UNIVERSITY OF TARTU

Faculty of Social Sciences

School of Economics and Business Administration

Dagnija Modesta Auzāne

COMPARISON OF THE MARKET OF SECOND PILLAR PENSION FUNDS IN LATVIA AND ESTONIA

Bachelor Thesis

Supervisor: Andres Võrk

Tartu 2022

This paper conforms to the requirements for a Bachelor Thesis

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(Signature of the supervisor)

Admitted for defense " "..... (date)

I have written this Bachelor Thesis independently. Any ideas or data taken from other authors or other sources have been fully referenced.

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(Signature of the author and date)

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Introduction

The first pension system was established over a century ago, and it has remained a fundamental and important aspect of people's lives ever since. However, according to many studies, most people think of pensions as complicated, and they are scared to make decisions when it comes to understanding and picking the right pension fund and where to invest their money (Citizens Advice Bureau, 2015). The pension system consists of parts of different schemes: compulsory (often called the first pillar) and voluntary (usually called second and third pillar). The first pension pillar provides for today's retirees, and the amount of the pension is determined by demographics. It is necessary for today's retirees to have enough money to provide for themselves. The second pension pillar consists of the state funded or accumulated pension schemes. It provides people with the opportunity to develop additional savings to the old age pension provided by the first pension pillar, which is mandatory for everybody. Latvian and Estonian pension system are often compared and considered to be very similar, however many things over time have changed - starting from different law changes to number of contributions, general opinion, and position of public about saving for the retirement and more. The topic of the bachelor thesis “Comparison of the market of second pillar pension funds in Latvia and Estonia” has been chosen based on its topicality in both countries, as it affects every inhabitant living and working there.

The aim of this research paper is to compare the structure, performance, and determinants of second pillar pension funds market in Latvia and Estonia and give recommendations for working individuals and based on findings of the research. The hypothesis of the thesis is that the more there are fund managers in both countries, the bigger the competition and better pension plan offers will be available for the public with lower fees and higher potential profitability.

To achieve the aim of the research paper, the following tasks must be done:

- To give an overview about the main definitions, aims and different choices of the pension system.
- To give an overview of theoretical literature about the role of funded pensions and determining factors of the pension market structure,
- To present main findings and methods used in previous studies regarding market comparison of the second pillar pension funds,
- To conduct an analysis and compare markets of Latvian and Estonian second pillar pension funds,

- To give recommendations for working individuals in choosing their plans.

The structure of the paper will have theoretical and empirical parts. In the beginning of the work the author will focus on giving an overview about theoretical background for funded pension schemes – what are the main definitions and aims of the pension system as well as what are different choices of pension systems. Also, the author will give an overview about the role of funded pensions and determinants of the market structure. Previously done studies will be analysed to draw connections between market comparisons of second pillar pension funds in Latvia and Estonia. To reach the aim of the paper, author will conduct the empirical research that will include different sections such as, a legislation analysis, which entails tracking the changes in laws governing the structure of the markets of second pillar pension funds in Estonia and Latvia. The thesis uses publicly available data on Latvian and Estonian pension funds to analyse the relationship between market concentration, measured by concentration indices and pension fund returns. The author uses monthly and annual data from the period of 2007 to 2021, as paper of Lieksnis (2010) has shown that largely up to 2009, the legislation in both countries have been similar, but the differences in portfolio composition were already noticeable. Author will analyse development of the available pension plan asset structure over time in both countries and will combine it with various market concentration indices such as Herfindahl-Hirschman Index. Finally, the author aims to highlight the changes in legislation, public campaigns, or some exogenous changes in the number of pension plans, to changes in the market concentration and asset structure and then link these changes to possible changes in yields produced by these funds as previous research have indicated that managers of the funds have an impact on portfolios and asset structure, which in turn has an impact on the yields of these funds. Conclusions will be based on the statistical and graphical analysis as well as trends will be compared between Latvia and Estonia. The results will provide a better understanding of which asset structure has historically provided either the most stable or highest yields, which of the asset structures are associated with the highest losses and what changes in legislation have encouraged or discouraged, or even prevented the fund managers from achieving these asset structures. It will also provide individuals with data and information about the outcomes of different asset structures to make better informed decisions in choosing their pension fund managers and plans.

Keywords: pension system, funded pensions, second pension pillar, Latvia, Estonia.

1. Theoretical background for funded pension schemes

This section includes information about pension system definitions and aims, as well as overview of different pension systems and their characteristics.

1.1. Definitions and aims of pension system

As mentioned before, pension system was first introduced more than 100 years ago. The American Express Company was the first to introduce it to the public in 1875. The American Express Company is a multinational financial services company based in the United States that specializes in credit card issuance, payment processing, and travel-related services. They established America's first private pension plan for retirees and workers with disabilities. According to the Pension Research Council, there were 200 private pension funds established by the largest employers in the United States by 1926. (Davidson, 2016) When it comes to Europe, however, the German Empire was the first European country to establish a fully-fledged pension system for workers aged 70 and over in 1889 (Galasso, 2019). The main goal of a pension system is a financial security in old age that consists of two types of instruments - a mechanism for consumption smoothing and a means of coverage, according to (Barr, Diamond, 2006). Today, retirement is already something that most people rely on when they retire.

According to Barr and Diamond (2006) another essential goal of the pension system is to function as an insurance mechanism. Individuals can save while working to support themselves financially when they retire because no one knows what will happen when they retire. As well as, according to the Holzmann, Hinz & Dorfman (2008) pensions system provides protection against the potential of poverty in retirement, as pension is the principal source of income for the elderly. Also, according to Schwarz (2006) the pension system can provide money to those whose households have lost a wage earner. Finally, the pension system fosters the financial development and economic progress of a country, according to Sun and Hu (2015). According to Barr and Diamond (2006) poorly structured pension plans and excessive public pension spending can lead to negative market labour incentