they were influenced by crisis.

2.3.1. Socio-economic environment of pension system in the Baltic States

Pension systems exist in a constantly changing environment of social and economic realities. Like in natural environments, some factors are much more constant over time creating a sort of terrain, while others are changing, cyclically or following other patterns; some factors can suddenly descend like a hurricane and cause numerous, but quite quickly neutralisable consequences, while others operate stealthily, and their effect is detected after a long time, when it is already difficult to fight with. Governments can influence some factors, but can only adapt to others. As natural systems, pension systems are not isolated from each other and explicitly or indirectly interact with neighbouring counterparts. Pension systems are a relatively young variant of people’s efforts tailored to address specified social risks of modern societies. There are plenty of interesting papers published in scientific journals focusing on private pension funds’ performance, models and strategies - see, for example a recent article by Latvian authors¹⁵² on market model for private pension savings elaborated

¹⁵² Arefjevs, I., Lindemane, M. (2014). The Market Potential Assessment Model for Private Pension Savings. *Procedia – Social and Behavioral Studies*, Vol. 110, pp. 755–766.

for 5 countries – Finland, Estonia, Latvia, Lithuania and Poland. However, very few are devoted to pay-as-you-go public pension systems. In the Baltic States, however, private funded II and III pillar pensions are not yet playing any significant roles, and will not play in the nearest decade, as people’s accumulations in these funds are very low yet as was shown above. Thus, the below proposed list of major factors influencing our pension systems is compiled by the author based on the different sources and is not pretending to omnitude.

Wolfgang Scholz, an expert from International Labour Organization already in 2001 had warned social policy-makers in Latvia that “social protection systems, while being nested into the structures and dynamics of societies, are exposed to adverse “exogenous” impacts and, not at all surprising, may themselves metamorphose into reasons for societal problems”. He outlined two fundamental factors on which social policy (and pension policy as its integral part) is conditional: ageing – which is characteristic to whole Europe, as well as to other developed countries, - and income gap between Eastern and Western Europe, which is of extreme importance to Estonia, Latvia and Lithuania and other post-communist countries¹⁵³. With the accession to the EU, “national welfare state is confronted with a European economy and increasingly European labour market. The frequently highlighted focus of European deepening in social processes challenges the traditional welfare state policies”¹⁵⁴. Pension system is financed from the contributions of insured population, and is, therefore, closely linked to changes in the numbers of taxpayers not relating to pure demographical ones, but having structural nature, like employment and shadow economy levels. Social trust is a very important factor for pensions either, and international comparison (between OECD countries) performed by American economists Raj Aggarwal and John W. Goodell proves, that social trust really matters¹⁵⁵, Hagemeyer and Woodall warn about possible sustainability trap in the longer term: “when promised benefits start to be seen as inadequate, the willingness of members of the schemes to contribute may reduce correspondingly”¹⁵⁶.

¹⁵³ Scholz, W. (2002). Future Visions for Welfare States in Developments in Social protection Policy in Europe in Latvia Welfare Reform – Present and Future. Proceedings from the Conference 19 October 2001. Rīga, Latvia, p. 15.

¹⁵⁴ Schubert, K., Hegelich, S., Bazant, U. (2009). European Welfare Systems: Current state of research and some theoretical considerations. In Schubert, K. et al. (eds.). The Handbook of European Welfare Systems. Routledge: Abingdon, pp. 8.

¹⁵⁵ Aggarwal, R., Goodell, J. W. (2013). Political-economy of pension plans: Impact of institutions, gender, and culture. *Journal of Banking & Finance*, Vol. 37 (6), pp. 1860-1879. However, the data on the Baltic pension schemes counter their arguments (see further in Chapter 3).

¹⁵⁶ Hagemeyer, K., Woodall, J. (2014). How should the adequacy of pension coverage be balanced against financial sustainability? *Australian Journal of Actuarial Practice*, Vol.2, p. 29.

The factors are listed in the order of their importance: the most influencing first. One may argue that it is a bad idea to put the political factor in the very end of the list, the author's reason is that the uninterrupted rule of right-wing parties during the last 20 years, that did not waver even in crisis years, makes Latvian social policy course remaining very stable and not subject to serious changes.

2.3.1.1. Demographical factors: depopulation due to emigration and ageing leading to increase of old dependency ratio.

A steady increase in life expectancy accompanied with the falling fertility rates impact upon demographic ageing, as the absolute number and the relative importance of the population of older persons continues to grow. The process of ageing is characteristic to all European countries, and today the Baltic States figures (see below in Table 2.14) are very close than EU averages, but the speed of ageing is increasing.

Table 2.14. Ageing of Baltic population in 2005 – 2014

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Median age of population										
Estonia	39.2	39.4	39.6	39.8	39.9	40.1	40.4	40.7	41.0	41.3
Latvia	39.3	39.5	39.8	39.9	40.2	40.8	41.4	41.8	42.1	42.4
Lithuania	38.2	38.8	39.2	39.6	39.9	40.3	41.1	41.7	42.1	42.4
Proportion of population aged 60 years and more										
Estonia	21.8	21.8	22.1	22.4	22.7	23.1	23.4	23.9	24.3	24.6
Latvia	22.2	22.4	22.5	22.6	23.0	23.6	24.1	24.6	24.9	25.2
Lithuania	21.0	21.4	21.6	21.8	22.0	22.4	23.2	23.7	24.0	24.3
Old dependency ratio (population 60 and over to population 20-59 years)										
Estonia	39.4	39.3	39.7	40.2	40.7	41.4	42.1	43.0	43.9	44.8
Latvia	40.9	40.7	40.5	40.5	41.0	42.2	43.2	44.0	44.6	45.3
Lithuania	38.7	39.4	39.4	39.4	39.7	40.6	42.3	43.2	43.7	44.0

Source: Eurostat 2014a [demo_pjanind]

The natural decrease of population is aggravated by emigration. According to Eurostat data ([migr_imm1ctz], [migr_emi1ctz]), only during the ten-year period after joining the EU (i.e., in 2004 - 2013) migration saldo in Estonia equals to -21,751 persons, in Latvia -181,711 persons, in Lithuania -332,305 persons. There was no any single year with positive migration balance in any Baltic country, during the crisis years the pace of emigration picked up significantly and even in 2013 did not drop to pre-crisis figures. What is even more important,

majority of these emigrants were aged 20 – 39 years, on the peak of their fertility and productivity. The crisis brought sharp growth of unemployment and massive wage-cuts, spurring economically active people seek for jobs in other countries. As this age group is not only economically, but also reproductively active, the countries lost not only present but also future taxpayers.

The increased speed of ageing caused legislators in all three countries to raise the official pensionable age from 62 to 65 years, as mentioned in the previous section.

2.3.1.2. Income gap between the Baltic States and Western Europe

Although the relative well-being of Baltic people is steadily increasing (except for 2009-2010) and nowadays it is significantly better than 10 years ago, it is still below 2/3 of average Western European level (except for Lithuania, which is performing better than other two countries), that makes those countries very attractive destinations of emigration. The Table 2.15 below provides comparative figures of living standards in ‘Old Europe’ (average EU-15) and three Baltic countries (**bold** figures mark the years with reverse dynamics).

Table 2.15. **GDP per capita in the Baltic States compared to EU-15 in 2004-2013** (in thousands PPS - purchasing power standard units)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-15	19.6	20.4	21.2	21.9	22.0	21.3	22.0	22.3	22.7	22.7
Estonia	9.0	9.9	11.0	12.3	12.8	11.3	11.6	12.3	13.1	13.7
EE/EU-15	45.9%	48.5%	51.9%	56.2%	58.2%	53.1%	52.7%	55.2%	57.7%	60.4%
Latvia	8.7	9.4	11.2	12.2	12.3	10.3	11.0	11.9	12.5	13.4
LV/EU-15	44.4%	46.1%	52.8%	55.7%	55.9%	48.4%	50.0%	53.4%	55.1%	59.0%
Lithuania	9.4	10.2	11.3	12.6	13.6	12.2	12.8	13.7	14.6	15.5
LT/EU-15	48.0%	50.0%	53.3%	57.5%	61.8%	57.3%	58.2%	61.4%	64.3%	68.3%

Source: Eurostat [nama_10_pc], author's calculations

Crisis years with dramatic fall in GDP have moved the expected point of convergence even more away from today. Pre-accession expectations of Estonian, Latvian and Lithuanian people concerning rapid shrinking of the income gap between “new” and “old” Europe after joining the EU have not materialised, so they are “losing touch to their own development potential”¹⁵⁷.

¹⁵⁷ Scholz, W. (2002). Future Visions for Welfare States - developments in social protection policy in Europe. In Proceedings from the Conference “Latvia Welfare Reform – Present and Future”, 19 October 2001, p.18.

2.3.1.3. Globalisation processes

Pension systems of Estonia, Latvia and Lithuania were designed in mid 1990s, when the countries were to a much lower extent included into global economic and financial markets. The systems were tailored for a country, where people do not move abroad for work and pension funds are investing into domestic economy. The crisis has demonstrated that the pension systems were not prepared enough to the risks brought by globalisation:

- Globalisation of labour market allows Estonians, Latvians and Lithuanians to use job opportunities abroad, and quite often their choice is motivated also by the reasons of better social guarantees in host countries: the emigrants are leaving their home country not only because of better job opportunities and living conditions, but also to indemnify themselves against poverty in old age by subscribing to Western pension schemes.
- Globalisation of financial market and volatility of financial instruments make the assets accumulated in 2nd and 3rd pillar private pension funds very vulnerable to the risk of devaluation. The majority of pension funds' assets are investing abroad and are highly dependent on foreign market fluctuations and during the crisis years suffered drastic contractions of share values. Before crisis the nominal share values were growing, but consumer prices were growing even faster, leading to factual devaluation of assets.

Small national economies are very vulnerable to global economic and financial crises, while the ability of nation states to intervene in the market processes is decreasing and the room for manoeuvre to regulate pension systems is shrinking.

2.3.1.4. (Un)Employment

High unemployment rates affect pension systems in three ways – firstly, paying out unemployment benefits to larger numbers of recipients depletes social budget thus complicating discharging obligations to existing pensioners; secondly, the unemployed persons make small or none contributions to their own future pensions; thirdly, Latvian pension formula automatically reduces future pensions for all future pensioners (even those having full employment and paying all taxes) through the mechanism of pension capital valorisation (indexation). Indexation rules in Estonia, as was shown in the previous section, also include nationwide wage bill increase/decrease in computation. Thus, the rise of unemployment in crisis years affected pension perspectives of all groups of population.

In the 2008–09 crisis millions of workers around the world were losing their income opportunities in both the formal and the informal economies. Unemployment levels in the Baltic region, that were lower than EU averages before crisis, sharply increased in 2009 and, especially, in 2010. In 2011, unemployment rates started their way down, but pre-crisis levels still have not been reached. In the Table 2.16 below the **bold** figures mark the years when unemployment levels were going up and employment rates were decreasing.

Table 2.16. Annual average unemployment and employment rates in the Baltic States, 2005-2014

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Unemployment rate, %										
Estonia	8.0	5.9	4.6	5.5	13.5	16.7	12.3	10.0	8.6	7.4
Latvia	10.0	7.0	6.1	7.7	17.5	19.5	16.2	15.0	11.9	10.8
Lithuania	8.3	5.8	4.3	5.8	13.8	17.8	15.4	13.4	11.8	10.7
Employment rate (15-64 years), %										
Estonia	64.8	68.4	69.8	70.1	63.8	61.2	65.3	67.1	68.5	69.6
Latvia	62.1	65.9	68.1	68.2	60.3	58.5	60.8	63.0	65.0	66.3
Lithuania	62.9	63.6	65.0	64.4	59.9	57.6	60.2	62.0	63.7	65.7

Source: Eurostat [une_rt_a] [lfsi_emp_a]

However, the specialists stress that the unemployment rate “is a poor indicator of the problem. Unemployment is an artificially defined, bureaucratic term, often a plaything for politics and/or statistics. It may be shown to be improving when employment is actually decreasing or vice versa. The true indicator is the employment ratio, the proportion of employed in the working-age generation”¹⁵⁸. The unemployment rate tends to minimize the true underutilization of the workforce, especially during economic downturn: first, more jobs become part-time or temporary; second, many people become discouraged and drop out of the labour force (e.g., by taking early retirement or disability pension, or by becoming ‘full-time-mothers’, or by emigrating to other countries). According to Eurostat data, employment rates in the population of ages 15-64 years in 2014 equalled to 65.7-69.6%. Turning the figure inside out, it could be said that approximately 30-35 percent (or, roughly, one third) of the active-age population is presently not employed. Some of them are still at school, some already in retirement, but these two groups combined can certainly be not responsible for the

¹⁵⁸ Augusztinovics, M. (2006). The Missing Pillar. In Fultz, E. (ed.) Pension Reform in the Baltic States. Budapest, International Labour Office, pp. 379-398.

large proportion of those without employment. Some are actually working in the shadow labour market.

One should also bear in mind that despite of improving employment rates, in the absolute number the situation may not demonstrate the same pace of progress, if not even deteriorate. When the total population number is going down, which is the case in all three Baltic States, the better relative levels sometimes mean worse absolute numbers: in Latvia, the employment rate increased from 65.0% in 2013 to 66.3% in 2014 (as shown in the table above), meanwhile in absolute figures the number of employed decreased from 866.5 thousands in 2013 to 858.6 thousands in 2014¹⁵⁹.

The European Trade Union Confederation (ETUC) urges to distinguish the “demographic dependency ratio” and the “economic dependency ratio”, and not to overestimate the former at the expense of the latter. “For pay-as-you-go systems, only the “economic” ratio is decisive, namely the number of people who are working, and who are therefore financing such a system, but also the increase in productivity and generated GDP, which must have positive repercussions on the quality of employment and wages. This ultimately means that faced with this challenge, it is vital to concentrate on the struggle for “more and better jobs” and more widely on increasing the rate of employment”¹⁶⁰. There should be more possibilities provided for part-time or partial employment, especially for the youngest and the oldest groups of labour market participants.

2.3.1.5. Shadow economy

The shadow economy is a part of everyday life almost everywhere, and can be divided into two parts. Estimations show that about two-thirds is undeclared work — where workers and businesses do not declare their wages to the government to avoid taxes or documentation. The other one-third comes from underreporting - most underreporting occurs in cash-based businesses, such as small shops, bars and taxicabs that only report part of their income in order to avoid some of the tax burden.

The pension systems are affected mainly by the first type – the undeclared work resulting in lower contributions gathered from the working population, which in its turn causes both less funds available for paying out benefits to current pensioners and lower future

¹⁵⁹ Eurostat, [lfsi_emp_a]

¹⁶⁰ European Trade Union Confederation (2010). ETUC Resolution Towards adequate pension systems – the ETUC response to the EC Green Paper. [Online] Available at <http://www.etuc.org/print/7001>

defined-contribution pension benefits to these undeclared workers when they retire. Saving money draws people into this other economy, especially during an economic downturn¹⁶¹.

Table 2.17. **Size of the shadow economy in the Baltic States compared to EU-28, 2005 – 2014** (in % of GDP)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estonia	30.2	29.6	29.5	29.0	29.6	29.3	28.6	28.2	27.6	27.1
Latvia	29.5	29.0	27.5	26.5	27.1	27.3	26.5	26.1	25.5	24.7
Lithuania	31.1	30.6	29.7	29.1	29.6	29.7	29.0	28.5	28.0	27.1
EU-28	21.8	21.1	20.3	19.6	20.1	19.9	19.6	19.3	18.8	18.6

Source: Schneider F. et al. (2015), table III on p. 45.

The share of shadow economy in the Baltic States is generally decreasing even faster than average European indicator, in 2009 all EU member states faced increase of shadow economy proportion. The Baltic States suffered further increase in 2010, as well (in **bold**).

The undeclared work results in lower contributions gathered from the working population, and affects both present and future pensioners in the same manner as high unemployment discussed above.

2.3.2. Major changes in pension legislation in response to crisis

In *Estonia*, austerity packages did not cause major changes in the pension system. It is accepted that deficit of the PAYG scheme during the next decade or even longer, need to be covered from the central state budget, i.e. from other tax revenues.

There were several policy measures implemented during the crisis years. First, there were ad hoc changes in the pension indexation rule, which kept pensions not declining and smoothed the nominal value of pensions and the total pension expenditure over the cycle 2009-2014. As a result of the indexation, the at-risk-of-poverty rate of elderly actually decreased during the crisis, as compared to labour earnings pensions did not decline, and hence the relative position of elderly in the income distribution increased.

Second, transfers to the funded pension scheme were temporary suspended by the state in 2009-2011, but these are compensated in 2014-2017, when extra transfers are made to the funded pension scheme. The long-term effect of these temporary suspensions is small.

¹⁶¹ Schneider, F. (2013). The Shadow Economy in Europe. [online] http://www.atkearney.com/financial-institutions/featured-article/-/asset_publisher/j8IucAqMqEhB/content/the-shadow-economy-in-europe-2013/10192

Finally, the government approved an increase of the pension age for the period 2017-2026, when the pension age increases from 63 to 65 years.

In the compulsory funded pension scheme, the crisis has resulted in stricter control and clearer rules over the management of the private pension funds and more flexibility for employees and employers.

During the crisis years, the politicians in *Latvia* put the screw on social budget expenditures: indexation of pensions was frozen for four years in 2009-2012. Early retirement benefit was set as 50% of 'normal' pension instead of 80%. Supplements for pre-reform years of service cancelled for newly awarded pensions from 2012. The government has also tried to cut all pensions by 10% (and even by 70% - those of working pensioners) in 2009, but the Constitutional Court abrogated this law, and the already withheld money was returned to pensioners. Minimum pension amount has not been revised since 2006 and is set as low as 70.43 EUR. The split of social insurance contributions between the first and the second pillars, as already mentioned above, was reassessed in favour of the former, in order to ensure payments to existing pensioners. The minimum vesting period was increased from 10 to 15 years (with further increase to 20 years in 2020) accompanied by the described above increase of pensionable age up to 65 years by 2025.

The majority of the examined crisis consequences relate mainly to future pensioners that are now in preretirement age at the stage of accumulation their pension capital in both NDC and funded pillars. Those who were already on retirement - suffered less, since their benefits remained the same. Even freezing of indexation did not matter too much: the pre-crisis indexation formula was based on inflation rate and increase in insured wages, but during the crisis years the prices almost did not grow while the wages even went down. As concerns the second group – those taking retirement during 2009-2012 – the observed trend was “the later the worse”. The luckiest were those who retired in the first half of 2009, when high valorisation indices for notional pension capital were in force. In the next three consecutive years valorisation indices fell below one, so newly retired pensioners started to receive lower remunerations for the same amount of contributions. In June 2015, the Parliament passed the amendments to the Law on State Pensions, prescribing recalculation of all pensions granted in 2010-2015, but the exact terms of compensation are not yet developed at the time of writing these words.

ILO experts point out, that “it was expected that the introduction of automatic adjustment mechanisms, within NDC schemes or otherwise, would reduce the need for

political intervention, along with that for any associated process of social dialogue, which has, again too often, been seen as a factor delaying necessary decisions. The recent financial and economic crisis has shown very clearly the limitations as to the extent to which reliance can be placed on such automatic adjustment mechanisms in the short term. There is, and there always will be, a tension between long-term concerns and shorter-term needs, and there must be a compromise between the two”¹⁶². The recent revision of valorisation index computation method is a good example of soundness of the above citation.

Funded pillar suffered severely during the crisis, both because of substantial devaluation of assets and decrease of the share of contributions directed to private pension funds from social insurance budget. The targeted proportion 10:10 was revised in favour of I pillar and replaced with 14:6. Also, since 2015 the administrative fees of fund managers have been linked to the profitability achieved (although still remaining caps are quite high).

Actions in *Lithuania* aimed to reduce pensions’ expenditures were implemented as consequences of economic crisis. One of the most important measures was the temporary reduction of pensions for a period of two years (2010-2011). The temporary Law on Social Benefits Recalculation and Payment was adopted at the end of 2009. According to the Law the social insurance pensions above LTL 650 (EUR 188) were reduced by 4.5 percent on average from 1 January 2010. It was decided slightly to increase the flat rate component and proportionally to decrease the earnings-related component. Thus, all pensions were flattened, and progressive reduction was achieved in order to protect people getting lower pensions. State pensions were also progressively reduced from 5 percent to 20 percent. The social insurance pensions of working pensioners were reduced by 13 percent for minimal wage earners, 40-45 percent for average wage earners, and up to 70 percent for well-paid working pensioners.

In the beginning of 2012 the Constitutional Court decided that in an extremely difficult economic situation it is reasonable and it is not against the Constitution temporary to reduce pension amounts. At the same time the Court declared that pensions should be reduced proportionally, so higher scale of reduction for working pensioners was illegal. The Court also reminded that reduction should be only temporary in the sense that non-paid amounts of reduced pensions should be reimbursed later.

¹⁶² Hagemeyer, K., Woodall, J. (2014). How should the adequacy of pension coverage be balanced against financial sustainability? *Australian Journal of Actuarial Practice*, Vol.2, p. 29.

So, the Constitutional Court of the Republic of Lithuania required to restore the previous amount of pensions and to pay back full debt to pensioners during a “reasonable time”. In order to fulfil this requirement the government decided to restore the amounts of pensions since beginning of 2012. The difference between the full and the reduced pensions of 2010 and 2011 should be repaid to pensioners in several years. Total amount is around EUR 2.6 billion or about 10 percent of the annual expenditures on social insurance pensions. Repayments were started at the end of 2014 and will be continued several next years. Because of obligation to pay back debt, there are no resources for pension’s adjustment in line with growth of wages and prices in post crises period. Therefore, the absence of obligatory rules on pension’s indexation will raise the gap between living standard of working and retired generations in post crisis period.

Before the crisis Lithuania had the lowest official retirement age among the Baltic States. However, like in Estonia and in Latvia, financial crisis and huge financial deficit of social insurance scheme was a strong factor to increase retirement age. From January 2012 it has been increasing by 2 month per year for men and by 4 months per year for women aiming to be 65 years for both sexes by 2026. The decision to increase retirement age was softened by loosening the rules on early retirement. Former requirement for long-term unemployment of applicants was abolishes.

In order to improve financial viability of the social insurance pension system in Lithuania the contribution rate transferred into the II pillar funds reduced it from 5.5% to 1.5%. So, the economic crisis slowed down development of the second pillar pension scheme. The crisis provoked new reform of contributions to private pension funds since beginning of 2014, financing of second pillar private pensions scheme was slightly moved from Social insurance fund to private contribution of participants and State budget (the details have been characterized in the previous section). Some amendments concerning the fees allowing to be charged by pension funds were also adopted. The fee allowing to be charged on contribution was decreased from 10 percent to 2 percent and a further decrease by 0.5 percent for each year in the following years is legislated.

To sum up, during the economic crisis, pensions were reduced but not so much in comparison with the income drop of the rest of population. Due to this, the situation of retirees in relative terms even improved. Meanwhile, social insurance system fell into a huge indebttness and there are no resources for increase of pensions in the post crisis period.

2.3.3. Threats to future pension system sustainability

The crisis years served as a ‘field calibration’ to pension systems, revealing their bottlenecks and imperfections. The challenges faced by Latvian pension system have been discussed in the recent national Human Development Report¹⁶³. As evidenced by the statistical data discussed in the Section 2.3.1 above, our neighbours’ problems are much the same. The question about most important negative factors to pension sustainability was put to the experts (see Annex II for more details). The results are quite in line with the already discussed issues.

The first and foremost threat to future adequacy and overall sustainability of pension systems in the region is population ageing: all Baltic experts demonstrated great concern on that factor: Estonian, Latvian and Lithuanian experts gave scores from “8” to “10” (mean = 9.0). On the second place they put the globalisation of labour markets, leading, in our circumstances, to emigration of working-age population and further worsening of dependency ratio. Mean score among Baltic experts is 8.67, Estonians are a bit less concerned (“6” and “7”), while Latvians and Lithuanians, whose countries face much more wide-spread ‘exodus’, assign “9” and “10”. The third place (mean = 8.0) in this rating is taken by shadow economy with a significant amount of persons’ earnings not covered by social insurance.

With the growing importance of the funded pillars, the sustainability of future pensions can be undermined by poor performance of private pension funds, not able to generate sufficient levels of profitability (the Baltic experts scored this factor with “7” as average).

In all the above answers, the level of concern demonstrated by the Baltic experts is higher than that of their colleagues from other European countries.

And, finally, all the experts agreed that the sustainability may be threatened by disadvantageous labour market patterns: unemployment, part-time employment, spread of freelance and self-employment not properly secured by social insurance schemes.

¹⁶³ Rajevska, F., Rajevska, O., Stavausis, D. (2014). Challenges for the Sustainability of Latvian Pension System. In Bela, B. (ed.). Latvia. Human Development Report 2012/2013. Sustainable Nation. Riga: Advanced Social and Political Research Institute of the University of Latvia, pp. 13-33.

Chapter 3. Comparative analysis of the pension systems in the three Baltic States

The last sections of the thesis are based methodologically on the chapter from the “Comparative Policy Studies: Conceptual and Methodological Challenges” (Palgrave Macmillan, 2014), edited by Canadian scholars Isabelle Engeli and Christine Rothmayr Allison. Especially valuable for the author was the chapter by Sophie Biesenbender of Institute for Research Information and Quality Assurance (Berlin) and Adrienne Heritier of European University Institute (Florence)¹⁶⁴. The recent research¹⁶⁵ on conceptualising the notion of “pension adequacy” was performed by Dr Aaron George Grech of London School of Economics. ILO experts Krzysztof Hagemeyer and John Woodall discuss interrelations between adequacy and financial sustainability¹⁶⁶. Methodology of assessing pension adequacy is also in the focus of studies of Filip Chybalski^{167,168,169} of the University of Lodz and Simon Brimblecombe^{170,171} of the International Social Security Association. A very fruitful conceptual approach¹⁷² of what constitutes “equity” was elaborated by Austrian professor August Osterle, Deputy Director of Research Institute for Economics of Aging in Wien. Dutch scholars Franziska Tausch, Jan Potters and Arno Riedl (members of NETSPAR – Network for Studies on Pensions, Ageing and Retirement, uniting researchers from nine Dutch universities, as well as governmental organisations and industry representatives) wonder what means solidarity and what are the best solutions in the redistribution issues of

¹⁶⁴ Biesenbender, S., Heritier, A. (2014). Mixed-Methods Designs in Comparative Public Policy Research: The Dismantling of Pension Policies. In Engeli, I., Allison, C.R. (eds.). *Comparative Policy Studies: Conceptual And Methodological Challenges*, Palgrave Macmillan, pp. 237-261.

¹⁶⁵ Grech, A.G. (2010). Assessing the sustainability of pension reforms in Europe. Centre for Analysis of Social Exclusion, London School of Economics. <http://sticerd.lse.ac.uk/dps/case/cp/CASEpaper140.pdf>

¹⁶⁶ Hagemeyer, K., Woodall, J. (2014). How should the adequacy of pension coverage be balanced against financial sustainability? *Australian Journal of Actuarial Practice*, Vol. 2, pp. 21-32.

¹⁶⁷ Chybalski, F. (2012) Measuring the multidimensional adequacy of pension systems in European countries. Discussion Paper PI-1204, March 2012. The Pension Institute, London. <http://www.pensions-institute.org/workingpapers/wp1204.pdf>

¹⁶⁸ Chybalski, F. (2015). The Multidimensional Efficiency of Pension System: Definition and Measurement in Cross-Country Studies, *Social Indicators Research*, DOI: 10.1007/s11205-015-1017-3.

¹⁶⁹ Chybalski, F., Marcinkiewicz, E. (2015). The Replacement Rate: An Imperfect Indicator of Pension Adequacy in Cross-Country Analyses. *Social Indicators Research*, DOI: 10.1007/s11205-015-0892-y.

¹⁷⁰ Brimblecombe, S. (2013). A multivariable definition of adequacy: Challenges and opportunities. *International Social Security Review*, Vol. 66, pp. 171–191.

¹⁷¹ International Social Security Association (2015). *Retirement Benefit Provision: Measuring multivariate adequacy and the implications for social security institutions*. Adequacy in Social Security Series. ISSA.

¹⁷² Osterle, A. (2002). Evaluating Equity in Social Policy: A Framework for Comparative Analysis. *Evaluation*, Vol. 8(1), pp. 46-59.

pensions¹⁷³. An instructive paper by international group of authors¹⁷⁴ operates with wider connotations of ‘justice’.

3.1. Critical review of statistical data sources

Reliable statistical data is a fundamental prerequisite of a credible research. A researcher with academic interest in pension policies and economics of pensions cannot do without pension statistics. There are numerous indicators that can be found in variety of sources, both national and international (e.g., Eurostat).

Several public bodies in each country are gathering (and publishing) statistics on pensions:

In Estonia they are:

- 1) The Social Insurance Board (Sotsiaalkindlustusamet, <http://www.sotsiaalkindlustusamet.ee>) is a government authority operating within the government area of the Ministry of Social Affairs, gathers and publishes statistics on the existing pensioners, but only in Estonian language;
- 2) Central Depository of Securities (Väärtpaberikeskus) is a subsidiary of NASDAQ OMX stock exchange, it holds the registry of individual second-pillar pension accounts and runs the web-portal devoted to mandatory pension funds - <http://www.pensionikeskus.ee>;
- 3) Estonian Financial Supervision Authority, EFSA (Finantsinspeksioon, <http://www.fi.ee>) is, inter alia, supervising private pension funds and annually publishes EFSA Yearbooks in English and in Estonian languages;
- 4) Statistics Estonia (www.stat.ee) is a government agency in the area of administration of the Ministry of Finance; it is the main performer and coordinator of the official statistical work in the country and is also providing the data to Eurostat in accordance with EU regulations.

A very similar set of governmental bodies can be found in Latvia:

- 1) Overall pension management, including gathering and processing of statistical data, is a core business of the State Social Insurance Agency, SSIA (Valsts sociālās apdrošināšanas aģentūra, VSAA, <http://www.vsaa.gov.lv>) and its Department of Statistics. The agency is an institution within and subordinate to the Welfare Ministry;

¹⁷³ Tausch, F., Potters, J., Riedl, A. (2013). Preferences for redistribution and pensions. What can we learn from experiments?. *Journal of Pension Economics and Finance*, Vol. 12, pp. 298-325.

¹⁷⁴ Hyde, M., Dixon, J., Drover, G. (2009). Assessing the Capacity of Pension Institutions to Promote Distributive Justice: A „Liberal” Conceptual Framework. *The Open Social Science Journal*, 2009, Vol. 2, pp. 16-31.

- 2) Central Depository of Latvia (Latvijas Centrālais depozitārijs, LCD) is a subsidiary of NASDAQ OMX Riga stock exchange, it holds the registry of individual second-pillar pension accounts and runs the web-portal devoted to mandatory pension funds - <http://www.manapensija.lv>;
- 3) Financial Capital and Market Commission, FCMC (Finanšu kapitāla un tirgus komisija, FKTK, <http://www.fktk.lv>), an autonomous public institution which, inter alia, is supervising the performance of private second- and third-pillar pension funds and the activities of the Central Depository;
- 4) Central Statistical Bureau of Latvia - CSB (Centrālā statistikas pārvalde, CSP, <http://www.csb.gov.lv>) - a body subordinate to the Ministry of Economics, it is the main performer and coordinator of the official statistical work in the country and is providing the data to Eurostat.

In Lithuania, the division of statistical duties among public bodies slightly differs:

- 1) State Social Insurance Fund Board (“Sodra”) under the Ministry of Social Security and Labour is a key institution engaged in administration of the public social insurance fund, the pensions statistics is available partially at general Sodra’s web-site <http://www.sodra.lt/lt/situacijos/statistika/pensijos> (only in Lithuanian) and partially at a special Sodra’s statistical data web-site: <http://atvira.sodra.lt/> (also in English);
- 2) Ministry of Social Security and Labour (Socialinės apsaugos ir darbo ministerija) also runs the web-portal devoted to II pillar pension funds - <http://www.pensijusistema.lt>, its Lithuanian version contains some statistical information (e.g., number of participants, total asset value), but no data on profitability of pension funds, that should be looked at the web-site of
- 3) The Bank of Lithuania (Lietuvos Bankas, <http://www.lb.lt>), playing the role of private pension funds supervisor;
- 4) Statistics Lithuania (Lietuvos statistikos departamentas, <http://www.stat.gov.lt>) is a government institution, assigned to the Minister of Finance, coordinating the production of official statistics in the country.

It should have been admitted that the abundance of Latvian national resources is impressive compared to other Baltic States: Estonian and, especially, Lithuanian publicly available sources are much less explicit. However, the overlapping functions of the above listed institutions sometimes lead to discrepancies in the figures that can be found in their

reports. In the absence of methodology descriptions¹⁷⁵, a researcher may be confused with ‘mismatching’ indicators. This could be a particular problem when the aim of research is comparative analysis of two or more countries.

Since many of the figures and/or methodology descriptions are provided in national languages only, this section would concentrate mainly on Latvian sources, their advantages and vulnerabilities, to provide a sort of directory - where to look for what kind of information, to reveal the discrepancies between the figures provided by different institutions, and, where possible, explain these discrepancies; to detect the areas not sufficiently covered by existing statistics. The author has limited herself to old-age pension statistics, not considering disability pensions, survivors’ pensions and other minor types of pension benefits.

The author is grateful to SSIA specialists: the Head of Statistical Department Evita Česka, senior statistician Sabīna Rauhmane and financial statistician Ruta Avotiņa for explanation of difficulties and useful comments.

3.1.1. Statistics on current pensioners

The first group of indicators refers to existing pensioners: the total number of old-age pensioners, average monthly pension benefits, average newly-awarded monthly pension benefits, distribution of pension recipients by average size of pension granted. These figures can be found both on SSIA web-site: <http://www.vsaa.gov.lv/lv/budzets-un-statistika/statistika> and in CSB online database: <http://www.csb.gov.lv/statistikas-temas/sociala-drosiba-datubaze-30403.html>. However, while SSIA offers only monthly data, CSB database contains only quarterly and yearly figures, and they do not perfectly correspond to each other.

To start with the absolute *numbers of old-age pensioners*: until II quarter of 2008 the quarterly figures provided by CSB were equal to the respective monthly indicators given by SSIA. However, starting from April 2008 the situation changed: quarterly data are always slightly higher. The difference is relatively small, and as average is less than 1,000 (the maximal observed difference was 1,564). Central Statistical Bureau of Latvia does not calculate quarterly figures, they take them ‘ready-made’ from SSIA quarterly reports (SSIA

¹⁷⁵ A perfect example of clear and unequivocal analysis of statistical sources and methodology is demonstrated by the UK Statistical Authority in its assessment reports: see UK Statistics Authority (2010). *Statistics on Pensions: Assessment of compliance with the Code of Practice for Official Statistics*. Assessment Report No 65, October 2010, and UK Statistics Authority (2012). *Statistics on National Insurance Contributions and Qualifying Years, and Second Tier Pension Provision: Assessment of compliance with the Code of Practice for Official Statistics*. Assessment Report No 183, March 2012, that are available online at <http://www.statisticsauthority.gov.uk/assessment/assessment/assessment-reports/index.html>

itself does not publish these reports for wide public). The difference roots in the fact that a person who had reached pension age in month X may come to claim for his/her pension later: in month $Y=X+1$ or $X+2$, or so on. Respectively, this person has to appear as a pensioner not only in month Y, but also in preceding months Y-1, Y-2 and so on. Monthly reports, once published, are not updated, but quarterly reports are open for such backward amendments while the quarter still lasts.

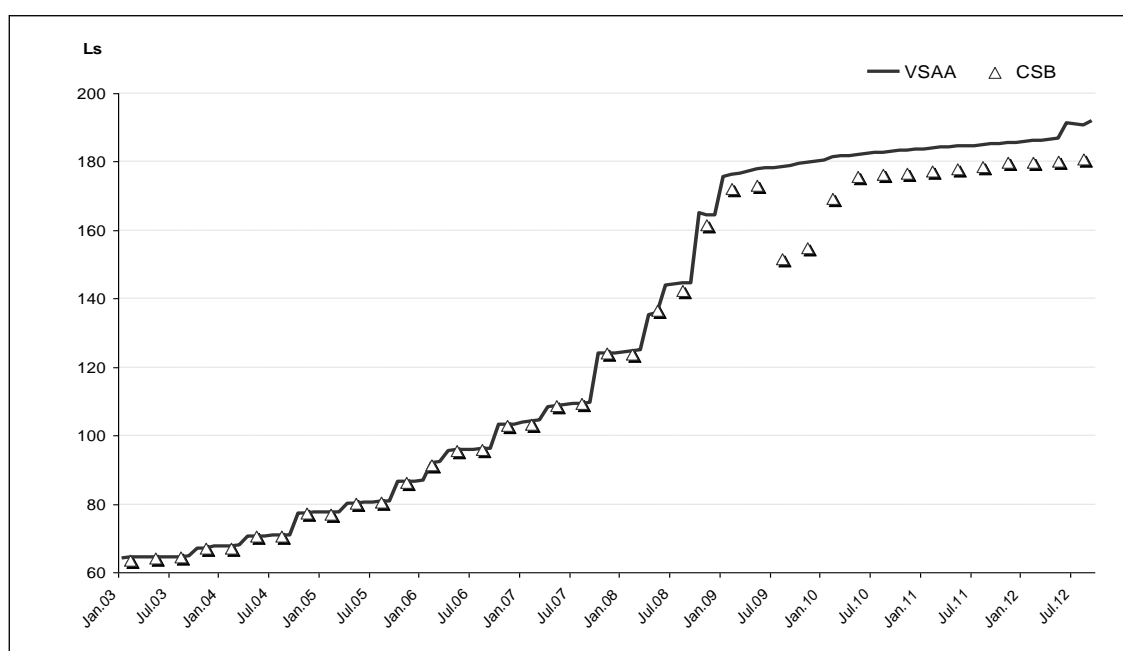


Figure 3.1. Average old-age pension benefit in Latvia in 2003 - 2012

Source: author's construction based SSIA and CSB statistical data.

The next indicator is *average monthly old-age pension benefit*. Again, since mid-2008 monthly SSIA figures differ from quarterly CSB ones, but here the direction is opposite: CSB figures are lower (see Fig. 3.1). The most significant difference was observed in III quarter 2009: 178.62 Ls according to SSIA and 151.76 Ls according to CSB – more than 15%. The reason for this difference is that while SSIA reports gross pensions, CSB quotes net pensions, after tax and other deductions.

One more interesting indicator, also found in SSIA/CSB of Latvia monthly/quarterly reports, and also demonstrating discrepancies, - is the *average newly-awarded monthly pension benefit*. Till 2008 CSB used cumulative indicators – for the first quarter of the year the data for the three first months were included into calculation, for the second quarter – the average of the first 6 months was calculated, for the third quarter – the average of 9 months, and for the last quarter – the whole year was taken into account. Starting from 2008 CSB simply uses average quarterly data. SSIA specialists also noted that starting from May 2012

the methodology of calculating the average newly-awarded pension has been changed: anticipatory pensions are now included into account in full 100% as imputed, but not 50% as actually paid.

It is well known that average values do not adequately represent the situation when the distribution does not follow Gaussian one. In addition, there are very interesting tables characterising *distribution of pension benefits by size*. Again, such tables can be found both at SSIA and at CSB web-sites, but layout of the tables varies significantly. The Statistical Bureau of Latvia offers annual figures (for the end of each year), the lowest interval is 30-40 Ls, then follow six intervals with 10-lat increment (40-50, 50-60, 60-70, 70-80, 80-90 and 90-100), two intervals with 50-lat increment (100-150 and 150-200), followed by 200-400 Ls interval and the very last one: 400+. SSIA splitting differs and is much more detailed (except for the lower side): the lowest interval is “below 50 Ls”; the diapason between 50 and 1000 Ls is split into 5-lat intervals, and the highest interval is for pensions above 1,000 Lats. After introduction of euro, the borders of the intervals were not changed and now look quite odd. However, regular statistics is not available on SSIA web-site: older tables are removed from public access.

In any case, these data show the increasing amount of persons receiving very low pensions. CSB in this regard comments that this is partially due to growing number of persons, to whom pensions are granted in accordance with the international regulatory enactments, i.e., when each country where a person had acquired pension rights during his/her working life grants the pension on the insurance periods accumulated in the respective country. Meanwhile, the senior statistician of SSIA Statistical Department believes that the number of such persons receiving their pensions from two or more countries is small and cannot influence statistics significantly. I wondered whether there were plans to separate this group of pensioners in regular reports, as they may artificially pull down average indicators making the picture worse than it actually is, but the answer was negative.

One more indicator in this group should be mentioned – a relative one: *number of pensioners per one thousand of inhabitants*. This ratio can be found in CSB online database (SSIA does not provide such info), Starting from 2000, data are recalculated in compliance with the results of the Population and Housing Census 2011 (the rates have become higher than earlier calculations, because of lower total population numbers).

3.1.2. Performance of II-pillar pension plans

The second large group of indicators is dealing with II pillar pensions. Presently, there are very few pensioners, whose pension benefit includes II pillar component. Thus, the vast majority of pension funds participants are in their accumulation stage. The registry of individual second-pillar pension accounts is held by the Central Depository of Latvia in cooperation with SSIA. This registry keeps and updates records for more than 1.2 mln persons who participate in mandatory private pension funds: 40% of them are voluntary participants, and 60% were obliged to join the pillar. Presently there are 7 asset managers offering 20 pension plans divided into three groups in accordance with chosen investment strategy: conservative, balanced and active. Central Depository of Latvia holds the topical web-portal <http://www.manapensija.lv> where the most recent data on pension plans are available – each *pension plan unit value*, *yield* (cumulative yields for various periods – 3 and 6 months, 1, 2, 3, 5 and 10 years), *net assets value* and the *number of participants*. The information is updated daily and the archive data is available. More detailed information, including *distribution of participants by age, gender, voluntary or mandatory joining*, etc., is available on SSIA web-site <http://www.vsaa.lv/lv/pakalpojumi/stradajosajiem/2-pensiju-limenis/statistika2limenis> as downloadable excel files. And again, the figures provided by CSD and SSIA do not coincide. According to information provided by SSIA financial statistician Ruta Avotiņa, Depository's statistics is less precise; it is of operative character, while the figures published by SSIA are better verified and more 'final'. The data are fully reconciliated only once a year – as at the year-end, on 31 December. Quarterly reports are produced also by FCMC – excel files can be downloaded from <http://www.fktk.lv/lv/statistika/pensiju-fondi/ceturksna-parskati/>. These reports are providing also quite interesting information on *geographical distribution of pension funds' investments*, *proportions of different types of securities in investment portfolios*, as well as *average weighted yield* of all II pillar pension plans in total.

The most reliable and full data can be found in annual reports. Once again, there are two authorities producing those reports, and once again one can find discrepancies between the figures. Firstly, SSIA publishes a comprehensive report devoted exclusively to mandatory pension funds activities (“Pārskats par valsts fondēto pensiju shēmas darbību”), the 2013 year report (the last available at the time of writing these lines) is 62 pages long. These reports can be downloaded from <http://www.vsaa.lv/lv/pakalpojumi/stradajosajiem/2-pensiju-limenis/parskati-par-valsts-fondeto-pensiju-shemas-darbibu> as *pdf or *doc files. FCMC

annual reports are downloadable from <http://www.fktk.lv/lv/publikacijas/gada-parskati/2014.html> but only 1-2 pages (of more than 70) relate to II pillar pension funds activities. However, a number of indicators mentioned both in FCMC and in SSIA reports return different values!

For example, the *structure of investment portfolio of pension plans*. For example, for the year-end of 2011 FCMC reported that 25% of the portfolio was made of investments in credit institutions. SSIA report gave to such investments only 17.7% of total portfolio.

Secondly, FCMC recorded 43.1% of total investments invested in Latvia at the end of the 2014, while SSIA found in Latvia only 36.1% of total investments at the same time point. The difference between these two sources exists since very first reports (see table 3.1 below).

Table 3.1. Mandatory pension funds' investments into domestic instruments in Latvia (% to total investments), 2003-2014

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
FCMC	88.6	85.1	71.6	69.4	59.4	65.2	65.6	61.1	52.4	47.2	46.5	43.1
SSIA	88.4	84.9	71.3	69.5	55.5	62.2	64.2	57.5	44.2	41.2	43.2	36.1

Source: FCMC and SSIA reports 2003-2014

Both SSIA and FCMC receive the same raw information (audited reports) from pension funds asset managers. However, they differently treat the data, especially the figures related to „investments in credit institutions”. While SSIA takes into account only term deposits, FCMC counts all money on bank accounts. Both techniques are logical, but when a researcher is willing to compare two or more countries s/he should be aware of the methodology used by statisticians in other countries in order to choose the correct Latvian figures (either from FCMC or from SSIA) for accurate comparison.

Thirdly, until 2012 FCMC and SSIA reports returned different figures on average *weighted annual yields* produced by second pillar private pension schemes (in the last three years 2012-2014 the figures are the same in both institutions). Table 3.2 demonstrates average profitability indices as calculated by SSIA and FCMC.

Table 3.2. Annual yields of mandatory funded pension plans in Latvia in 2004-2011 (%)

	2004	2005	2006	2007	2008	2009	2010	2011
SSIA	5.25	7.88	3.50	3.48	-9.83	13.31	8.28	-2.31
FCMC	3.76	6.74	2.82	2.50	-11.5	12.33	7.59	-1.96

Source: FCMC and SSIA reports 2004-2011

Both institutions provide also separate indices for active, balanced and conservative investment plans, and these indices in earlier years were not congruent either. For example, according to SSIA average weighted profitability of balanced plans in 2011 was negative: -1.56 %, but according to FCMC it was positive: +0.6 %.

The reasons root in the methodologies used by the two institutions. I used simulation method to try to receive the same results as SSIA and FCMC from the available raw data and have succeeded. The difference lies in what variable is being “weighted” for obtaining the sought-for weighted average. SSIA is weighting the yields demonstrated by separate pension plans, but FCMC is weighting unit values and then calculating the yield that such average unit has brought by comparing it to last year average unit value.

Again, both methods have their reasons. However, in my opinion, the logic of FCMC is sounder. It’s worth mentioning that Estonian pension statistics is operating with so called ‘pension index’, to be more exact , with a set of such indices: one common index for all pension plans and 4 sub-indices for conservative, balanced, active and aggressive plans separately. These indices are intended for assessing the overall performance of mandatory pension funds, namely, their average profitability, and the formula used for computation of the indices is practically the same as FCMC uses for obtaining average weighted profitability. Therefore, if one wishes to compare average performance of Latvian and Estonian pension plans s/he should use the figures from FCMC reports, and not SSIA indicators.

Another problem related to II pillar pension statistics will declare itself in several years, when a significant number of pension plans participants reach pensionable age. The legislator in Latvia provides two possibilities for a pensioner how to deal with his/her second pillar pension capital: at retirement, the insured can purchase an annuity or have the accumulated funds credited to his/her NDC account, adding them to the first-pillar pension capital. In the first case a pensioner would further receive his pension from two sources: I pillar benefit from SSIA and II pillar supplement from an insurer; in the latter case the general pension formula shall be applied to the both parts of the capital and our retiree will receive monthly pension payments from SSIA only. By now, the accumulated on individual accounts second pillar pension capital is too small, so almost all pensioners are choosing the second option, and SSIA has full information on the total benefit amount. But when a significant part of future pensioners would receive pension benefits both from the state and from insurance companies, while the rest of future pensioners – from the state only, the statistical data on average amounts and distributions would become confusing.

3.1.3. EU Statistical data

Eurostat - the statistical office of the European Union – is consolidating national indicators in order to allow a comparison of best practices to be made and also measure progress being made towards common objectives. The social protection committee adopted, in May 2006, a portfolio of overarching indicators complemented by specific indicators on social inclusion, pensions and health, that was further revised under the Europe 2020 strategy¹⁷⁶. Indicators that form part of the open method of coordination on social inclusion and social protection cover: social cohesion, interaction with the objectives of Lisbon and sustainable development strategies and good governance (so-called overarching indicators); social inclusion; pension and health and long-term care (referred to as common indicators). Common indicators allow a comparison of best practices to be made and also measure progress being made towards common objectives. The list consists of 27 indicators, 9 of which are still under preparation at the time of writing this text¹⁷⁷.

The growing importance of relative figures rather than absolute ones is visibly demonstrated by the set of indicators chosen by Eurostat for inclusion into the portfolio:

- At-risk-of-poverty rate of elderly people (60+, 65+, 75+)
- Dispersion around the at-risk-of-poverty threshold of elderly people (60+, 65+, 75+)
- Gender differences in the at-risk-of-poverty rate of elderly people (65+)
- At-risk-of-poverty rate for pensioners
- Median relative income ratio of elderly people (60+, 65+)
- Gender differences in the relative median income ratio of elderly people (65+, 75+)
- Inequality of income distribution - S80/S20 income quintile share ratio, elderly people (65+)
- Employment rate of older workers
- Effective labour market exit age (average exit age from the labour force)
- Total Current Pension expenditure (% of GDP)
- Total expenditure on social protection (% of GDP)
- Housing cost overburden rate by age group (65+).

¹⁷⁶ Statistics for European policies and high-priority initiatives - http://ec.europa.eu/eurostat/statistics-explained/index.php/Statistics_for_European_policies_and_high-priority_initiatives [Accessed May 19, 2015]

¹⁷⁷ Pension indicators - <http://ec.europa.eu/eurostat/web/employment-and-social-policy/social-protection-and-inclusion/pension> [Accessed May 19, 2015]

Some more indicators are under preparation at this stage. The indices are annual ones, the earliest available data is for 2005 (2000 for some indicators), the data are submitted to Eurostat by national statistical institutions and data processing is quite time consuming. The undisputable advantage of Eurostat data is their comparability, as the uniformity of methodology used in different countries is granted.

3.2. Adequacy: dimensionality and measurement approaches. Findings of the analysis

3.2.1. Definitions and approaches

Following the wording of the World Bank expert group (see Section 2.3 above), an adequate pension system is the one that provides benefits to the full breadth of the population that are sufficient to prevent old-age poverty on a country-specific absolute level in addition to providing a reliable means to smooth down the lifetime consumption for the majority of the population¹⁷⁸.

Traditionally, there are two major approaches for defining the adequate levels of old-age consumption: the first approach considers “adequate” as being above the poverty line, the second one measures adequacy in terms of a certain benchmark fraction of monthly income during active life (i.e., in terms of replacement rates). The majority of the surveyed pension experts have considered such indices to be good measures for pension adequacy in their countries (see Figure II.1 in Annex II for more details). Meanwhile, with the development of cross-national and cross-‘welfare worlds’ studies, these two approaches show many limitations¹⁷⁹ and there is a demand for better measurement means.

Many authors are operating with the notion of “pension wealth” i.e. the total projected flow of pension benefits through retirement. From an individual’s point of view, pension wealth is “the present discounted value of future pension rights, taking into account of mortality prospects.”¹⁸⁰ In mathematical notation, this can be expressed as:

$$PW_h = \sum_{s=h+1}^S \beta^{s-a} \pi_s B_s(h) \quad (9)$$

¹⁷⁸ Holzmann, R., Hinz, R.P., Dorfman, M. (2008). *Pension Systems and Reform Conceptual Framework*. Social Protection Discussion Paper 0824. The World Bank. <http://siteresources.worldbank.org/SOCIALPROTECTION/Resources/SP-Discussion-papers/Pensions-DP/0824.pdf>

¹⁷⁹ Chybalski, F., Marcinkiewicz, E. (2015). The Replacement Rate: An Imperfect Indicator of Pension Adequacy in Cross-Country Analyses. *Social Indicators Research*, DOI: 10.1007/s11205-015-0892-y.

¹⁸⁰ Brugiavini, A., Maser K., Sunden, A. (2005), Measuring pension wealth. Cited after Grech, A.G. (2015) Evaluating the Possible Impact of Pension Reforms on Elderly Poverty in Europe, *Social Policy & Administration*, Vol. 49 (1), pp. 68–87.

where PW_h is pension wealth at age of retirement (h), S is the age of certain death, β is the pure time discount factor, a is the age of the individual, π_s is the conditional survival probability at age (s) for an individual alive at age (a) and $B_s(h)$ is the pension expected at age (s).¹⁸¹

Pension wealth can be also “thought of as the lump sum needed to buy an annuity giving the same flow of pension payments as that promised by mandatory retirement - income schemes.”¹⁸²

The advantages of using pension wealth instead of replacement rates lay in taking into consideration the period during which pension benefits will be received. Increased longevity increases pension wealth, but it does not impact replacement rates. Similarly an increase in pension age decreases pension wealth, while it does not show up in changes in replacement rates. The inclusion of a discount factor helps reflects the higher attractiveness of earlier income streams compared to those more distant in time. Pension wealth measures the entire income stream, rather than focusing on just one payment in time. Thus if pension benefits fall in relative value over time, pension wealth would be less than if they stay constant. A replacement rate tells you nothing about how it will evolve. A reform changing indexation would not change the replacement rate at retirement, but it would clearly show up when looking at pension wealth.

Pension wealth is typically calculated following on of the two methods. The empirical method involves using data from income and wealth surveys, and, therefore, tends to be retrospective in that it reflects current entitlements and past pension system rules. The institutional method uses simulation approach: prospective pension entitlements are calculated for a number of “model cases” (with different service record, with or without interruptions in employment, having or not having children, etc.) by applying the pension system’s parameters, and then grosses up results.

Unfortunately, no such calculations (neither empirical, nor institutional) have been performed for the Baltic States. This concept is still awaiting its acknowledgement. Even leading country experts in the field of pensions seem have insufficient knowledge about pension wealth approach: only 8 out of 15 experts gave their scoring (see Annex II for more details), the rest seven chose the response entries “don’t know” or “not applicable” when they

¹⁸¹ Grech, A.G. (2013). *How best to measure pension adequacy*. Case/172, Centre for Analysis of Social Exclusion, London School of Economics. [<http://sticerd.lse.ac.uk/dps/case/cp/casepaper172.pdf> (2014.20.03)].

¹⁸² OECD (2011). *Pensions at a glance 2011: retirement - income systems in OECD and G20 countries*. Paris: OECD.

were asked if pension wealth is a good measure for adequacy in their home countries. Among the Baltic States experts only one (!) out of seven gave a valid answer. The majority of the experts have chosen such traditional indices as average and individual replacement rates and pension benefit relation to subsistence minimum as the best measures of pension adequacy.

Replacement rate targets have long been a key feature of pension scheme design, and it would be desirable to quantify the adequacy of provision against one or more benchmarks expressed in such terms. Accordingly, both the social security Conventions of the International Labour Organization and the European Code of Social Security demand that national pension systems (possibly comprising several schemes) should deliver replacement rates of at least 40% of pre-retirement earnings when an individual has paid contributions for 30 years - the ILO Convention No. 102, the Social Security (Minimum standards) Convention of 1952, sets this minimum, and countries that have ratified the Convention must undertake, in principle, a binding commitment to ensure that the required minimum level is enshrined in national law. Convention No. 128, the Invalidity, Old Age and Survivors' Benefits Convention of 1967 sets a somewhat higher standard, requiring that an individual who contributes for 30 years should receive a pension of at least 45 per cent of pre-retirement earnings. Countries which have not ratified these conventions are not legally bound in the same way, but the fact that the Conventions have been adopted in plenary sitting by the ILO's 180-plus member countries means that they can be considered to represent a strong global consensus on best practice. Pension systems should be designed in such a way that, even if benefits are "capped" for those with relatively high earnings, this standard should be met for all those who have earnings lower than the prevailing average. Pension systems in some European countries (including Estonia and Lithuania) are already inadequate to provide such replacement rates at present, and are likely to fall behind that target by 2060 in a number of other countries (also in Latvia), even for those contributing for longer than 30 years¹⁸³.

Whether or not the target replacement rate of 40 per cent represents an appropriate benchmark in relative terms, it is important also to consider how effective pension benefits at this level can be in obviating poverty in old age. It is not easy to make such an assessment on a global basis, owing to, among other things, the wide range of national poverty lines.

The recent results, revealed that in 2010 17% of employees in the European countries (more than 21% of women and over 13% of men) had earnings below a "low-earnings" threshold, defined as two-thirds of median earnings. The highest proportions of low-wage

¹⁸³ Hagemeyer, K., Woodall, J. (2014). How should the adequacy of pension coverage be balanced against financial sustainability? *Australian Journal of Actuarial Practice*, Vol.2, p. 24-25.

earners were in Latvia (27.8%), Lithuania (27.2%), Romania (25.6%), Poland (24.2%) and Estonia (23.8%), while the lowest were in Sweden (2.5%), Finland (5.9%), France (6.1%), Belgium (6.4%) and Denmark (7.7%).¹⁸⁴

An interesting approach of measuring the adequacy of pensions has been offered by Filip Chybalski of Technical University of Lodz¹⁸⁵. He starts with the definition of three dimensions of adequacy: income, poverty, and the differentiation of pensioners' material situation by gender. Next, the sub-indicators measuring the individual dimensions of adequacy are proposed, along with an aggregation procedure based on the tools of multidimensional statistical analysis. First, the sub-indicators are aggregated into synthetic indicators for individual dimensions, and finally the synthetic indicators for individual dimensions are aggregated into a single synthetic indicator of the adequacy of the pension system. He argues that "the approach to adequacy and its measurement presented in the above-quoted publications is generally one-dimensional, as it is based only on income or wealth in hand. In fact, it seems that in the context of the goals of the pension system with reference to its adequacy, a multidimensional approach is more appropriate, especially if the measurement is made for several countries and adequacy is evaluated comparatively. The replacement rate alone, particularly if it is based exclusively on pension benefits, may lead to false conclusions. This is because today's pensioners may obtain their income from very different sources, including work and capital investments, and this affects their total income and consequently their standard of living." Chybalsky concludes that in order to obtain comprehensive information on adequacy, one must use at least a few indicators, meaning that the issue must be approached in a multidimensional manner. He further suggests introducing a synthetic indicator, derived from the following components:

- pensioner income indicators – being median relative income ratio of elderly people, aggregate replacement ratio, relative inequality of income distribution ratio and net pension wealth by gender;
- pensioner poverty indicators – being at-risk-of-poverty rate of older people and the change in at-risk-of-poverty rate of older people after retirement; and

¹⁸⁴ Eurostat. Earnings statistics. Retrieved on 25/07/2015 from http://ec.europa.eu/eurostat/statistics-explained/index.php/Earnings_statistics#Low-wage_earners

¹⁸⁵ Chybalski, F. (2012). *Measuring the multidimensional adequacy of pension systems in European countries*. Discussion Paper PI-1204, March 2012. The Pension Institute, London, further developed in: Chybalski, F. (2015). *The Multidimensional Efficiency of Pension System: Definition and Measurement in Cross-Country Studies*, *Social Indicators Research*, DOI: 10.1007/s11205-015-1017-3.

- indicators of pensioners' gender differences – these are gender differences in the at-risk-of-poverty rate of older people, gender differences in the aggregate replacement ratio, change in at-risk-of-poverty rate of older people after retirement by gender, median relative income ratio of elderly people by gender and relative difference in net pension wealth by gender.

These sub-indicators had been either taken from Eurostat and OECD data, or computed by Chybalsky himself. Every sub-indicator was assigned its relative weight and included into the formula elaborated by the researcher. He then used the formula to compute the aggregate APS (i.e. adequacy of pension system) indicator for EU-25 (i.e. without Bulgaria and Romania) and Norway for three years: 2005, 2007 and 2009; and ranked these 26 countries in accordance with the value of APS. The lower the APS is – the less adequate pensions does the system in a respective country produce. The APS varied from 0.22 (Latvia in 2009) to 0.85 (Luxembourg in 2007).

The Baltic States have returned the lowest ranks in the Europe, and are accompanied in the group of European underperformance by Cyprus, while the group of top-ranked countries includes Luxembourg, Hungary, France and the Netherlands.

It seems that the approach of F.Chybalsky overvalues the relevance of gender disparities, since gender differences in old-age income are mainly resulting from gender differences in income during working ages, and the pension systems per se are not contributing to the said disparity. What they can, theoretically, contribute to – is the levelling of such lifelong inequalities for elderly people¹⁸⁶, but none of the schemes functioning in Estonia, Latvia or Lithuania are intended to facilitate such levelling. For NDC, there are quite interesting opportunities of achieving men/women pension income levelling by making joint notional accounts for spouses¹⁸⁷ (pension points could be also shared between partners/spouses even easier), but these opportunities exist only in theory at the time being, no country has embedded such mechanisms into its pension system.

In 2013, Simon Brimblecombe of the International Social Security Association suggested, that even broader consideration is required: a multivariable analysis should include

¹⁸⁶ James, E. (2013). *Gender in the (Nonfinancial) Defined Contribution World: Issues and Options*. In Holzmann, R., Palmer, E., Robalino, D. (eds). *NDC pension schemes in a changing pension world: Vol. 2 - gender, politics, and financial stability*. The World Bank, pp. 3-33.

¹⁸⁷ Klerby, A., Larsson, B. Palmer, E. (2013). *To Share or Not to Share: That Is the Question*. In Holzmann, R., Palmer, E., Robalino, D. (eds). *NDC pension schemes in a changing pension world: Vol. 2 - gender, politics, and financial stability*. The World Bank, pp. 39-65.

also the assessment of the quality of service, labour market aims, security of benefits and interaction with other stakeholders¹⁸⁸.

In September 2015, the International Social Security Association (ISSA) have published a 35-pages report¹⁸⁹ prepared by Brimblecombe, where they introduce the elaborated adequacy model consisting of seven parameters: benefit levels, exiting labour market at the correct age, administrative adequacy, interaction with other retirement provision, intergenerational equity and sustainability of benefit adequacy, security of adequacy and coverage. Each of parameters uses from three to seven indicators.

One more dimension of adequacy presumes that an adequate pension benefit is such benefit that is perceived as adequate by its recipient. Johannes Binswanger and Daniel Schunk wondered what “adequate” meant for the general public and addressed this question to respondents in the U.S. and the Netherlands¹⁹⁰, using a specifically designed internet survey. They found out that a large majority of individuals aimed to achieve a spending profile where, under normal circumstances, old-age spending exceeds 80% of working-life spending. They further used the respondent’s answers to calibrate minimum (desired) income replacement rates for each income quintile. For the U.S. sample, they ranged between 95% for the lowest income quintile and 45% for the highest. For the Netherlands, those rates fell between 75 and 60%.

3.2.2. Verification of adequacy criterion in pension systems of the Baltic States

The author has limited her study by assessing pension adequacy in its narrow sense, i.e. the ability of pension systems of Estonia, Latvia and Lithuania to generate adequate old-age pension benefits: whether the pension schemes manage to provide income for the existing pensioners that is sufficient to prevent absolute and relative poverty of elderly population. For this purpose, pension legislation of the three countries is considered in respect of guaranteeing minimum pension levels. The analysis of statistical data from different sources (national statistical bodies of the Baltic States as well as Eurostat data) is used for the comparison of the actual situation and the tendencies in respect of relative indicators of adequacy. Specially

¹⁸⁸ Brimblecombe, S. (2013). A multivariable definition of adequacy: Challenges and opportunities. *International Social Security Review*, Vol. 66, pp. 171–191.

¹⁸⁹ International Social Security Association (2015). *Retirement Benefit Provision: Measuring multivariate adequacy and the implications for social security institutions*. Adequacy in Social Security Series. ISSA,

¹⁹⁰ Binswanger, J., Schunk, D. (2011). What is an adequate standard of living during retirement? *Journal of Pension Economics and Finance*. Vol. 11, pp. 203-222.

tailored public opinion poll data (for Latvia only) have been analysed with SPSS to identify patterns of subjective adequacy and expected replacement rate.

3.2.2.1. Preventing absolute poverty - minimal old-age pension benefits

The role of pension systems can be divided into income allocation over the life course and poverty protection at old age. While the general design of the pension system is focused on the former, the minimum pension or other forms of guarantees serve the latter.

The elderly people are a particular group of poverty risk, it particularly refers to those who have been poor on a lifetime basis and therefore are unable to save enough, both through voluntary savings and through mandatory pension schemes. Statutory minimum pensions are designed to fight absolute poverty in this group of population.

As mentioned in Section 3.2 above, the eligibility for an old-age social insurance pension is restricted by the minimum 15-year mandatory period of work experience. Persons of pensionable age who do not qualify for a social insurance old-age pension because of the lack of the required years of service can apply for social assistance benefits. In Estonia and Lithuania social assistance pensions are set at the level of minimum social insurance pensions: 158.37 EUR in Estonia and 94.50 EUR in Lithuania. In Latvia, having the lowest minimum pension amount – 70.43 EUR, social security benefit (for those not having enough service record) is even lower – 64.03, and, moreover, the recipient of such a benefit should have resided in the country for at least 5 years before applying for the pension, and the applicant's age must exceed the normal pensionable age by 5 years.

In Estonia, the minimal amount of the state pension is indexed annually, taking into account the inflation rate and the increase in the total wage bill. In Lithuania, the minimum amount is set as 0.9 of the so-called basic pension (a component of the general pension formula), which, in its turn, lacks any clearly defined indexation procedure and is revised on a discretionary basis. In Latvia, the minimum is affixed to the amount of the social security state benefit that also lacks any prescribed indexation and has not been changed since 2006.

All three Baltic States are in a very short list (accompanied by Hungary and Malta) of European 'black sheep' – the countries that have not ratified ILO Social Security (Minimum Standards) Convention, 1952 (No. 102). The Convention sets the lower limit of the old-age pension benefit as 40% of the wage of a skilled manual male employee (or 50% of the average insured wage). Moreover, our northern neighbours – Finland, Sweden and Norway (as well as Germany, Austria, Switzerland, The Netherlands, Czech, Slovakia and Cyprus)

have ratified the more recent and more generous ILO Invalidity, Old-Age and Survivors' Benefits Convention, 1967 (No. 128) prescribing even more generous lower limits: 45% of the wage of a skilled manual male employee (or 56.25% of the average insured wage). The corresponding figures in the Baltic countries are significantly lower: in 2014, the minimal pension made only 9.2 % of the average gross wage (12.6% of the average net wage) in Latvia, the respective figures in the other two countries are also very low: minimal pension in Lithuania made 14.0% of average gross wage or 17.9% of average net wage, and in Estonia 14.9% of average gross wage or 17.8% of average net wage¹⁹¹ .

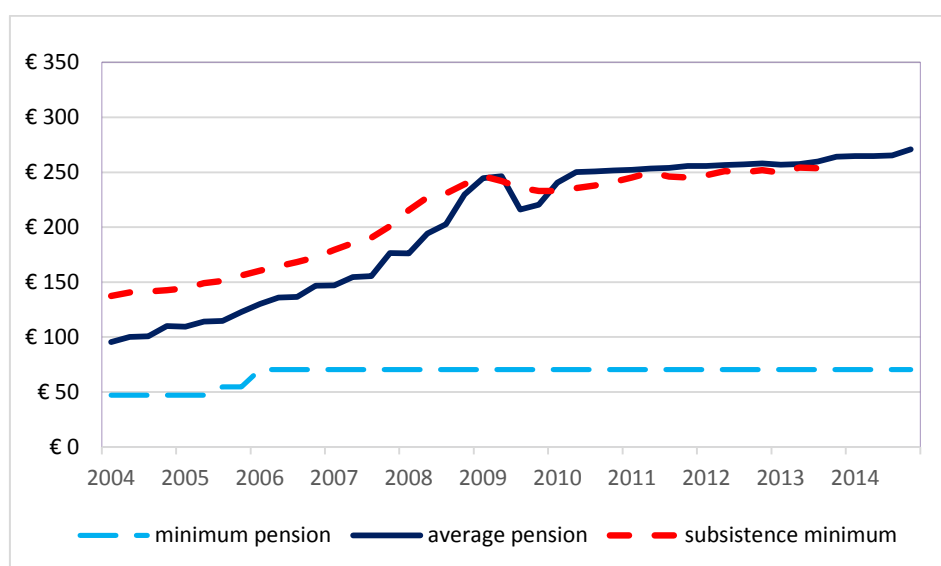


Figure 3.2. **Minimum and average monthly old age pension benefits in Latvia in 2004-2014 compared to minimum subsistence level (EUR)**

Source: Central Statistical Bureau of Latvia, the author's calculations

Let us also compare the amount of minimum pension with the such indicator of poverty, as 'subsistence minimum' that was earlier calculated by the Central Statistical Bureau of Latvia (starting from 2014, the minimal subsistence level is not calculated any more) – see Fig. 3.2. Since 1990s, the average Latvian pension benefit was below this poverty line and it grew up to the subsistence minimum only in 2010. In December 2013, the minimum pension benefit made only 27.9% of the subsistence minimum, and even average old-age pension was just five euro higher than the poverty line.

Poverty among the elderly is a problem of vital importance in Latvia, which can be evidenced by an extremely high rate of material deprivation in old age (see Table 3.3).

¹⁹¹ Author's calculations based on normative (minimum pensions) and statistical (gross and net wages) data.

Severely materially deprived persons, according to Eurostat methodology, are those who have living conditions severely constrained by a lack of resources and experience at least 4 out of 9 of the following deprivations: cannot afford to i) pay rent or utility bills, ii) keep the home adequately warm, iii) face unexpected expenses, iv) eat meat, fish or a protein equivalent every second day, v) take a one-week holiday away from home, vi) own a car, vii) own a washing machine, viii) own a colour TV, or ix) own a telephone.

Table 3.3. Severe material deprivation rate among persons aged 65 years and over in the Baltic States and Poland compared to EU-27, 2005-2014 (% of total population)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
EU-27	10.0	9.1	8.6	7.5	6.7	6.7	7.2	7.5	6.9	
Estonia	14.9	7.4	7.9	5.8	5.6	6.6	5.8	7.1	6.3	6.4
Latvia	49.5	38.1	35.8	28.7	25.3	27.5	28.9	26.4	26.6	22.0
Lithuania	40.5	31.5	20.8	16.5	18.8	24.0	25.1	24.1	18.4	19.3
Poland	36.7	29.2	23.7	20.8	17.3	16.5	15.4	14.8	11.5	9.7

Source: Eurostat / EU-SILC [ilc_mddd11]

All Eastern Europe had quite high rates when joined the EU because of lower living standards, however, already since 2006 Estonia has been demonstrating figures lower than EU average, while Lithuania and, especially, Latvia, are lagging greatly behind. Poland is included into the above table as an example of another post-communist country that had introduced the notional defined contribution pension system quite similar to the Latvian one; compared to other types (e.g., the so-called ‘point system’ used by Estonia and Lithuania) of pension systems, this one, almost entirely reduces the income redistribution within the pension system (see more thorough discussion in Section 3.3 below). However, in contrast to Latvia, Poland is a member state to the ILO Convention No. 102, and the minimum pension guarantee set at a decent level is successfully functioning as the principal mechanism of income protection of old-age pensioners in the future.

As noted by Hagemeyer and Woodall, “in the “old-fashioned” defined-benefit social security pension schemes, redistributive benefit formulas (usually combined with flat rate components or their equivalent) guaranteed higher replacement rates for low wage earners. Today, many countries have removed those redistributive formulae, introducing instead either defined-contribution (DC) or “notional” defined-contribution (NDC) components, or converting defined-benefit (DB) schemes to a purely earnings-related structure. In this

situation, the securing to low-wage earners of benefits that would keep them out of poverty can be achieved only by strengthening minimum benefit provisions (a matter in which most countries have to date fallen short), in general through some form of non-contributory minimum income guarantee.”¹⁹² This is exactly the Latvian case. While the pension system until recently was relatively effective in mitigating the poverty risk of older people compared to the general population, the poverty risk in the 65+ age group has been rapidly worsening since 2012, as their income increased much slower the general population. The rate of 65+ at risk of poverty or social exclusion reached 39% in 2014, the second highest in the EU.

3.2.2.2. Average pension levels

The next figure allows for the comparison of the average old-age pensions in the three countries considered. The columns show the amount of a benefit expressed in euro, while the solid lines indicate the respective values in PPS – purchasing power standard units¹⁹³.

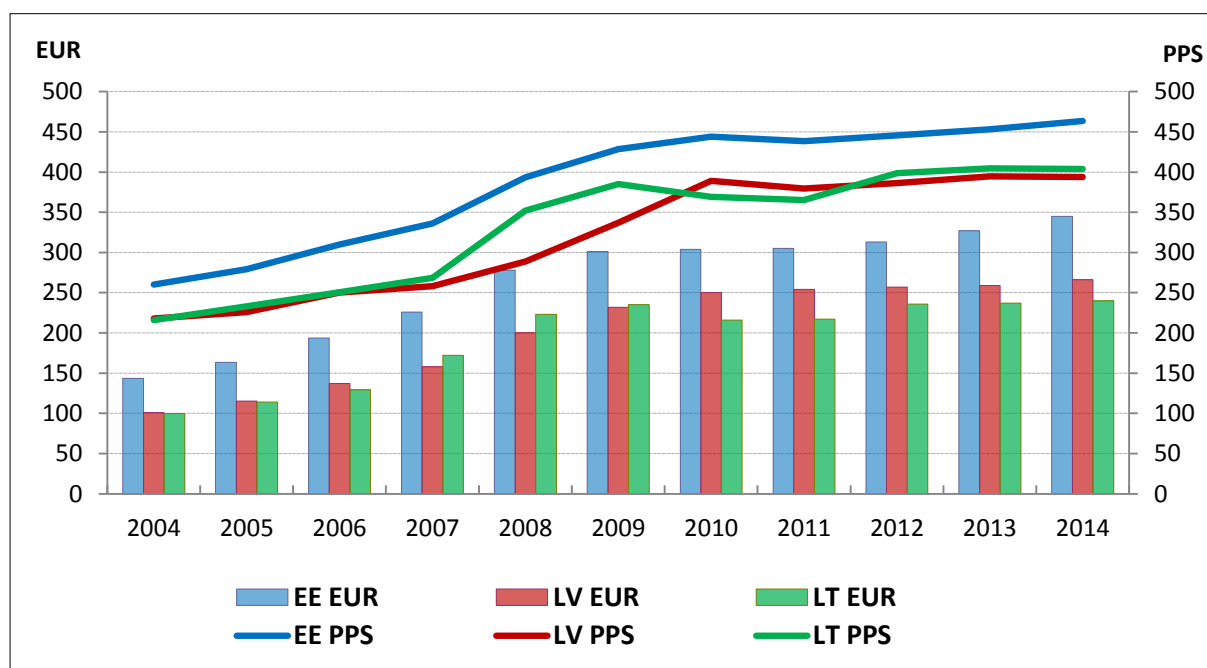


Figure 3.3. Average monthly old age benefits in the Baltic States in EUR and PPS (purchasing power standards), 2004-2014

Source: Estonian Statistical Office, Central Statistical Bureau of Latvia, Statistics Lithuania, State Social Insurance Fund Board of the Republic of Lithuania, Eurostat, the author’s calculations

Average pensions were increasing, expressed either in EUR or in PPS. The real value of an average old-age pension benefit has increased since 2004 by 78% in Estonia, 81% in Latvia and 87% in Lithuania. The growth in PPS was significantly slower than if measured in

¹⁹² Hagemeyer, K., Woodall, J. (2014). How should the adequacy of pension coverage be balanced against financial sustainability? *Australian Journal of Actuarial Practice*, Vol.2, p. 26.

¹⁹³ Purchasing Power Parities (PPPs) taken from Eurostat database (data code [prc_ppp_ind]), [on 18/06/2015]

EUR: nominal growth was faster than the real one by 46% in Latvia, by 35% in Estonia and 28% in Lithuania – high inflation made the achievements of the Baltic States less impressive.

Estonia had the highest pension levels (both in EUR and in PPS) in any given year of the reviewed period. The relative positions of Latvia and Lithuania were changing with time. In 2014, Latvia had nominally higher pension benefit than Lithuania; however, in terms of PPS Lithuanian pensioners got slightly more.

It is noteworthy, however, that the distribution of pension amount among the recipients is much more skewed in Latvia due to the difference in the pension formula that produces less redistributive effect than Lithuanian and Estonian pension formulae do (discussed more thoroughly in the next Section 3.3).

3.2.2.3. Replacement rates

A very important indicator of a pension system is the replacement rate it produces. For an individual, a replacement rate shows how large (or, rather, how small) his/her pension is compared to his/her previous wage (the comparison can be made both to the wage in his/her preretirement years or to the average wage s/he earned during all years of service). Such replacement rates can also be calculated for specific cohorts, showing whether the pension system is more favourable to some generations at the account of the others. The replacement rate is measured by percentage or can be expressed as a ratio (i.e. 0.4 = 40%).

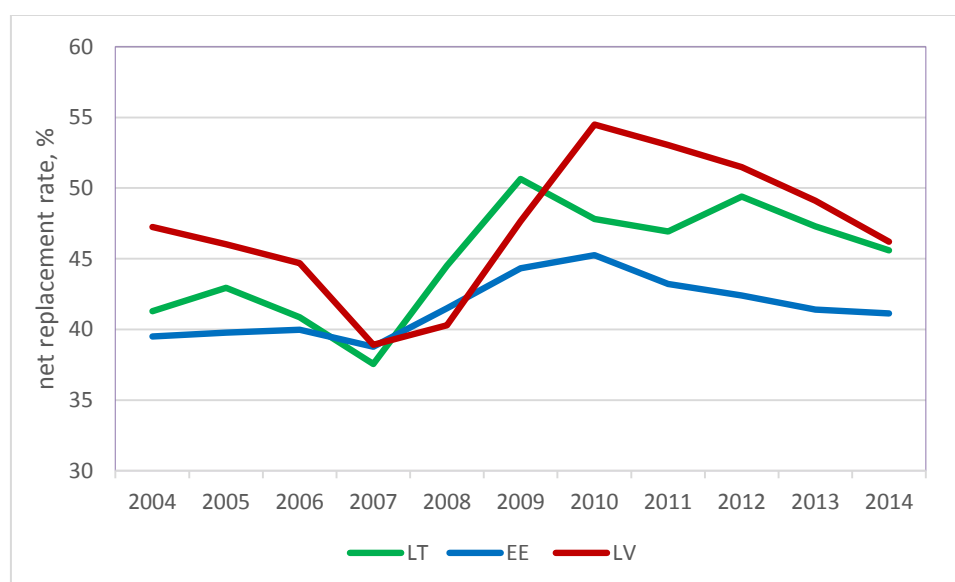


Figure 3.4. Net aggregate replacement rates in the Baltic States, 2004-2014 (in %)

Source: Estonian Statistical Office, Central Statistical Bureau of Latvia, Statistics Lithuania, State Social Insurance Fund Board of the Republic of Lithuania, the author's calculations

The publicly available data of the national statistical bureaus allow for the comparison only the aggregate replacement rates: average pensions compared to average salaries. Figure

3.4 presents the net replacement rates (i.e. net pensions that are free of taxes are compared to net wages that are free of taxes as well, since salaries and pensions are taxed differently in all three Baltic countries and the comparison of gross replacement rates would be less accurate). Generally, the three lines follow similar trajectories – sloping down in the pre-crisis years when salaries grew up much faster than pensions, then up in 2008-2010 when the decrease in salaries occurred everywhere in the Baltics, and then decreasing again in the post-crisis years (except for Lithuania). The rates were quite high in 2010, but that was not due to the increase in pensions, but rather the decrease in wages. Likewise, the highest net replacement rate among the Baltic States that was last year observed in Latvia roots not in higher pensions (as was shown in the previous section of this paper), but in relatively lower salaries.

The Baltic States are below the average levels of the new EU member states (the post-communist Eastern Europe, accompanied by Malta and Cyprus). As a rule, countries with lower salaries have higher replacement rates (because the salaries per se do not exceed the subsistence minimum by many times, and pension benefits are strongly influenced by a flat-rate component, where applicable). Thus, the average NMS12-rates are higher than the EU-27 averages. Nevertheless, this rule fails in relation to the Baltic States.

Eurostat offers another indicator of that kind – a ratio of the income from pensions of persons aged between 65 and 74 years and the income from work of persons aged between 50 and 59 years (i.e. those in preretirement years) – see Table 3.4. The most up-to-date data currently available relate to the year 2013.

Table 3.4. Aggregate replacement ratio in the Baltic States compared to EU-27 and NMS-12, 2006-2013 (pensions in 65-74 to wages in 50-59)

	2006	2007	2007	2009	2010	2011	2012	2013
EU27	0.51	0.49	0.50	0.51	0.53	0.54	0.54	0.56
NMS12	0.51	0.50	0.51	0.53	0.57	0.56	0.57	0.58
Estonia	0.49	0.47	0.45	0.52	0.55	0.54	0.50	0.50
Latvia	0.49	0.38	0.30	0.35	0.46	0.53	0.48	0.47
Lithuania	0.44	0.40	0.44	0.48	0.60	0.52	0.45	0.48

Source: Eurostat, data code [ilc_pnp3], retrieved 02/05/2015

The trends in this ratio in Estonia, Latvia and Lithuania are similar to those discussed above and these trends do not correspond to the situation in other EU countries, both ‘old’ and ‘new’ Europe. The Baltic States are below the average levels of the new member states.

Everywhere in Europe, elderly people are poorer than average: the relative median income ratio of people aged 65 years and over to people aged less than 65 years is lower than one. The most recent available indicators on Eurostat can be found for 2013, when the average EU-28 ratio was 0.93, the average NMS-12 ratio was 0.94, while the Baltic States demonstrated significantly worse figures: Lithuania had the ratio equal to 0.81, Latvia – 0.77 and Estonia – 0.69¹⁹⁴.

Eurostat – the statistical office of the European Union – is consolidating the national indicators in order to allow for the comparison of best practices to be made, as well as to measure progress being made towards the common objectives. In May 2006, the social protection committee adopted a portfolio of overarching indicators complemented by specific indicators on social inclusion, pensions and health. The “pensions portfolio” contains, except for the already mentioned aggregate replacement ratio and relative rate of median income, such indices as at-risk-of-poverty rate of elderly people (60+, 65+, 75+) and gender differences in the at-risk-of-poverty rate of elderly people (65+) as well as a bunch of other relative rates. They are meant for the assessment of adequacy of not only pension benefits, but the adequacy of the whole pension systems, and even more generally – the adequacy of social insurance policies.

3.2.2.4. Subjective adequacy - pension expectations of Latvian residents

Various surveys demonstrate that Latvians are not satisfied with the existing pension system, as well as that they hardly understand the formula used for pension benefit calculation. In the June 2013 survey „Inequality, integration and sustainable development of territories”, conducted by LU SZF within the frameworks of the state program „National Identity” for Human Development Report 2012/2013 „Sustainable Nation”, there were two questions included through the request of the writer of these words: 1) about the desired amount of pension satisfactory for meeting basic everyday needs („How big should your pension be to suffice for living (food, clothes, housing and health care)?”); and 2) about the presumptive wage level sufficient to ensure the desired pension („How big should your (net) salary be in order for you to get a pension sufficient for living?”). The respondents were offered to choose from the range of interval variables. The survey data has been analysed with SPSS software (the averages, variation indices, groups, etc.).

At the mean, the respondents considered a pension in the LVL 400-500 range to be „adequate”. For 44% of the respondents, a smaller pension would suffice, but 37% would

¹⁹⁴ Eurostat data code [ilc_pnp2] (Relative median income ratio (65+)), retrieved 02/05/2015

require a benefit above LVL 500. There were pronounced differences in the opinions of different groups: women are more modest in their requirements than men. Residents of Latgale and Zemgale are ready to live with a pension whose amount is less than the country average, whereas the demands of Rigans are substantially above the average. The requirements of persons with higher education (including those with incomplete higher education) regarding pension amount exceed LVL 500, but the demands of people with high school or basic education fall below this rate. There are no differences between the answers of Latvians, Russians, and other ethnical groups.

The survey has also proved that the population does not understand the methodology used for calculating pensions and are unaware of how much they would have to earn in order for the desired pension amount to become reality. This is obvious from a simple calculation, which is also called the expected replacement rate: take the number from each respondent's answer to the first question and divide it with the number given as the same respondent's answer to the second question. Then the averages are calculated. According to this methodology, most of the respondents suppose that their pension would be equal to 60-65% of their net salary. Such a view is unsound and misleading, because the Latvian pension formula generates a much lower replacement rate¹⁹⁵. However, this view is widespread among population irrespective of region, gender, or educational level (moreover, the actual income of the respondents constitutes, on average, less than one third of the salary, which, in their opinion, could ensure an adequate pension). This bias is characteristic not only for Latvian people: a recent research in the Netherlands studied the relationship between the individual expectations of retirement replacement rates in the first and second pillars at the planned retirement age and the estimated replacement rate (computed by the researchers according to pension formula) at the same age¹⁹⁶. The expected replacement rate was in general higher than the computed one. Larger discrepancies were found for younger cohorts and for individuals with less education and working experience. According to the authors, the mismatch is mostly related to poor institutional knowledge. Another study show that Italians also expect higher

¹⁹⁵ For example, for newly granted pensions in the first half of 2014, the replacement rate was only 43% (Jana Muizniece, Ministry of Welfare of Latvia, unpublished presentation materials from seminar on Active Ageing in December 2014).

¹⁹⁶ van Duijn, M., Mastrogiacomo, M., Lindeboom, M., Lundborg, P. (2013). Expected and actual replacement rates in the pension system of the Netherlands: how and why do they differ? *Journal of Pension Economics and Finance*, Vol. 12, pp 168-189.

replacement rates compared with the rates they will eventually receive.¹⁹⁷ Our Estonian neighbours also tend to overestimate their future pension income, the National Audit Office of Estonia in February 2014 discovered that „the awareness and behaviour of Estonian people have not changed much – they still expect to receive a sizable pension in the future. However, according to a forecast of the Ministry of Finance, the share that a pension comprises of the last wage will generally remain at the same level as today”, that is „somewhat higher than average for men (ca 40%) and smaller for women (ca 35%)”¹⁹⁸.

Poor understanding of pension calculation and over-optimistic pension expectations may lead to high risk to the individuals to stay without adequate income in old days, as well as to increasing demand for other forms of social assistance from the state and local governments.

3.2.3. Adequacy: key findings

As noted before, there is no consensus among experts and scholars on what constitutes adequacy. According to one widely respected definition, pensions are adequate when they are sufficient to prevent poverty among the elderly and to provide the majority of people with a reliable mechanism for smoothing down the income over their lifetime.

Although most observers would probably agree that the last decade has brought significant progress towards providing better living standards to elderly population, the average old-age pension benefits being produced by the existent pension schemes in the Baltic States are still too far from being generous. At the end of 2014, the net average pension in Latvia exceeded the subsistence minimum (as it was last time defined one year earlier) by 3.7% only, and the median pension¹⁹⁹ was about 2% lower than the subsistence minimum. In Lithuania, the average old-age pension (expressed in PPS) in 2014 was just 2.5% higher than the Latvian one, thus the majority of Lithuanian pensioners live a hand-to-mouth existence as well. The average Estonian pension benefit (in PPS-units) in 2014 was 17.7% higher than the average Latvian pension, which is, of course, better but also means a very modest income. The pension systems in all three countries considered are far from providing adequate old-age

¹⁹⁷ Bottazzi, R., Jappelli, T., Padula, M. (2006) Retirement expectations, pension reforms, and their impact on private wealth accumulation. *Journal of Public Economics*, Vol. 90(12), pp. 2187–2212.

¹⁹⁸ Mattson, T. (2014). Estonia needs long-term plan to guarantee sustainability of pension system. National Audit Office of Estonia, 26/02/2014 <http://www.riigikontroll.ee/tabid/168/amid/557/ItemId/704/language/en-US/Default.aspx>

¹⁹⁹ Calculated by the author from SSIA statistical data retrieved from <http://www.vsaa.gov.lv/lv/budzets-un-statistika/statistika?gid=6&dates=2014-12-01> on 02/05/2015

income to elderly population, however, as far as we can see, the Estonian system copes with this task better than two other neighbouring countries.

The minimum pension guarantees should be, in our opinion, revised in all three countries, and in Latvia in particular, in order to bring the figures in accord with the socio-economic realities. Clear indexation rules should be formalised in legislation, rather than left at the discretion of politicians.

Until the present, the performance of II pillar private pension funds in all three Baltic countries leaves much to be desired. Their ability to produce the promised replacement rates for future pensioners causes serious concerns. According to the Estonian National Audit Office report presented in February 2014, “although the main goal of second pillar funds is to increase the purchasing power of people’s retirement savings, the analyses carried out by the Ministry of Finance indicate that the actual returns on the funds amount to zero on average. The limited competition between funds has led to a situation where returns are poor and investments are made passively, but the management fees are large. The second pillar has also failed to meet the other goals set at the time the mandatory funded pension system was created. Second pillar funds have had little impact on the development of the Estonian economy and financial markets. The mandatory funded pension has not reduced the impact of political factors on the pension system or significantly decreased the risks that threaten the pension system.”²⁰⁰ These words are fully justified for Latvian and Lithuanian pension funds, as well. The problem is exacerbated by poor financial literacy of population, choosing inappropriate investment strategies²⁰¹. The default option for young labour market entrants in Latvia is a random conservative fund, and the person remains there until s/he makes an intentional choice of another pension plan. Instead, life-cycle strategy should be used – with active investment strategies in earlier working years shifting to more balanced and conservative pension plans closer to retirement.

²⁰⁰ Mattson, T. (2014). *Estonia needs long-term plan to guarantee sustainability of pension system*. National Audit Office of Estonia, 26/02/2014 <http://www.riigikontroll.ee/tabid/168/amid/557/ItemId/704/language/en-US/Default.aspx>

²⁰¹ Stavausis, D. (2013). Izglītības veicināšana finanšu jautājumos kā spējīnāšanas instruments Latvijā: valsts fondēto pensiju gadījums. In Rajevska, F. (Ed.) *Sociālā civildrošība: spēju attīstība, sadarbība, iekļaušana* (pp. 141 – 160). Rīga, LU Akadēmiskais apgāds.

3.3. Equity: dimensionality and measurement approaches. Findings of the analysis

3.3.1. Definitions and approaches

Ever since G. Esping-Andersen had published his famous “The Three Worlds of Welfare Capitalism”²⁰², pension systems are considered as a clear indicator of the welfare state characteristics and as a powerful tool for comparative analysis of social policies in different countries. The ‘degrees of justice’ (fairness, equity) and even the understanding of the meaning of these terms vary across countries, as well.

As was demonstrated in Section 2.3 above, this principle has high priority, both in the documents of EU and OECD, and in the conceptual framework for pension system analysis elaborated by the WB experts. The latter are distinguishing equity as a separate criterion and as one of the major goals of any successful pension system. They offer the following definition: “an equitable system is one that provides the income redistribution from the lifetime rich to the lifetime poor consistent with the societal preferences in a way that does not tax the rest of society external to the system; and one that provides the same benefit for the same contribution”²⁰³. It is worth to mention, that initially the set of criteria consisted only of four factors: adequacy, affordability, sustainability (in its pure financial sense) and robustness. Equity and predictability were added to this set only in 2008. The reassessment of what constitutes a good target for pension system reform was influenced, inter alia, by the refocus on basic income protection for the elderly, reforms of earnings-related schemes towards a tighter contribution-benefit link limited the capability to redistribute income towards low income groups within the schemes.

However, this definition lacks a very important dimension of equity: the attention is paid only to the distribution of benefits, omitting the issue of the fair distribution of burdens and risks.

As shown by August Osterle, “equity is about three types of choices. First, they are characterised by the goods to be shared. These goods might include resources and burdens, goods in cash as well as in kind, rights and responsibilities, etc. The second choice concerns the units among whom these goods, resources or burdens, are shared. These might be individuals, families or households as well as institutions or geographical areas. Finally,

²⁰² Esping-Andersen, G. (1990). *The Three Worlds of Welfare Capitalism*, New York: Princeton University Press.

²⁰³ Holzmann, R., Hinz, R.P., Dorfman, M. (2008). Pension Systems and Reform Conceptual Framework. Social Protection Discussion Paper 0824. The World Bank.

choices have to be made in terms of principles or criteria according to which the goods are shared. Again, a broad range of criteria might be applied”²⁰⁴.

When applying these three types of choices to pension policy, they turn into the following dimensions of analysis:

- 1) what is shared, or “the goods”: this is, on the one hand, money flows within pension system: both incoming and outgoing, and, on the other hand, risks and burdens, borne by various participants of the system;
- 2) among whom is shared, or “the recipients”: for old-age pensions, this dimension includes not only aged persons receiving pension benefits, their family members, but also the state, private pension funds and insurance companies, local self-government authorities, as well as the working population paying taxes;
- 3) how is shared, or “the principles”: explicitly or implicitly expressed in legislation, can be need-related (e.g., social assistance benefits), egalitarian (e.g. basic pensions), status-related (e.g., special pensions for civil servants, merit pensions, widow/er pension, etc.), economics-related (e.g., means-tested pensions), time-related (e.g., pension annuities in funded schemes). Normally, modern pension systems involve a combination of all of the above sub-groups.

An important complicating factor with pensions is that these principles affect not only one’s own generation but also other generations. The sustainability of any pension system based on intergenerational solidarity (that is, all variations of PAYG schemes) calls for both an extension of justice principles across generations and solidarity between different social classes within a generation. How should the benefits be distributed between different income classes and across generations? Perhaps even more important is the question of how the burden in times of distress should be distributed between generations and social classes. A similar quandary applies to funded schemes, where the benefits and costs have to be distributed between people with different income potential and different risks²⁰⁵.

In his paper “Evaluating Equity in Social Policy: A Framework for Comparative Analysis”, A.Osterle refers to the previous research on the subject and identifies four sets of equity objectives as follows:

- guaranteeing minimum standards;

²⁰⁴ Osterle, A. (2002). Evaluating Equity in Social Policy: A Framework for Comparative Analysis. *Evaluation*, Vol. 8(1). pp. 50-51.

²⁰⁵ Tausch, F., et al. (2013). Preferences for redistribution and pensions. What can we learn from experiments?. *Journal of Pension Economics and Finance*, Vol. 12, p. 319.

- supporting living standards;
- reducing inequality; and
- promoting social integration²⁰⁶.

Three of these objectives address quantitative dimensions but they are not just referring to the monetary dimension of income and wealth. Poverty and/or disadvantages may also occur in ‘resources’ such as the availability of health services or access to education (as well as features such as ‘health status’ or ‘education’). The objective of guaranteeing minimum standards aims at reduction and/or prevention of absolute poverty and/or absolute disadvantages.

The second objective, supporting living standards, is aimed at prevention of large drops in individual living standards. Here, living standards of individuals measured by income or other characteristics before and after the occurrence of a social risk (e.g., retirement) are compared.

The third objective, reducing inequality, relates the individual situation to an average situation in society. It aims at reducing and/or preventing relative poverty or relative disadvantages. The focus of reducing inequalities can vary. Policies might be aimed at redistribution between the rich and poor (vertical equity); they might focus on a reduction of inequalities between families with children and families with no children or between the employed and the unemployed (horizontal equity), etc.

The fourth objective, promoting social integration, includes a qualitative perspective. It relates to the resource approach to the social and cultural context according to which specific resources may have different meanings. Promoting social integration aims to reduce and prevent social exclusion. Defining and measuring social integration tends to be more difficult than in the case of quantitative objectives considered above.

3.3.2. Verification of equity criterion in pension systems of the Baltic States

As quoted above, four sets of equity objectives can be identified: 1) guaranteeing minimum standards; 2) supporting living standards; 3) reducing inequality; 4) promoting social integration. How these yardsticks can be applied to the subject of our study - pension systems of the Baltic states? The questions of minimum standard guarantees and supporting individual living standards have been already discussed in the previous section. Promoting of social integration lies outside the scope of this paper. Therefore, the section will be focusing at reducing inequalities.

²⁰⁶ Osterle, A. (2002). Evaluating Equity in Social Policy: A Framework for Comparative Analysis. *Evaluation*, Vol. 8(1). p. 48.

As has been pointed out by B.Ebbinghaus and J.Neugschwender, the employment patterns and income differences during working life may be either mitigated or reproduced by the public and private pension contribution-benefit rules.²⁰⁷

While the role of funded pillars is increasing with the ageing of population they do not contribute to ensuring compliance with the equitability goal: benefits in funded schemes are very much depending on rates of return produced by the pension plan(s) chosen by a participant and on volatile security markets, thus the rule “same benefits for same contributions” conflicts the very nature of funded pillars. No redistribution from lifetime rich to lifetime poor is provided in these pillars, as well. Even more, promotion of third pillar voluntary pension plans (by granting tax reliefs on the contributions made to private funds) can be successful only among those persons who have enough “extra” money that can be directed to long-term savings. Those who live from paycheck to paycheck can hardly afford to withdraw any additional amounts from their household budgets and cannot, therefore, expect any significant third-pillar supplement to their mandatory 1st and 2nd pillar old-age pension benefits. This effect is enhanced by level of financial literacy: as shown in a recent international research²⁰⁸, persons with higher levels of education – who, as a rule, have higher incomes and therefore make larger contributions to pension funds, - are better informed in financial matters and are less vulnerable to risks of choosing an inappropriate investment strategy. Less educated persons, whose incomes are lower, are more exposed to the risk of making a wrong investment choice. In this context, funded pillars are rendering a disservice to lifetime poor, causing further distortion in income distribution in old age. The larger share of total pension tax goes to the second pillar – the higher degree of inequity the system generates.

Different elements of the first pillar design also contribute to quite different outcomes in relative inequality levels. Lack of any basic component in Latvian formula leads to perpetuation of income inequalities after retirement.

It is recognized (see, for example, a study of Polish researchers²⁰⁹) that NDC systems almost lack redistribution instruments, and therefore are not adequate for countries with

²⁰⁷ Ebbinghaus, B., Neugschwender, J. (2011). The Public-Private Pension Mix and Old Age Income Inequality in Europe. In Ebbinghaus, B. (ed.) *The Varieties of Pension Governance: Pension Privatization in Europe*. Oxford University Press, pp. 394.

²⁰⁸ Lusardi, A., Mitchell, O. S. (2011). Financial literacy around the world: an overview. *Journal of Pension Economics and Finance*, Vol. 10, pp. 497-508.

²⁰⁹ Chłoń-Domińczak, A., Strzelecki, P. (2013). The minimum pension as an instrument of poverty protection in the defined contribution pension system – an example of Poland. *Journal of Pension Economics and Finance*, Vol 12 (03), pp. 326-350.

relatively large gap between the rich and the poor (and Latvia has the second highest GINI index in Europe after Bulgaria) – material stratification is not smoothed in old age, and combined with low replacement rates it leads to massive poverty: in December 2014, more than 50% of Latvian pensioners got a net pension benefit lower than the official subsistence minimum defined one year before, meanwhile 0.8% got more than 1000 euro per month²¹⁰.

The actual statistical data demonstrate much higher level of inequality among Latvian pensioners compared to their Estonian and Lithuanian counterparts. And the inequality is deepening. The lines on the Figure 3.5 show how changed the distribution of old-age pension benefits by size from July 2009 (earlier figures are incomparable due to methodological reasons) till March 2014. The vertical dashed lines mark the amounts of average pension in corresponding periods (253.48 EUR in July 2009 and 278.24 EUR in March 2014). In 2009 64% of all Latvian pensioners received a monthly benefit below the country average, in 2014 there were 67% of such persons. As was noted in the previous chapter, public pensions in Latvia have no upper limits (and there are pensions of 5,000 EUR and higher), and the distribution curves have very long right ‘tail’ not shown on the diagram, because less than 2% of pensioners are getting benefits above 700 EUR. A slight slip to the right in the interval 150-250 EUR is mainly caused by small pensions indexation that took place in autumn 2013. Although the average pension has increased by almost 25 euros, the majority of pensioners experienced much more moderate increase of their incomes. The peaks are becoming lower, meanwhile the left and the right tails – higher. The left tail is upheaving because of the growing number of persons, to whom pensions are granted in accordance with the international regulatory enactments, i.e., when determining the rights of pension receipt the insurance periods of Latvia and other EU/EEZ Member States are taken into account, but each country grants the pension on own insurance periods. Regretfully, Latvian statistics does not distinguish such pensioners into a separate group²¹¹.

²¹⁰ Author’s calculations based on SSIA statistical data retrieved from [<http://www.vsaa.gov.lv/lv/budzets-un-statistika/statistika?gid=6&dates=2014-12-01>] on 02/05/2015

²¹¹ Rajevska, O. (2014). Pension statistics in Latvia: resources and weaknesses. *The Journal of Economics and Management Research*, Vol.3, pp. 65-74.

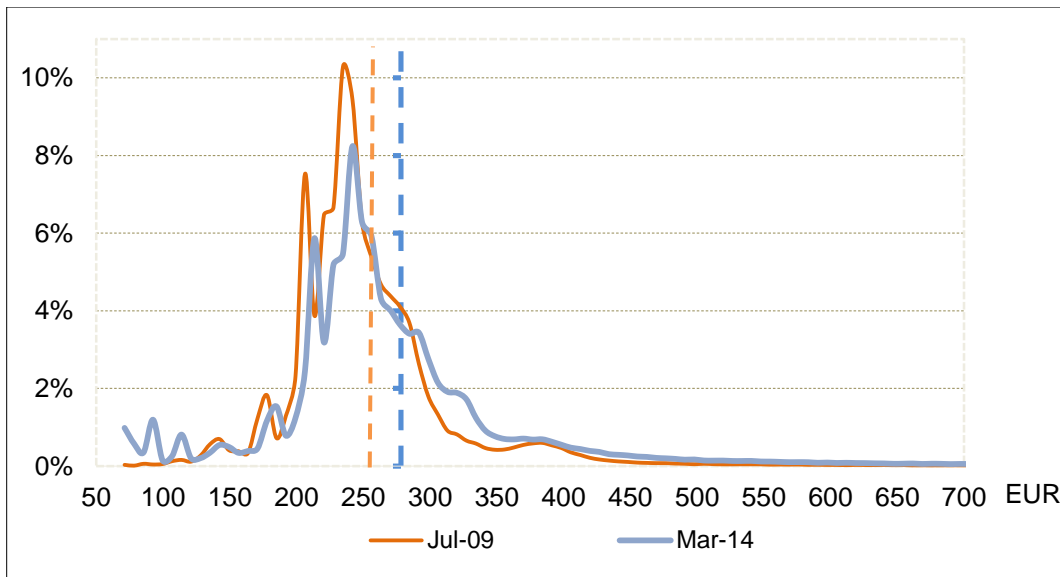


Figure 3.5. **Distribution of old-age pension benefits by size in Latvia in 2009 and 2014** (share of pensioners receiving the corresponding amounts in the total number of pensioners, vertical dashed lines show respective levels of average pensions)

Source: SSIA, author's plotting

Estonian and Lithuanian open access sources do not publish data of such distributions, but some data – for one time point in each country, including separate figures for men and women - was kindly furnished by statisticians of national social insurance boards.²¹² The obtained data sets are not ideally comparable: firstly, I got the figures from Latvia and they are for March 2014. The interval data was provided with 7.11 EUR increment (rooting in former 5-lat grouping). Then Estonian statisticians provided me with the figures for May 2013, grouped into uneven intervals with width from 15.98 EUR (formerly 250 EEK) to 319.56 EUR (formerly 5,000 EUR). And the last data came from Lithuania – for January 2015, grouped into uneven intervals from 25 EUR to 100 EUR. Therefore, Latvian data was also regrouped into wider intervals in order to have smoother lines.

The three diagrams below demonstrate the general patterns of pension benefit distribution by size. Average pensions reached 331.30 EUR in Estonia, 278.24 EUR in Latvia and 241.92 EUR in Lithuania in respective time-periods. Scaling is intentionally made uniform.

²¹² See Annex II.

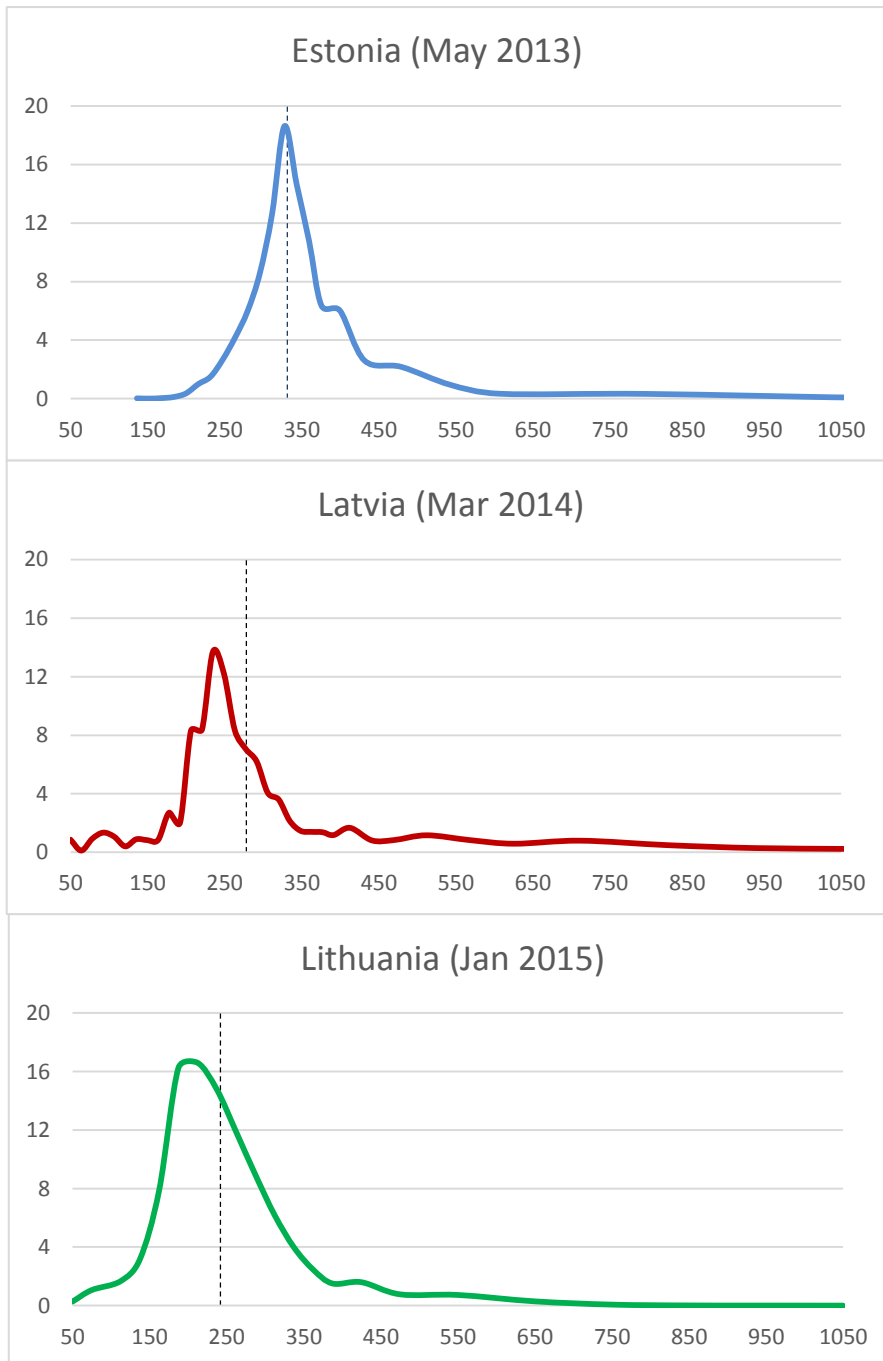


Figure 3.6. Comparative distribution of old-age pension benefits by size in the Baltic States (share of pensioners receiving the corresponding amounts (EUR) in the total number of pensioners, vertical dashed lines show respective levels of average pensions)

Source: national social insurance agencies, author's calculations and plotting

Latvian and Lithuanian distributions look much more skewed than Estonian one! In Estonia, the median value (calculated by the author from interval data) is almost equal to the mean value: 330.66 EUR vs 331.30 EUR respectively. In Lithuania this relation is 231.05 EUR to 241.92 EUR. And the largest difference is observed in Latvia: 250.56 EUR to 278.24 EUR. Latvian distribution has also the higher excess, i.e. the heaviest left and right tails (not

shown on the plot). Leaving aside the smallest pensions on the left side (that are partially explained by people receiving old-age benefits from several countries, as was discussed above), Latvia provides the most generous pensions to high-earners: 4.6% of Latvian pensioners get more than 500 euro per month, compared to 1.1% in Lithuania and ca. 2% in Estonia (despite of higher average pension level in that country). Only 3 (three) pensioners in Lithuania had a pension higher than 1000 euro, in Estonia there were about 50 such persons, but in Latvia – more than 3,500 persons!

Another interesting comparison can be made between distribution of old-age benefits among men and women in the study countries (see Figure 3.9). In all three countries, women's pensions are lower than men's; in all three countries income stratification among men is more expressed.

However, gender disparities are demonstrably smaller in Estonia. The most pronounced difference between men and women is observed in Lithuania, which is due to larger disparity between pensionable age for men and women: hence, in addition to traditionally lower salaries and longer interruptions in career (characteristic to other countries as well), Lithuanian women have shorter period of accumulation of pension rights. On the other hand, Lithuanians have a special type of pension benefit, which is absolutely missing in Latvia and Estonia – a widow(er)' pension. Widows and widowers (and there are, naturally, much more widows, than widowers, since women mainly tend to outlive their husbands) have the right to receive widow(er)'s pension if they are not remarried, and are above official retirement age. Widow(er)'s pension is supplementary to the recipient's own old-age pension. According to the initial version of the law, it was granted as a percentage of the deceased person's pension. Later, the widow(er)'s pension was transformed into a flat rate benefit (presently amounts to EUR 20.30).

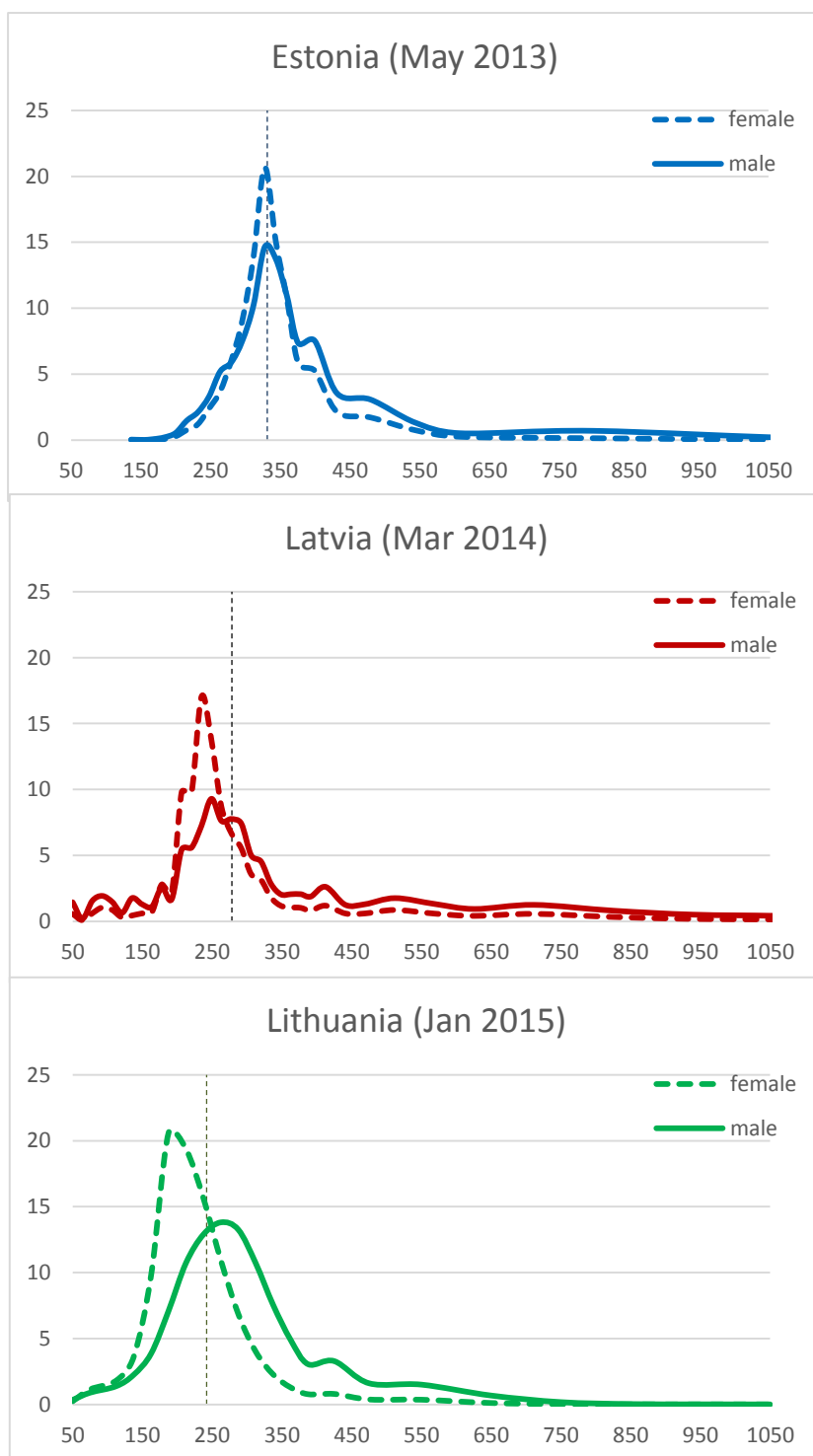


Figure 3.7. **Comparative distribution of old-age pension benefits by size and gender in the Baltic States** (share of pensioners receiving the corresponding amount (EUR) in the total number of pensioners, vertical dashed lines show respective levels of average pensions)

Source: national social security boards, author's calculations and plotting

There is one more underlying condition of Latvian pension formula which is contributing to higher level of inequality of a different nature - intergenerational inequality, -

and this is the mechanism of pension capital valorisation. As discussed in the previous chapters, the accrued notional capital is annually valorised (up-rated) in line with increase in the covered wage bill. When the total amount of wages on a nationwide scale drops below the last year figure – the interest rate is negative, and all prospective pensioners will suffer lower pensions. This mechanism was incorporated into the system in order to maintain financial sustainability, and it was anticipated that the constant growth in wage rates and labour productivity would neutralise the effect of decreasing working population and the index therefore would manage to remain above 1. Nevertheless, crisis years brought negative pension capital indexation in three successive years (2009-2011), and the average amount of a newly-awarded pension benefit dropped by 15% in the first quarter of 2012 compared to the first quarter of 2009. Abolition of the so-called “supplements” (one euro per each pre-reform year of service, i.e. prior to 1996) for newly awarded pensions from 2012 had enhanced this tendency. It was calculated, that a person with 45 years’ service record who was receiving the average nationwide wage throughout his/her career retiring in 2009 got a 24% higher benefit, than a similar person retiring in 2012 did.

Thus, both Latvian and Estonian pension systems include similar balancing mechanisms of matching the assets with liabilities by annual wage-bill index (total amount of wages paid nationwide). Estonian legislation prohibits diminution in benefits for the newly-qualified pensioners: for the same service record (same contributions) they will get as much as those who already enjoy retirement. Meanwhile, valorisation of notional pension capital in Latvian scheme generates serious distortions: if we compare two pensioners with the same service record – for instance, 45 years of service and average salary, a person who retired in 2010 received (and is still receiving) a 24% higher benefit than one who retired in 2012.

Indexation of notional pension was negative during the three consecutive years 2009-2012. The effective value of contributions made prior to 2008 has contracted by almost one third from 2009 to 2012. As was mentioned above, the very recent (June 2015) amendments to the Law on State Pensions, introduced additional rules for computation of annual indices not allowing negative valorisation. This rule has retroactive effect, and all pensions granted in 2010-2015 shall be recalculated – but the terms and timings are not defined yet.

Valorisation rules differ among countries - although some authors note that any other method of valorisation except for the usage of average nominal wage increase “may be considered as a manipulation of the “capital”, hence contradicts to the “true” NDC

principle”²¹³. For instance, indexation of notional capital in Poland is linked not only to the wage-bill index, but also to consumer price index (and in no case can be lower than inflation), in Sweden, valorisation ratio is linked to average wage growth (inflation-adjusted 3-year moving average), in Italy – to nominal GDP growth (5-year moving average). Should Latvia have also adopted such valorisation principles, the benefits would substantially differ from the observables (see the author’s calculations in the next section). In Sweden, notional capital grows not only due to person’s contributions and annual valorisation, but also from the so called “inheritance gains”: the notional assets of those who die before reaching pensionable age are credited to the surviving members of that birth year cohort²¹⁴. This unique mechanism of intra-cohort solidarity is applied in Sweden to the 2nd pillar (premiumpension) either.

3.3.3. Theoretical pension benefits and replacement rates

As noted by Bernhard Ebbinghaus and Jorg Neugschwender, systematic cross-national analyses of pension income inequality often face the problem of long time-lag between accumulating pension rights over an entire working life and withdrawing pensions after retirement. Today’s income of current pensioners reflects the combined effects of past and current regulation, while reforms enacted today may only gradually affect current retirees. There are two possible strategies to cope with this time-lag between policy changes and its likely effect. The first is a *prospective simulation* - by applying a detailed model of today’s rules to possible life-course trajectories in estimating future incomes, the result is depending on multiple assumptions about future employment careers, demographic changes, future returns on capital, and stability of pension rules. The second way is to “link outcomes at a point in time with a *retrospective analysis* of the preceding development, which is the common method adopted in most national and comparative studies”²¹⁵.

The (retrospective) analyses of legislative norms, average pension levels, replacement rates and distributions in the previous sections were performed with the assistance of the historic data, and, therefore share the already noted limitations of empirical method. Statistical data include pension benefits of those who retired at different stages of pension reform, or even before pension reform.

²¹³ Augusztinovics, M. (2006). The Missing Pillar. In Fultz, E. (ed.). *Pension Reform in the Baltic States*. Budapest, International Labour Office, p. 383.

²¹⁴ Anderson, K., Backhaus, M. (2013). *Country Document 2013 – Sweden. Pensions, health and long-term care*. p. 6. Available from http://socialprotection.eu/files_db/1427/SE_asisp_CD13.pdf

²¹⁵ Ebbinghaus, B., Neugschwender, J. (2011). The Public-Private Pension Mix and Old Age Income Inequality in Europe. In Ebbinghaus, B. (ed.). *The Varieties of Pension Governance: Pension Privatization in Europe*. Oxford University Press, pp. 386.

A reliable set of prerequisite prognostic data necessary for prospective simulation is lacking. ‘Pension calculators’ on various bankers’ web-pages are based on ill-founded assumptions and tend to service private pension funds’ advertising goals. As was discussed in the Chapter II above, pension legislation in all three Baltic countries is a subject to frequent amendments, therefore the use of prospective simulation would be precarious.

The author, therefore, has chosen to apply a combination of both methods and to run a retrospective simulation: to calculate theoretical benefits for a number of model cases for a certain point in the past. The aim was to compare pensions a “typical” person retiring in December 2014 in Estonia, Latvia and Lithuania could have been granted.

Assumptions and preconditions:

A generic case is a person:

- with 40 uninterrupted years of service (the strict condition of unbroken service record in post-reform years);
- retiring in the end of 2014 at official pensionable age (i.e. 63 years for men and 62.5 years for women in Estonia; 62 years and 3 months for both sexes in Latvia; 63 years for men and 61 year for women in Lithuania);
- having no dependents at the last year of employment;
- not eligible for any extras for children or other bonuses and supplements;
- was not participating in II pillar;
- throughout whole career had average nationwide insured wage - baseline case; (or, alternatively, was earning 50% / 75% / 125% / 200% / 250% of average insured wage).

Computation steps and data used for them:

1. Calculation of gross pension benefit in accordance with the rules as were in force in December 2014:
 - based on the statistical data and the rules discussed in the previous chapters.
2. Calculation of net pension benefit in accordance with the rules as were in force in December 2014:
 - according to applicable taxation rules (personal income tax regulation).

For more correct comparison amounts in euro are translated into purchasing power standards.²¹⁶

3. Computation of the replacement rate (net pension to net last salary):

- according to applicable taxation rules (personal income tax and social tax / social insurance contributions regulations)²¹⁷.

The full step-by-step computation tables can be found in Annex I (Tables I.1 – I.9), in this section only main results are given in below tables and further illustrated by Figure 3.10.

The least complicated pension formula can be found in *Estonia*.

$$\text{Pension} = \text{Basic pension} + \text{pre-reform component} + \text{insurance component}$$

Basic pension is the same to all persons and was equal to 126.8183 EUR in 2014. Pre-reform component is the same to all persons having uninterrupted post-reform service record: 40 years are made of 24 years of pre-reform service before 1998 (inclusive) and 16 years of post-reform service (1999-2014). One point value was set at 4.718 EUR in 2014.

Table 3.5. Theoretical pensions and replacement rates in Estonia

	50% AW	75% AW	Average wage	125% AW	200% AW	250% AW
Net benefit, EUR	277.79	296.67	315.54	334.41	383.62	413.82
Net benefit, PPS	399.64	426.78	453.93	481.08	551.88	592.73
Replacement rate	80.3%	58.8%	47.6%	40.7%	29.6%	25.6%

Source: author's calculations based on normative and statistical data

Quite high tax exempt on pensions make the overwhelming majority of pensions in Estonia not subject to income tax (see Table I.1 for details). The system demonstrates very significant level of progressivity: with high replacement rate for low earners, and low replacement rate for high-earners. However, the level of computed replacement rate for the average earner is at a quite low level. For example, ISSA experts consider that the adequate replacement rate should lie between 60 per cent and 80 per cent²¹⁸.

²¹⁶ Eurostat online database, [prc_ppp_ind] indicator PPP_EU15_A01: Purchasing power parities (EU15=1), actual individual consumption. In 2014, PPP exchange rate for Estonia – 0.695120; Latvia – 0.630549; Lithuania – 0.554340

²¹⁷ Skačkauskienė, I., Tuncikiene, Z. (2014). Comparative evaluation of the labour income taxation in the Baltic States. *Procedia - Social and Behavioral Sciences*, Vol. 110 (2014), pp. 439 – 449.

²¹⁸ International Social Security Association (2015). *Retirement Benefit Provision: Measuring multivariate adequacy and the implications for social security institutions*. Adequacy in Social Security Series. ISSA. p. 7.

Pension formula in *Latvia* requires more cumbersome computations:

$$\text{Pension} = (\text{Notional pension capital} + \text{initial capital}) / G / 12$$

G-coefficient was equal to 18.50 for persons aged 62 full years in 2014²¹⁹. Other components of the formula need preliminary calculations. In order to calculate the accumulated notional capital, one has to multiply the amount of paid contributions by valorisation indices of the subsequent years (Table I.2 in the Annex I).

Likewise, for calculating the initial pension capital for pre-reform years of service it is necessary to multiply the wages in 1996-1999 by cumulative valorization indices and obtain the average. Further, this ‘average’ is multiplied by the length of pre-reform record and “taxed” at 20% (Table I.3 in the Annex I).

Total accumulated pension capital is **63,558.59 EUR** for a person with average insured wage, or, respectively, 50% of this amount for a person with 50% of average wage, 75% of this amount for a person with 75% of average wage, etc. Knowing tax exempts and income and social tax rates, it is possible now to calculate the sought-for quantities (detailed calculation is provided in Table I.4 in the Annex I).

Table 3.6. Theoretical pensions and replacement rates in Latvia

	50% AW	75% AW	Average wage	125% AW	200% AW	250% AW
Net benefit, EUR	143.15	214.72	273.99	328.38	491.58	600.37
Net benefit, PPS	227.02	340.54	434.52	520.79	779.6	952.14
Replacement rate	62.3%	64.0%	62.1%	60.2%	56.8%	55.8%

Source: author's calculations based on normative and statistical data

The untaxable pension amount is much lower in Latvia than in Estonia, and variations in replacement rate between the poor and the rich is less expressed.

Lithuanian pension formula is also quite complicated:

$$\text{Pension} = \text{Main pension} + \text{bonus for long service} + \text{insurance component}$$

‘Main pension’ is equal for all persons having 40 years record: 396 LTL or 114.79 EUR (110% of the ‘basic pension’ that was set at that time at the level of 360 LTL). Bonus for long service is also equal for all persons having the same length of record²²⁰: 108 LTL or 31.30

²¹⁹ Dārziņa, L. (2014), Mainīta pensijas aprēķina koeficienta G noteikšanas kārtība. „Latvijas Vēstneša” portāls „Par likumu un valsti”, 14/01/2014 <http://www.lvportals.lv/visi/skaidrojumi/260283>

²²⁰ One exception would be made for a person with 50% AW : there the bonus would be slightly lower – 97.2 LTL, because there were 5 years (1997, 1998, 1999, 2013 and 2014) when 50% of average insured wage fell short of the official minimum wage, so bonus part for those years is proportionately discounted.

EUR (3% of ‘basic pension’ for each year in excess of 30). To calculate the insurance component it is necessary to find the average number of pension points earned by our ‘typical’ worker (see Table I.5 in Annex I). It is equal to 1.120444.

A person with 50% of average wage would get 50% of this figure = 0.560222 points per year, a person with 200% of average wage would get 200% of this figure = 2.240888, etc.

The insurance component is then calculated according to the following formula:

$$0.005 \times \text{years of service} \times \text{average points per year} \times \text{insured income}$$

which gives 96.58 EUR for average wage earner; other model cases are prorated respectively.

(look for detailed calculus specification in Table I.6 in the Annex I).

Table 3.7. Theoretical pension and replacement rate in Lithuania

	50% AW	75% AW	Average wage	125% AW	200% AW	250% AW
Total benefit, EUR	191.25	218.52	242.67	266.82	339.25	387.53
Total benefit, PPS	345.00	393.99	437.55	481.11	611.78	698.90
Replacement rate	77.4%	61.0%	51.79%	46.0%	37.1%	34.1%

Source: author’s calculations based on normative and statistical data

The obtained figures are illustrated by Figure 3.8 that clearly demonstrates very different patterns of pension sizes in dependence to person’s wage during working life. Small coloured rhombi are marking the levels of net average salaries in 2014, expressed in PPS. Despite of significantly lower salaries in Latvia, an average wage earner would get practically the same pension in Latvia and Lithuania.

Latvian case is an example of almost linear proportionality: twofold earnings would bring twofold pension, the only shadow of progressivity is obtained through tax exempt. The difference in replacement rate for low- and high-earner is less than 10 percentage points. On the opposite side is Estonia with a strongly pronounced redistribution from rich to poor: among all three countries its pension system provides the highest replacement rate for low-earners – 80.3% and the lowest replacement rates for high-earners – 25.6%, the amplitude reaching almost 55 percentage points. To a great degree, this progressivity is achieved through egalitarian approach to pre-reform service record, where everyone got exactly one pension point for one year.

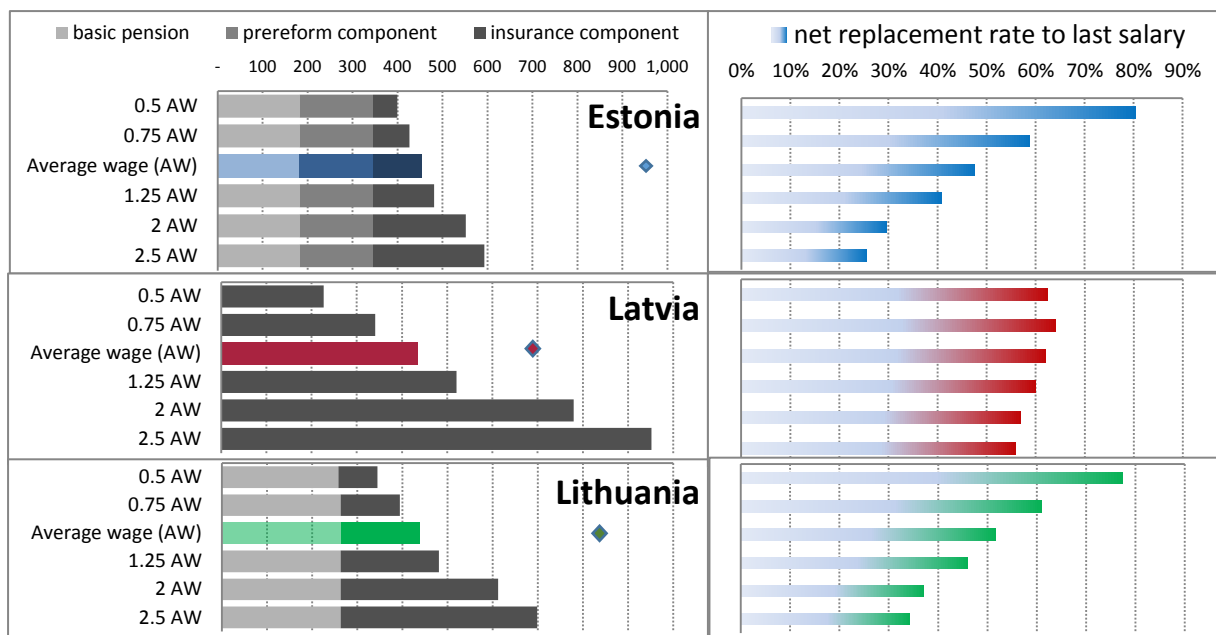


Figure 3.8. **Theoretical pensions and replacement rates in the Baltic States**

Source: author's calculations based on statistical data of national social insurance agencies and pension legislation norms

Lithuania demonstrates an intermediate example of distribution, being however much closer to Estonian pattern than to Latvian one. The difference in replacement rates for low- and high-earners reaches 43 percentage points.

So, in Latvia the poor are poorer, and the rich are richer. Pensions of low-earners (50% and 75% of average wage) are the lowest in the Baltics, while those of high-earners (125%, 200% and 250% of the average) are the highest in the region. Pensioners, who had average wage during their working careers, can afford very similar living standard: the purchasing power of their pension is almost the same - 454 PPS in Estonia, 438 PPS in Lithuania and 435 PPS in Latvia. One PPS is close to a purchasing power of one euro in Germany and The Netherlands, so, actually, 40 years of uninterrupted service record in any of the Baltic States entails a very modest living standard, compared to other EU member states.

It is interesting to note, that the case of three Baltic States is in contrast with the findings of Raj Aggarwal and John Goodell²²¹ for OECD countries. Those scholars have demonstrated that average relative pension levels are negatively related to pension progressivity, i.e. the lower average pensions are found in the countries with high degree of progressivity. This is not the case for Estonia, Latvia and Lithuania, where the situation is the opposite: the country with the highest average pensions (Estonia) has the most progressive distribution.

²²¹ Aggarwal, R., Goodell, J.W. (2013). Political-economy of pension plans: Impact of institutions, gender, and culture. *Journal of Banking & Finance*, Vol. 37 (6), pp. 1860-1879.

Another regularity evidenced in OECD, does not work in the Baltics, either: Aggarwal and Goodell contend that lower mutual social trust encourages pension progressivity. For measuring social trust they use a variable taken from the World Values Survey – namely, the percentage responding affirmatively to the question that most people can be trusted. Respondents of Estonia, Latvia and Lithuania were recently also asked the same question at the 4th wave of European Values Study in 2008²²² and the least social trust was observed in Latvia (25.5% of respondents) where pension system is the least progressive, Estonians having the most progressive pension system returned the rate of 32.6% (which is higher than EU-27 average 32.4%), Lithuanians are somehow more suspicious: 29.9% of them trust in people. Aggarwal and Goodell proceed from the premise that national pension plans in democratic states reflect the expectations of their citizens. It works for OECD countries, but does not work for Latvian case, where pension reform was to a great extent choreographed by foreign experts and bank lobbyists.

As concerns Latvia, the above model allowed to test one more hypothesis: whether those persons who voluntarily joined the II pillar benefited from that decision or not. Let's consider the same average wage earner, who made a decision to participate in the II pillar starting from 01/01/2004²²³ and compare him/her to our model case, a non-participant in the funded scheme.

Such person's accumulations in the first NDC pillar would make 27,693.78 EUR (see Table I.7 in Annex D). The initial capital would remain the same as in the base case (i.e. 34,867.73 EUR).

Part of his/her contributions was directed to the II pillar, and after deduction of the SSIA administrative fee was transferred to one of pension funds.

Further, a person could then choose a pension plan with active, balanced or conservative investment strategy. For ease of calculations, let us suppose that annual average yields (as presented in FCMC reports) can be extended to the whole corresponding year. The results of calculations are presented in Table 3.8 (the detailed description of intermediate computations can be found in Tables I.8 – I.8 of Annex I):

²²² Online database of EVS - available from <http://www.gesis.org/unser-angebot/daten-analysieren/umfragedaten/european-values-study/data-access/>

²²³ II pillar commenced in the end 2001 in Latvia; however, private pension funds were admitted to this market from 2003. Private funds started massive advertising and attracted a lot of voluntary participants in the second half of 2003 and the beginning of 2004. Assume our test object was one of them.

Table 3.8. **Theoretical pension of II pillar participant in Latvia**

	Active strategy	Balanced strategy	Conservative strategy	‘Average’ strategy
Accumulated capital	1098.98	1121.71	1116.16	1101.88
Net pension, EUR	274.34	274.41	274.40	274.35
Gain / loss compared to non-participant	+0.35 EUR	+0.42 EUR	+0.41 EUR	+0.36 EUR

Source: author’s calculations based on normative and statistical data

Quite surprisingly, there practically is no difference either a person participated in II pillar or not, as well as either the chosen pension plan was active, balanced or conservative. Since the resulting figures are averaged and close to zero, in practice this means, that some of voluntary II pillar participants could face though small but loss.

As described in the previous chapter, II pillar legislation in Estonia and Lithuania offered more choices to participants, therefore, it is more difficult to define a ‘typical’ case for modelling there (at least, based on the information in open access sources).

And the last simulation in this section is related to the most recent changes in Latvian pension legislation, namely, the amendments to notional capital valorization procedure. The author has calculated what would be the pensions, should these rules be in force in 2014 (interim steps of calculation omitted in the Table 3.9):

Table 3.9. **Theoretical pension and replacement rate in accordance with the revised valorisation rules**

	50% AW	75% AW	Average wage	125% AW	200% AW	250% AW
Net benefit, old rules (EUR)	143.15	214.72	273.99	328.38	491.58	600.37
Net benefit, new rules (EUR)	160.56	239.44	300.45	361.46	544.50	666.53
Gain, EUR	17.41	24.72	26.46	33.08	52.92	66.16
Gain, %	12.2%	11.5%	9.7%	10.1%	10.8%	11.0%
Replacement rate, new rules	69.9%	71.4%	68.1%	66.0%	63.0%	61.9%
Gain in replacement rate, percentage points	+7.6	+7.4	+6.0	+5.8	+6.2	+6.1

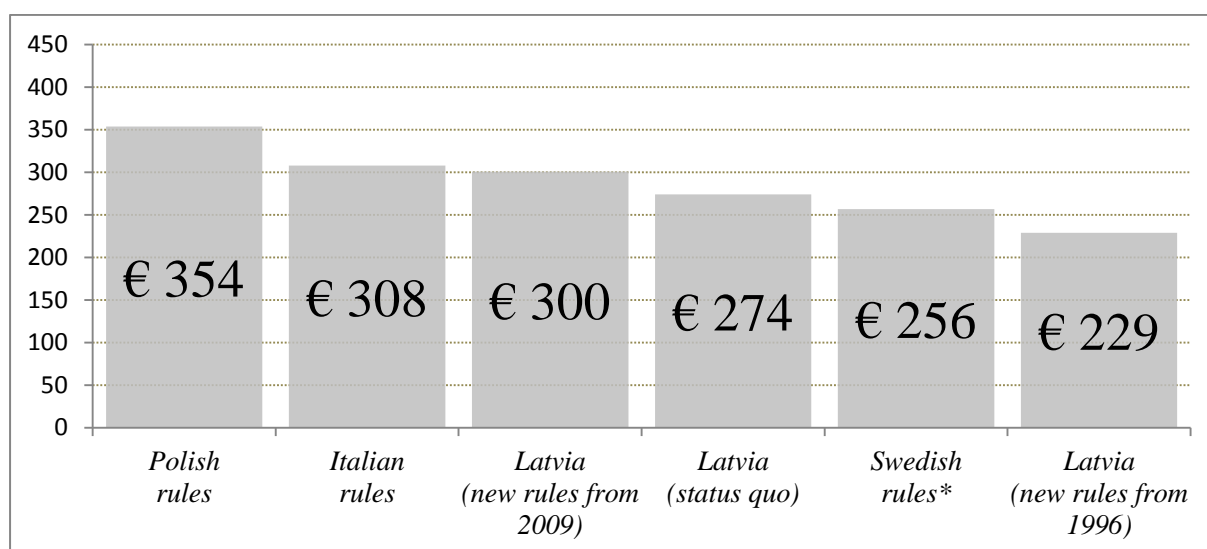
Source: author’s calculations based on normative and statistical data

Although the procedure for uprating the pensions that were granted in 2010-2015 in accordance with the amended law is not developed yet, the author’s calculations show, that those who retired in the end of 2014 may expect increase in their net pensions by

approximately 10%. In general, the relative increase will be the highest for those retired in the beginning of 2013, who suffered most from negative indices, and the lowest for those who retire in the 2nd half of 2015, who suffer least.

This is a very positive sign and an important step to make the Latvian pension system more equitable and more adequate. The author's dares to hope that co-authorship in the Latvian Human Development Report 2012/2013²²⁴ contributed to promotion of pension awareness among Latvian politicians and general public.

As was noted above, other countries with NDC-system use different methods for valorisation of notional capital. Should Latvia have chosen the same method as Poland, Sweden or Italy, or should the new Latvian rules have been in force from the very commencement of the reformed system, the results for our theoretical average wage earner would be significantly discrepant – see Figure 3.9. Interim stages of calculations are not shown²²⁵.



* - without inheritance gain

Figure 3.9. Theoretical net pension benefit for average wage earner with 40 years record depending on methodology of notional capital valorisation

Source: author's calculations based on normative and statistical data

²²⁴ Rajevska, F., Rajevska, O., Stavausis, D. (2014). Challenges for the Sustainability of Latvian Pension System. In Bela, B. (Ed.), Latvia. Human Development Report 2012/2013. Sustainable Nation. Riga: Advanced Social and Political Research Institute of the University of Latvia, pp. 13-33.

²²⁵ Methodology of calculus for Poland and Italy picked from OECD (2013). Pensions at a Glance 2013. Country Profiles. Description of Swedish rules can be found in Axelsson, R., Wadensjo, E., Baroni, E. (2010). ASISP Annual National Report 2010. Pensions, Health and Long-term Care. Sweden. p. 10. Consumer price indices and nominal GDP rates are taken from online database of Central Statistical Bureau of Latvia.

As can be seen, Polish rules (increase in countrywide wage-bill, but not lower than inflation rate and no diminution) would produce by now the most generous pension to a Latvian average-wage earner. The second place is held by Italian method (moving 5-year average of annual increase in nominal GDP). Then follows Latvian new formula, prescribing retroactive recalculation of capital indices starting from 2009. Should, however, these new rules be applied to earlier „fat” years, not allowing indices be above 1.15, then the result would be much worse. Swedish formula (moving 3-year inflation-adjusted average of annual increase in average wage) returns quite low pension, either. It should be noted, however, that such rating is not valid for all years.

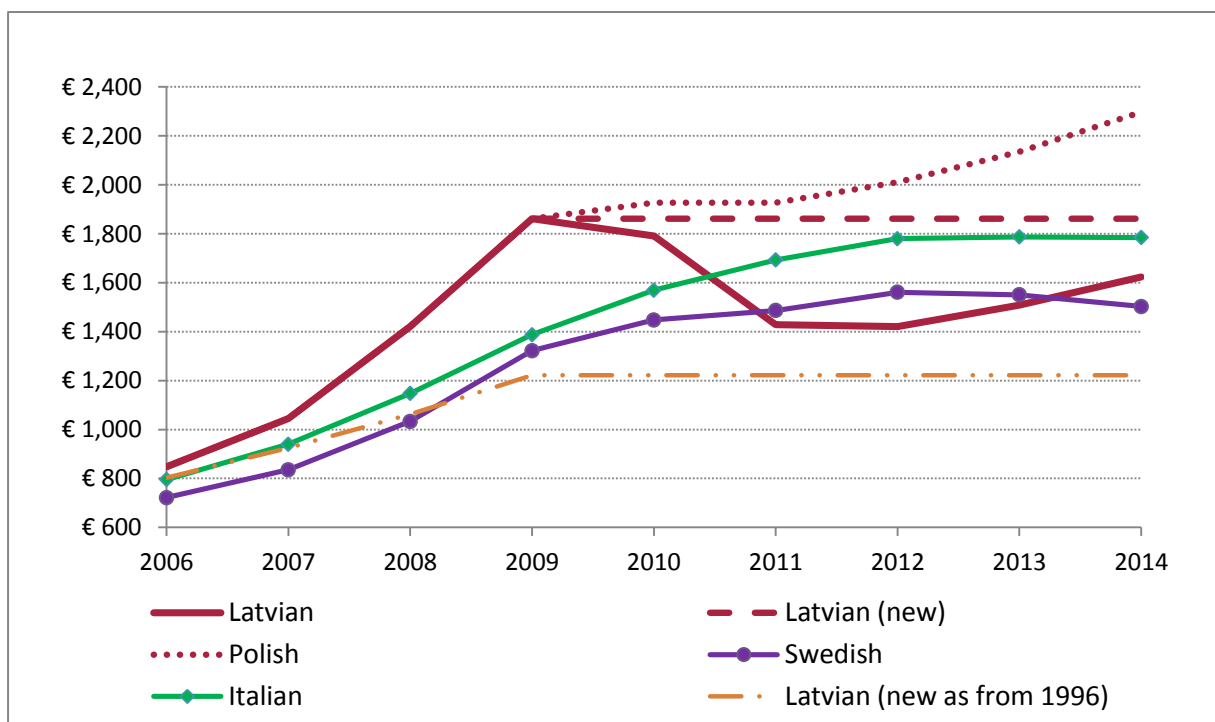


Figure 3.10. **Theoretical trajectories of notional capital valorisation depending on methodology of calculation**

Source: authors' calculations based on normative and statistical data

The above diagram (Figure 3.10) shows, as example, a value of contributions made in 2000 from an average insured wage (i.e. 466.54 EUR) valorised according to different methods over a period from 2006 till 2014. The relative positions of trajectories vary: until 2009 'Polish' and 'Latvian' lines coincide, but afterwards the former goes up, while the latter falls down; in 2011-2013 'Swedish' method guaranteed higher pensions than 'Latvian', but in other years – vice versa. 'Italian' method gave lower results than 'Latvian' before 2010, but then the roles reversed.

It should be noted, that there is no ‘first-best’ methodology: each of them has its advantages and disadvantages: the method, used in Latvia presently and its new amended version guarantee the fastest matching PAYG assets with its liabilities, but does not take inequitable inter-cohort relations into consideration; Polish rules prevent individual notional account accumulations from diminution, but can generate excessively high liabilities to social insurance budget. Italian formula links notional capital growth to overall economic capacity of the state, 5-year moving average helps to avoid sharp variations but does not guarantee notional capital from melting in the long-run. Swedish valorisation formula does not react on decrease in number of working population – instead, the system uses additional balancing mechanism of matching assets with liabilities, making the total computation extremely complicated.

To summarise, in terms of equity those methods are better which 1) ensure more smooth lines (e.g., by using moving averages); 2) do not allow capital diminution; and 3) save the accumulations from inflation.

3.3.4. Equity: key findings

Pension systems in Estonia and Lithuania demonstrate more signs of a fair distribution of benefits and risk both in I and II pillars, and therefore have better compliance with the principles of equity.

The presence of flat demogrant and diversified pension indexation rules in Estonia not only ensure income redistribution for the benefit of most needy, but also provide adherence to the rule “same benefits for same contributions” in inter- and intragenerational dimensions. Point systems in Estonia and Lithuania allow uprating pensions in payment and pension rights in accumulation with the same pace, while in Latvia the rules of pension indexation and the order of pension capital valorisation have almost nothing in common.

The most equitable method of translating the pre-reform service record into new systems was chosen by Lithuania, the Estonian approach is too egalitarian, while Latvian formula looks more like an extemporary measure.

Lithuania, contrary to other two countries, has a unique mechanism, rewarding not only for financial contributions, but also for the time in service, which is positively perceived as a manifestation of justice, albeit non-financial one.

The design of Latvian pension system is de facto inducing the reverse redistribution: from poor to rich – by imposing ceiling on taxable earnings, tax incentives for voluntary III pillar savings are more effective to those having more money to save, high-earners are

normally better educated financially and make more reasonable choices in II pillar pension plans, are less often employed in shadow economy, etc. In countries where median salary is quite close to subsistence minimum, pension system should treat low income groups with positive discrimination instead of negative one.

Statistical data demonstrate that gender inequality is better addressed in Estonia. This country has also launched comprehensive parents pension programme, from which women will be the major gainers. The other two countries should learn by this example, especially in view of the accelerating ageing of Baltic societies. Another interesting example of addressing gender inequality can be learned from Sweden, where a person may transfer his/her pension entitlements in the II pillar (premium pension) to his/her spouse or registered partner. The contributions continue to be transferred until the person gives a notice that they should cease to do so. In the event of transfer the amount is reduced by 8 percent. This money is distributed among all pension savers. The reduction is the same for men and women. The decrease is due to the fact that it is expected that there will be more transfers from men to women than vice versa, and that women live longer on average than men²²⁶.

Minimum rates of return (either absolute or relative) are not secured in pension legislation of any Baltic country, thus putting all the risks on the population and relieving pension fund managers of any responsibility for wrong investment decisions. Financial literacy of population is quite low, especially of people with low incomes, which leads to higher risk of choosing inappropriate pension plan or pay-out method in that group. Inequity of II pillar in Latvia is exacerbated by unjust order of succession.

The surveyed experts stressed the importance of pronounced pension progressivity (i.e. higher replacement rates for low-wage earners and lower replacement rates for high-wage earners) in achieving equitable pensions (see Annex II for more details), but the first place they gave to the handling of gender inequalities in pension distribution. This dimension of equity is underestimated in all three study countries.

²²⁶ Swedish Pensions Agency (Pensionsmyndigheten). Premium pension can be transferred to your partner https://www.pensionsmyndigheten.se/PremiumPensionCanBeTransferredToYourPartner_en.html

Conclusions and recommendations

1. The analysis of academic literature demonstrates the variety of pension system institutional design forms. Those systems comprise various functional and organizational elements, each contributing to one or more system objectives. These objectives are: poverty relief, individual consumption smoothing, insurance against longevity risk, income redistribution.
2. The major criteria of assessment pension systems are: adequacy, affordability, sustainability, equity, predictability, robustness. Pension adequacy is evaluated in terms of a) minimum and average levels with respect to absolute and relative poverty lines; b) individual and aggregate replacement rates; c) pension wealth; d) subjective perceptions of income adequacy. Pension equity is evaluated in terms of a) proportionality between contributions and benefits; b) income redistribution (progressivity); c) fair distribution of risks and burdens; d) fair distribution between genders and generations.
3. The defined-benefit pay-as-you-go pension systems inherited by the Baltic economies from the Soviet era were in need of reforms to address short-term fiscal imbalances and longer-term issues relating to population aging. Reforms were also needed to adjust benefit and contribution structures to market economy. The countries initiated a process of pension reform motivated by the need to reform their existing systems and by the trend toward multipillar structures. All Baltic countries reformed their existing pay-as-you-go, first-pillar schemes, to become earnings related in the sense that benefits in retirement depend, in varying degrees, on earnings received and contributions paid while working. Latvia, at the suggestion of the World Bank, has introduced NDC-system, Estonia and Lithuania use variations of pension points systems combined with non-contributory component.
4. The Baltic States reduced first-pillar benefits for future beneficiaries and complemented their first-pillar schemes with mandated (or quasi-mandated, as in Lithuania) earnings-related, funded second-pillar schemes. These schemes are defined-contribution schemes that rely on privately managed pension funds for administration and asset management. Until now, second-pillar pension funds have not proved their effectiveness, neither in providing good rates of return for their

participants, nor in contributing to development of national economy and financial markets. The myths about 'intrinsic' advantages of funded schemes, which were shaping pension reforms in the Baltic countries in 1990s, are being debunked by real experience.

5. The post reform experience demonstrates divergence in the levels of adequacy and equity of old-age pensions between the study countries, despite of very similar external environment. With the analysis of historic data and retrospective simulation, it was proved that the variations in pension adequacy and equity between the Baltic States can be substantially explained by differences in pension system design elements.

The main hypothesis of the dissertation was confirmed. Despite the resemblance in the organization of pension systems in the Baltic States some varying principal features of their institutional design exert a decisive influence on their adequacy and equity. Institutional design is a fundamental determinant for pension system performance.

6. The pension systems in all three countries are far from providing adequate old-age income to elderly population. The Estonian system ensures relatively higher average pensions, while Latvian system returns higher average replacement rates. But in absolute figures the well-being of the elderly in the Baltics is significantly below European averages.
7. Pension systems in Estonia and Lithuania demonstrate more signs of a fair distribution of benefits and risk both in I and II pillars, and therefore have better compliance with the principles of equity. The design of Latvian pension system is de facto inducing the reverse redistribution: from poor to rich n of Latvian pension system is de facto inducing the reverse redistribution: from poor to rich.
8. Point systems in Estonia and Lithuania allow uprating pensions in payment and pension rights in accumulation with the same pace, while in Latvia the rules of pension indexation and the order of pension capital valorisation have almost nothing in common.

9. The most equitable method of translating the pre-reform service record into new systems was chosen by Lithuania, the Estonian approach is too egalitarian, while Latvian formula looks more like an extemporary measure.
10. Patterns generated by pension systems of the Baltic States differ from the results valid for OECD countries: lower average pensions and lower mutual social trust negatively correlate with high pension progressivity. Baltic pension systems stay out of the line with other CEE states, either.
11. Pension systems of Estonia, Latvia and Lithuania were designed in mid 1990s, when the countries were to a much lower extent included into global economic and financial markets. The systems were tailored for a country, where people do not move abroad for work and pension funds are investing into domestic economy. The crisis has demonstrated that the systems were not prepared enough to the risks brought by globalisation.

Upon analysing pension systems' design and studying the functioning of their separate elements, the following strengths and bottlenecks were identified and respective recommendations for legislators and policy makers were elaborated:

I. The following systemic elements responsible for ensuring pension **adequacy** have been identified in the pension schemes of the Baltic countries:

1. Minimum guaranteed pensions linked to average workers' wage
Although statutory minimums are set, their amounts are inadequately low and not bound to average wages in the country, as prescribed by ILO Conventions.
2. Basic pension
Presence of basic pension in Estonia and Lithuania plays positive role in contribution to adequacy. Lack of this element in Latvia is a serious disadvantage.
3. Indexation rules – preventing pensions in payment from losing purchasing power
Lack of clear indexation mechanisms in Lithuania is a disservice to pension adequacy and predictability. Limiting pension indexation in Latvia with increasing only part of the benefit devaluates pensions with time, worsening their adequacy.

4. NDC – notional capital valorisation rules preventing its diminution from inflation or other reasons

Lack of protection mechanisms against inflation in Latvian formula for notional capital valorisation does not secure accumulations in I pillar from devaluation.

5. Administrative fees in II pillar

Enormously high administrative fees in all countries erode future pensions of fund participants. Private pension funds after almost 15 years of operation have accumulated great assets that should bring lower marginal costs.

6. Minimum guaranteed rates of return in II pillar

Lack of minimum guaranteed rates of return does not secure accumulations in II pillar from devaluation.

II. The following systemic elements responsible for ensuring pension **equity** have been identified in the pension schemes of the Baltic countries:

1. Earnings-related schemes

Old-age pension benefits depend on earnings received and contributions paid while working. Pension points are in use in Estonia and Lithuania, and notional accounts – in Latvia.

2. Methodology of converting pre-reform service record into new schemes

The three Baltic countries have applied very different methods: the most equitable method is found in Lithuania, the most egalitarian, contributing to pension progressivity – in Estonia, the most contradictory – in Latvia.

3. Tax exempts and progressive taxation

Tax exempts protect the poorest groups of elderly population.

4. NDC – notional capital valorisation rules preventing from abrupt jumps (moving averages, balancing mechanisms)

More smooth trajectories of capital indices contribute to more equality between cohorts.

5. Point system – regular update of denominator (close link to average wage)

Lack of functional relation between average wages and the denominator in pension points computation creates inequity in weights of points earned in different years.

6. Pension ‘ceilings’
Since state social insurance system is mainly addressed to the less prosperous groups of population, it should not assume generous obligations towards more affluent ones.
7. Indexation rules – beneficial to low pension recipients
A good example can be found in Estonia, where non-contributory and contributory components grow at different paces. A less effective solution is offered by Latvian formula, where only part of pension benefit is subject to indexation.
8. Parental pensions
Special provisions for rewarding the period of parenthood promote equitable solution for women spending their productive years on child-care.
9. Bonus for length of service
Bonus for longer work career adds a non-financial dimension of equity, prising socially useful values of honest employment. In Estonia it is expressed in equal reward for pre-reform years of service irrespectively of actual earnings, in Latvia – in different rates of minimum pension depending on service record; in Lithuania – as an integral part of basic pension.
10. Actuarially fair rules for early / deferred pension calculation
A well-designed layout offering flexible time of taking retirement promotes longer stay in labour markets without extra burden on pension schemes.
11. Possibility to participate in several II pillar pension funds simultaneously
Diversification of investment strategies mitigates risks of suffering losses from non-optimal choice of pension plan.
12. In NDC and in II pillar – inheritance gains and/or hereditability of II pillar accumulations
Fair principles of hereditability strengthen intra-generational solidarity and contribute to overall social trust and justice.

Recommendations to legislators in the Baltic States for improvement of pension **adequacy**:

1. Minimum pension levels should be linked to average wages; ILO Social Security (Minimum Standards) Convention No. 102 or ILO Invalidity, Old-Age and Survivors' Benefits Convention No. 128 should be ratified
2. Non-contributory element in the form of basic pension should be introduced in Latvian pension system
3. Indexation rules should be revisited in Latvia to prevent loss in pension value with the course of time. In Lithuania, a bright-line indexation rule should be legislated, linking increase in pension amounts with inflation and wage growth.
4. Notional capital valorisation rules in Latvia should be revisited to guarantee that the annual index cannot be lower than consumer price index.
5. The administrative fees of private pension funds should be legislatively capped on the significantly lower levels in all three study countries. Additional SSIA administration fee in Latvia should be cancelled.
6. Minimum guaranteed rates of return should be introduced in the Baltic pension legislation on the model of CEE countries in order to protect participants and promote more competition among pension funds. Such guaranteed yield may be expressed in relative value on the basis of industry's average; or in the form of absolute return guarantee of protection of nominal ("at least zero") or real ("at least real value of accumulated assets") rate of return.

Recommendations to legislators in the Baltic States for improvement of pension **equity**:

1. Latvian formula for converting pre-reform service record into NDC needs revision. Among possible options are: excluding non-productive periods from the reference period for calculation of initial capital: extending the reference period from 4 years 1996-1999 for a longer one; extending of supplements also to those retired after 2012.
2. Tax exempt for pensions should be either removed (as in Lithuania), or linked to the amount of average wage (and be made significantly higher than average pension) to improve the relative well-being of low earners.

3. Notional capital valorisation rules in Latvia should be revisited to include the method moving averages.
4. The ‘insured income’ rate in Lithuania should be annually re-linked to actually observed average wage.
5. In Latvia, ceilings should be imposed on pension benefits, and not on contributions, and linked to average wages
6. Indexation rules should be revisited in Latvia to ensure indexation of full pension amount. In Lithuania, a bright-line indexation rule should be legislated, setting the relative increases in contributory and non-contributory part in favour of low pension recipients.
7. Parental pensions’ mechanisms should be developed in Latvia and Lithuania following the example of Estonia.
8. Elements rewarding for longer work careers should be enhanced to guarantee more sensitive response of individual benefits to longer service record irrespectively of contributions.
9. The formulae of early / deferred pension benefits should be revisited in order to provide effectual mechanism for later retirement. The incentives should be strong enough and adequate to the current situation, e.g. the possibility of combining work and pension.
10. Individuals in Latvia and Lithuania should be given an option to participate in more than one mandatory pension plan.
11. Latvia should follow the example of Sweden and consider a possibility to introduce the scheme of inheritance gains in the NDC. The funds accumulated by individuals in II pillar funds should be made fully hereditable.

The above recommendations are also applicable in other countries looking for improvement of their pension systems.

Recommendations to scientists on public administration and public policy in the field of pensions:

1. This doctoral dissertation is looking at „how” pension systems in the Baltic States differ from each other. It intentionally leaves aside the question “why” they are so different. Surely, this topic deserves an intensive study.
2. The notion of pension wealth is high-potential instrument for comparative analysis of different pension systems’ performance, both in respect to historical data and to future prospects. For the first case, it requires longitudinal data from income and wealth surveys. For the second case, it requires calculations for a number of “model cases” (with different service record, with or without interruptions in employment, having or not having children, etc.) by applying the varying system’s parameters. This task could be a ‘greenfield’ for a whole team of researches.
3. The Baltic States should be compared not only among themselves, but also to Nordic and or Eastern European countries. Or – focusing on NDC-schemes – to compare actual performance of Latvian NDC with Polish, Swedish and Italian experience.

Range of possible research is very extensive, and the author is looking forward to seeing new work on the subject.

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- 172. Republic of Lithuania *State Social Insurance Law*. I-1336. Adopted on 21/05/1991.
- 173. Republic of Lithuania *Law on State Social Pension Insurance Pensions*. I-549. Adopted on 18/07/1994.
- 174. Republic of Lithuania *Law on Personal Income Tax*. NIX-1007. Adopted on 02/07/2002.

Other documents

- 175. Unpublished statistical data from social insurance bodies of the Baltic States: Republic of Latvia State Social Insurance Agency, Republic of Estonia Social Insurance Board, State Social Insurance Fund Board of the Republic of Lithuania.

Annex I. Step-by-step calculation of theoretical pensions and replacement rates

This annex contains computation tables derived in the course of retroactive simulation analysis described in Section 3.3.3 of Chapter 3 of this thesis.

Table I.1 Theoretical pensions and replacement rates in Estonia

	50% AW	75% AW	Average wage	125% AW	200% AW	250% AW
Basic pension	126.82	126.82	126.82	126.82	126.82	126.82
Pre-reform part	113.23	113.23	113.23	113.23	113.23	113.23
Insurance part	37.74	56.62	75.49	94.36	150.98	188.72
Gross benefit	277.79	296.67	315.54	334.41	391.03	428.77
Tax exempt	354.00	354.00	354.00	354.00	354.00	354.00
Income tax 20%	-	-	-	-	7.41	14.95
Net benefit, EUR	277.79	296.67	315.54	334.41	383.62	413.82
Net benefit, PPS	399.64	426.78	453.93	481.08	551.88	592.73
Gross wage	396.38	594.56	792.75	990.94	1585.50	1981.88
Tax exempt	144.00	144.00	144.00	144.00	144.00	144.00
Income tax 20%	50.48	90.11	129.75	169.39	288.30	367.58
Net wage	345.90	504.45	663.00	821.55	1297.20	1614.30
Replacement rate	80.3%	58.8%	47.6%	40.7%	29.6%	25.6%

Source: author's calculations based on normative and statistical data

Table I.2 Notional pension capital accumulated in 1996-2014 (Latvia)

Year	Average wage (W)	Contributions paid	Valorisation index (annual)	Valorisation index (cumulative)	Notional capital
1996	131.41	315.38	1	4.7918684	1511.26
1997	158.17	379.61	1.03	4.6522994	1766.05
1998	174.40	418.56	1.12	4.1538387	1738.63
1999	182.13	437.11	1.117	3.7187455	1625.51
2000	194.39	466.54	1.069	3.4787142	1622.95
2001	206.83	496.39	1.0835	3.2106269	1593.73
2002	219.93	527.83	1.0453	3.0714885	1621.23
2003	245.19	588.46	1.1645	2.6376028	1552.11
2004	272.96	655.10	1.1754	2.2440044	1470.06
2005	312.92	751.01	1.1712	1.9159874	1438.92
2006	389.77	935.45	1.2333	1.5535453	1453.26
2007	518.71	1244.90	1.3593	1.1429010	1422.80
2008	625.65	1501.56	1.3106	0.8720441	1309.43
2009	560.31	1344.74	0.9622	0.9063023	1218.74
2010	537.52	1290.05	0.7978	1.1360019	1465.50
2011	547.68	1314.43	0.9945	1.1422844	1501.46
2012	565.28	1356.67	1.0618	1.0758	1459.51
2013	594.06	1425.74	1.0758	1	1425.74
2014	622.50	1494.00	1.0766	1	1494.00
Total accumulated notional capital:					28,690.88

Source: SSIA, author's calculations

Table I.3 **Initial pension capital (Latvia)**

Year	Average wage (W)	Valorisation index (V)	Valorised wage (W x V)
1996	131.41	4.7918684	629.70
1997	158.17	4.6522994	735.85
1998	174.40	4.1538387	724.43
1999	182.13	3.7187455	677.30
Average 1996-1999 (W_{ave})			691.82
Initial capital = $W_{avg} \times 12 \times 21$ pre-reform years x 20%			34,867.71

Source: SSIA, author's calculations

Table I.4 **Theoretical pensions and replacement rates in Latvia**

	50% AW	75% AW	Average wage	125% AW	200% AW	250% AW
Pension capital	31779.30	47668.94	63558.59	79448.24	127117.18	158896.48
Gross benefit	143.15	214.72	286.30	357.87	572.60	715.75
Tax exempt	235.00	235.00	235.00	235.00	235.00	235.00
Income tax	-	-	12.31	29.49	81.02	115.38
Net benefit, EUR	143.15	214.72	273.99	328.38	491.58	600.37
Net benefit, PPS	227.02	340.54	434.52	520.79	779.6	952.14
Gross wage	311.25	466.88	622.50	778.13	1245.00	1556.25
Soc. tax 10.5%	32.68	49.02	65.36	81.70	130.73	163.40
Tax exempt	75.00	75.00	75.00	75.00	75.00	75.00
Income tax 24%	48.86	82.28	115.71	149.14	249.43	316.28
Net wage	229.71	335.57	441.42	547.28	864.85	1076.56
Replacement rate	62.3%	64.0%	62.1%	60.2%	56.8%	55.8%

Source: author's calculations based on normative and statistical data

Table I.5 **Average pension points in Lithuania in 1995-2014**

Year	Average wage (W)*	Insured income (D)*	Points (W/D)	Year	Average wage (W)*	Insured income (D)*	Points (W/D)
1995	425.30	427.00	0.996019	2005	336.90	300.58	1.120834
1996	556.20	538.00	1.033829	2006	396.30	332.75	1.190971
1997	702.60	694.00	1.012392	2007	474.50	389.57	1.218025
1998	827.00	845.00	0.978698	2008	559.10	418.84	1.334875
1999	851.00	886.00	0.960497	2009	516.40	431.30	1.197298
2000	867.00	886.00	0.978555	2010	496.00	431.30	1.150000
2001	893.00	886.00	1.007901	2011	507.30	431.30	1.176200
2002	918.10	886.00	1.036230	2012	518.20	431.30	1.201472
2003	280.10	259.13	1.080923	2013	550.40	431.30	1.276129
2004	303.80	269.86	1.125789	2014	574.60	431.30	1.332238
Total sum of points for 20 years			22.40888	Average points per year			1.120444

* - figures for 1995-2002 are in Litass, later – in euro

Source: Sodra, author's calculations

Table I.6 Theoretical pension and replacement rate in Lithuania

	50% AW	75% AW	Average wage	125% AW	200% AW	250% AW
Main pension	114.79	114.79	114.79	114.79	114.79	114.79
Bonus	28.17	31.30	31.30	31.30	31.30	31.30
Insurance comp.	48.29	72.44	96.58	120.73	193.16	241.46
Total benefit, EUR	191.25	218.52	242.67	266.82	339.25	387.53
Total benefit, PPS	345.00	393.99	437.55	481.11	611.78	698.90
Gross wage	287.30	430.95	574.6	718.25	1149.2	1436.5
Soc. tax 9%	25.857	38.7855	51.714	64.6425	103.428	129.285
Tax exempt	165.22	165.22	165.22	165.22	165.22	165.22
Income tax	14.433	18.969	55.589	73.258	132.083	171.299
Net wage	247.01	337.20	467.30	580.35	913.69	1135.92
Replacement rate	77.4%	61.0%	51.79%	46.0%	37.1%	34.1%

Source: author's calculations based on normative and statistical data

Table I.7 Accumulated notional capital for a person participating in II pillar in Latvia

Year	Average wage (W)	Contributions paid		Earnings index	Valorisation index	Notional capital
		to pillar I	to pillar II			
1996	131.41	315.38	-	1	4.7918684	1511.26
1997	158.17	379.61	-	1.03	4.6522994	1766.05
1998	174.40	418.56	-	1.12	4.1538387	1738.63
1999	182.13	437.11	-	1.117	3.7187455	1625.51
2000	194.39	466.54	-	1.069	3.4787142	1622.95
2001	206.83	496.39	-	1.0835	3.2106269	1593.73
2002	219.93	527.83	-	1.0453	3.0714885	1621.23
2003	245.19	588.46	-	1.1645	2.6376028	1552.11
2004	272.96	627.80	27.30	1.1754	2.2440044	1408.79
2005	312.92	719.72	31.29	1.1712	1.9159874	1378.97
2006	389.77	896.47	38.98	1.2333	1.5535453	1392.71
2007	518.71	1141.16	103.74	1.3593	1.1429010	1304.23
2008	625.65	1251.30	250.26	1.3106	0.8720441	1091.19
2009	560.31	1288.71	56.03	0.9622	0.9063023	1167.96
2010	537.52	1236.30	53.75	0.7978	1.1360019	1404.44
2011	547.68	1259.66	54.77	0.9945	1.1422844	1438.89
2012	565.28	1300.14	56.53	1.0618	1.0758	1398.69
2013	594.06	1306.93	118.81	1.0758	1	1306.93
2014	622.50	1369.50	124.50	1.0766	1	1369.50
Total accumulated notional capital:						27,693.78
Initial capital (the same as in the base case):						34,867.73

Source: author's calculations based on normative and statistical data

Table I.8 Accumulated financial capital for a person participating in II pillar in Latvia
(average investment strategy)

Year	II pillar contrib.	SSIA fees		Monthly transfer to a fund	Average yield	Accumulated capital	
		%	EUR			By year end	By end 2014
2004	27.30	2.5%	0.68	2.22	3.76%	27.08	37.47
2005	31.29	0.51%	0.16	2.59	6.74%	32.11	41.63
2006	38.98	1.25%	0.49	3.21	2.82%	38.99	49.17
2007	103.74	0.47%	0.49	8.60	2.50%	104.44	128.48
2008	250.26	0.27%	0.68	20.80	-11.50%	236.84	329.19
2009	56.06	0.27%	0.15	4.66	12.33%	59.15	73.19
2010	53.75	0.63%	0.34	4.45	7.59%	55.31	63.61
2011	54.77	0.79%	0.43	4.53	-1.96%	53.85	63.17
2012	56.53	0.76%	0.43	4.68	8.96%	58.46	62.94
2013	118.81	0.37%	0.44	9.86	2.29%	119.62	125.90
2014	124.50	0.32%	0.40	10.34	5.25%	127.13	127.13
Total accumulated II pillar capital:							1101.88

Source: author's calculations based on normative and statistical data

Table I.9 Accumulated financial capital for a person participating in II pillar in Latvia
(depending on investment strategy)

Year	Monthly transfer to a fund	Conservative		Balanced		Active	
		Average yield	Accumulated by end 2014	Average yield	Accumulated by end 2014	Average yield	Accumulated by end 2014
2004	2.22	3.42%	36.66	4.44%	39.03	6.07%	38.39
2005	2.59	2.55%	41.64	5.76%	43.43	9.50%	41.66
2006	3.21	-1.32%	51.26	1.56%	51.86	3.96%	48.30
2007	8.60	-1.96%	139.85	3.05%	135.93	3.03%	125.22
2008	20.80	1.99%	337.51	-5.71%	334.76	-14.63%	327.14
2009	4.66	9.03%	71.59	9.69%	73.34	13.27%	73.47
2010	4.45	6.17%	63.61	7.88%	64.44	8.09%	63.43
2011	4.53	1.89%	62.27	-0.57%	63.42	-3.78%	63.51
2012	4.68	8.42%	61.11	9.20%	62.71	9.12%	63.76
2013	9.86	0.20%	123.91	1.78%	125.64	3.28%	126.80
2014	10.34	4.58%	126.74	5.28%	127.15	5.52%	127.29
Total II pillar capital:			1116.16		1121.71		1098.98

Source: author's calculations based on normative and statistical data

Annex II. Expert survey

The research included expert poll and expert interviews

A. Expert poll

The questionnaire (see the model below) was elaborated by the author using the discussed conceptual framework for pension system analysis and included three major questions: assessment of measurement instruments of pension adequacy, assessment of measurement instruments of pension equity, assessment of pension sustainability threats.

The proposed answers 'entries have been developed on the basis of the analysis of respective academic literature (see Sections 3.2.1, 3.3.1 and 2.3.1 respectively).

The answers were collected in person (by Feliciana Rajevska during ESPN meeting in Brussels on 28-29/09/2015) and electronically by e-mail. The total amount of the responded questionnaires – 15.

Mainly the pollees are European Social Policy Network (ESPN) national coordinators. ESPN was established in 2014 to provide the European Commission with independent information, analysis and expertise on social policies. In particular, the ESPN supports the Commission in monitoring progress towards the EU social protection and social inclusion objectives set out in the Europe 2020 strategy.

For the Baltic States, more than one expert was included from each country (two from Estonia and Latvia and three from Lithuania): in addition to ESPN Network country experts, the questionnaires were sent also to ASISP Network country pension experts Ruta Zilvere (Latvia) and Teodoras Medaiskis (Lithuania) (in Estonia the ESPN country pension expert and ASISP country pension expert is one and the same person – Andres Vork), as well as to Jolanta Aidukaite in Lithuania, known for her numerous publications on a social policy development in the three Baltic States, and to Avo Trumm in Estonia, expert in social policy analysis.

The list of experts in the alphabetical order:

- 1) Aidukaite Jolanta (Lithuania), Lithuanian Social Research Centre
- 2) Cabrero Gregorio Rodriguez (Spain), University of Alcalá, ESPN national coordinator for Spain, Country Expert in Social inclusion, Long-term care and Pensions
- 3) Gerovska Mitev Maja (FYR of Macedonia), Institute of Social Work and Social Policy, Faculty of Philosophy, Ss. Cyril and Methodius University, ESPN national coordinator for FYR of Macedonia, Country Expert in Social inclusion and Pensions

- 4) Kangas Olli (Finland), Social Insurance Institution of Finland – Kela, ESPN national coordinator for Finland, Country Expert in Social inclusion, Healthcare and Pensions
- 5) Kvist Jon (Denmark), Roskilde University, ESPN national coordinator for Denmark, Country Expert in Social inclusion, Long-term care and Pensions
- 6) Lazutka Romas (Lithuania), Vilnius University, ESPN Country Expert in Pensions and Social inclusion
- 7) Marxer Wilfried (Liechtenstein), Liechtenstein-Institut, ESPN national coordinator for Liechtenstein, Country Expert in Social inclusion, Healthcare, Long-term care and Pensions
- 8) Medaiskis Teodoras (Lithuania), Vilnius University, ASISP Country Expert for Lithuania on Pensions
- 9) Olafsson Stefan (Iceland), University of Iceland, ESPN national coordinator for Iceland, member of ESPN Network Core Team, Country Expert in Social inclusion, Healthcare, Long-term care and Pensions
- 10) Pedersen Axel West (Norway), Institute for Social Research, ESPN national coordinator for Norway, Country Expert in Social inclusion and Pensions
- 11) Rajevska Feliciana (Latvia), Vidzeme University of Applied Sciences, ESPN national coordinator for Latvia, Country Expert in Long-term care and Pensions
- 12) Topinska Irena (Poland), Centre for Social and Economic Research, CASE Foundation, ESPN national coordinator for Poland, Country Expert in Social inclusion and Pensions
- 13) Trumm Avo (Estonia), University of Tartu
- 14) Võrk Andres (Estonia), Praxis Centre for Policy Studies, ESPN national coordinator for Estonia, Country Expert in Healthcare, Long-term care and Pensions
- 15) Zilvere Ruta (Latvia), ASISP Country Expert for Latvia on Pensions and Long-Term Care.

The experts' responses have been analysed with the assistance of SPSS. The major results are summarised in the below table Annex 2.1.

It clearly demonstrates that all proposed answers' entries are eligible. At least one expert gave a high score (from eight to ten) to all entries but one ("significant difference in social security standards between Eastern and Western Europe"), where the observed maximum value is seven.

Annex 2.1. Descriptive statistics on expert poll results (September - October 2015)

Descriptive Statistics							
	N	Minimum	Maximum	Mean	Std. deviation	Mode	Median
average replacement rate	15	4	10	7.67	2.024	9	8
average pension to subsistence minimum	15	1	10	6.00	3.000	8	7
individual perception	13	1	8	4.54	2.106	3	4
individual replacement rate	14	2	10	6.21	2.806	8	8
minimum pension to subsistence minimum	13	1	10	6.77	2.555	7	7
minimum pension to median income	14	1	10	6.71	2.367	7	7
pension wealth	8	3	9	5.75	2.188	3; 5	5.5
share in GDP	15	2	9	4.80	2.757	3	3
average replacement rate	14	1	10	5.86	2.797	7	6.5
distribution by gender	15	5	10	8.00	1.309	8	8
distribution by size	15	2	10	7.20	2.210	8	8
individual perception of equity	13	1	9	5.15	2.641	4; 8	4
individual replacement rate	14	1	10	6.29	3.197	8	8
minimum pension to subsistence minimum	12	1	10	5.00	2.594	5	5
minimum pension to median income	13	3	10	6.08	1.891	5	6
pension progressivity	12	3	10	7.83	1.946	8	8
late start	13	2	10	5.92	2.900	8	7
fragmentised careers	14	1	10	6.14	2.685	8	6.5
part-time employment	14	2	10	6.21	2.517	3;6;7;8; 9	6.5
freelance	14	3	8	6.50	1.506	6; 7; 8	7
labour market globalisation	14	1	10	6.64	2.790	7; 10	7
poor performance of II pillar	14	1	10	5.36	2.649	7	5.5
ageing	15	3	10	8.07	2.017	8	8
shadow economy	14	2	10	6.43	3.435	10	7
gap between East and West	11	1	7	4.00	1.949	2; 3; 5; 6	4
unemployment	15	2	10	6.53	2.532	4; 5; 8	7
excessive reliance on state	13	1	8	4.38	2.434	2	4
overoptimistic expectations	14	2	8	5.21	1.718	4; 5; 7	5
poor financial literacy	14	2	8	4.86	1.875	3	5

Source: author's calculations using SPSS, the answers were given using ordinal scale 1-10, where 1- fully disagree to 10 - fully agree

On the other hand, the answers of experts vary significantly, proving the complexity and multi-dimensionality of the studied phenomena. This is visibly demonstrated on the Figures II.1 – II.3 below.

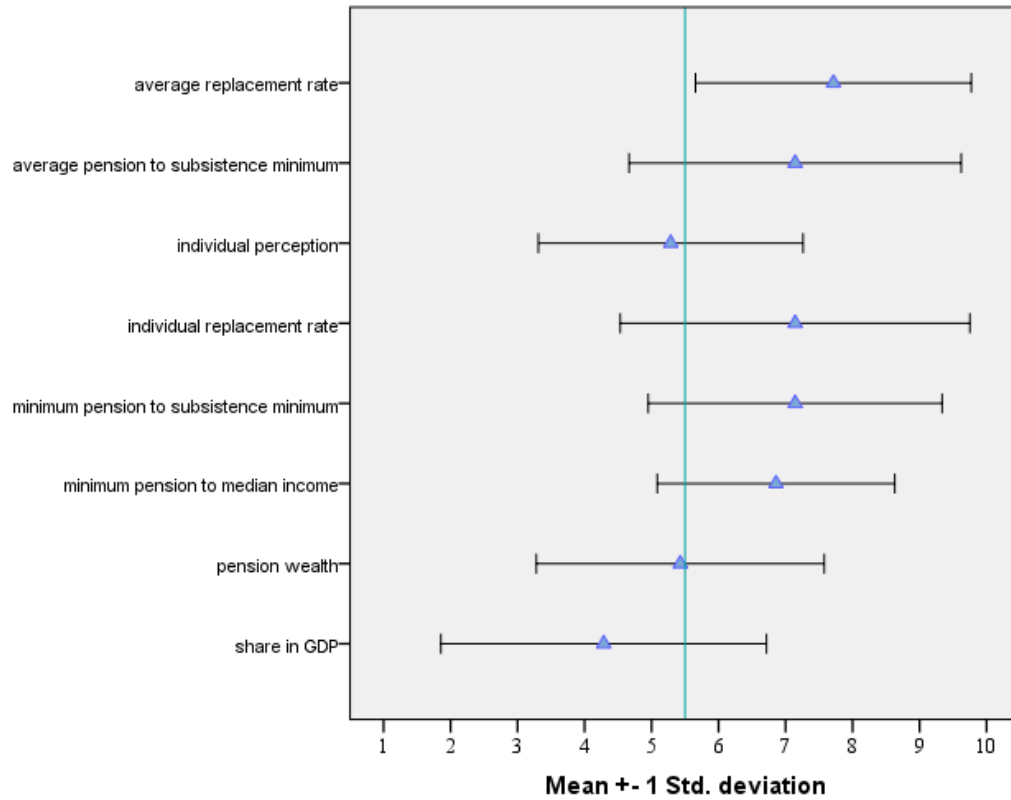


Figure II.1 Evaluation of adequacy measurements

Source: author's plotting using SPSS

The majority of the experts have chosen such traditional indices as average and individual replacement rates and pension benefit relation to subsistence minimum as the best measures of pension adequacy.

Compared to the concept of adequacy, which is quite developed and supported by numerous publications, especially in the last years, the notion of pension equity is more indistinct and waiting for further conceptualisation. Experts' answers on the second group of questions vary to a much greater extent.

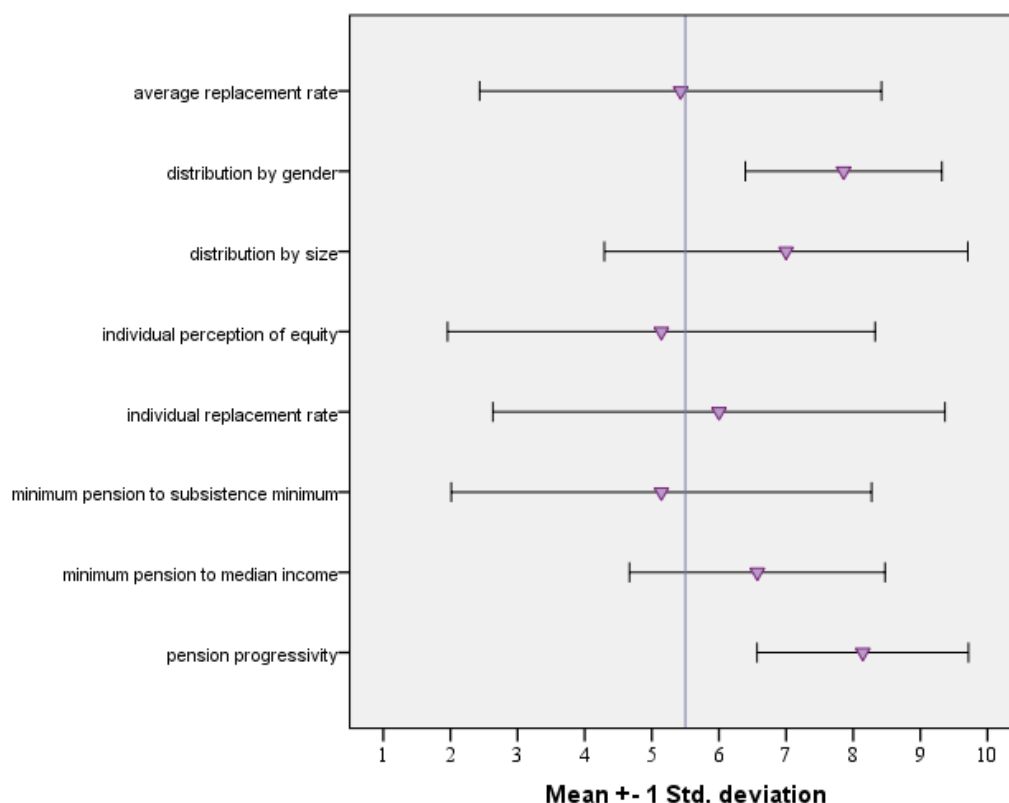


Figure II.2 Evaluation of equity measurements

Source: author's plotting using SPSS

Variations in experts' scorings are strongly pronounced. The 'top picks' are pension progressivity and benefit distributions by size and gender.

The last group of questions, those regarding systemic risks, has also brought broad-ranging responses, since the listed negative factors (e.g., shadow economy or unemployment) are of different importance in different countries, and the experts were requested to evaluate them for their home country. Even within one country, the views of experts are quite dissimilar: for instance, when evaluating the importance of potential underperformance of II pillar pension funds, three Lithuanian experts returned "2", "7" and "10".

The two main almost unquestioned risks include population ageing and interruptions in service record due fragmentation of labour careers and unemployment.

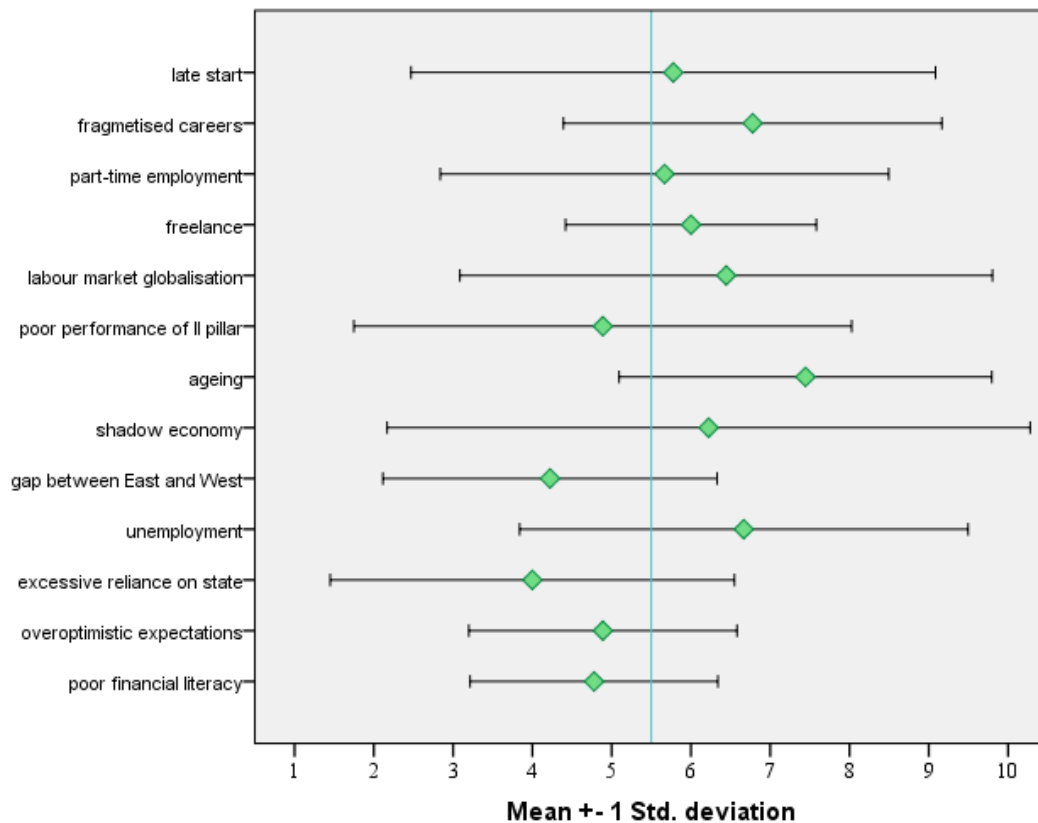


Figure II.3 **Evaluation of threats to pension systems sustainability**

Source: author's plotting using SPSS

The experts have also provided the author with a number of valuable comments and references to useful publications.

B. Expert interviews

Apart from the questionnaire, the author has communicated (by e-mail, telephonically and in person) with country experts on pension statistics:

- Ruta Avotiņa, Financial Statistician at the Statistical Department of SSIA (Latvia)
- Raselė Bernotienė, Senior Specialist of Statistics, Analysis and Forecasts Department of Sodra (Lithuania)
- Evita Česka, Statistical Department Head of SSIA (Latvia)
- Dalia Janušauskaitė, Deputy Head of Statistics, Analysis and Forecasts Department of Sodra (Lithuania)
- Merle Sumil-Laanemaa, Deputy Head of Pensions and Benefits Department of Estonian Social Insurance Board (Estonia)
- Sabīna Rauhmane, Senior Statistician at the Statistical Department of SSIA (Latvia)

The author is grateful for invaluable help, many hours of fruitful discussions, worthwhile academic contacts received from my first and foremost reviewer, co-author of a number of papers and conference presentations, ESPN Country Expert of Pensions and Long-Term Care, Associate Professor of Vidzeme University of Applied Sciences, Dr. pol. sc. Feliciana Rajevska.

3. Do you agree the below factors **threaten** pension system sustainability in your country?
 (Evaluation scale 1-10, where 1 – fully disagree, 10 – fully agree)

		1	2	3	4	5	6	7	8	9	10	Don't know	Not applicable
1	Changing labour patterns												
	- late start (youth unemployment)												
	- more fragmented careers												
	- part-time employment												
	- spread of freelancing and self-employment												
	- other (please indicate and evaluate)												
	-												
	-												
2	Globalisation of labour markets causing migration of working age population												
3	Poor performance of funded pension schemes												
4	Population ageing												
5	Shadow economy (earnings uncovered with social insurance)												
6	Significant difference in social security standards between Eastern and Western Europe												
7	Unemployment												
8	Views and expectations of the population												
	- excessive reliance on the state												
	- overoptimistic individual expectations												
	- poor financial literacy												
	- other (please indicate and evaluate)												
	-												
	-												
9	Other (please indicate and evaluate):												

Thank you!

More information about survey Olga Rajevska - Olga.Rajevska@lu.lv, phone +371 29110545

Your name, surname _____

Country _____

Date _____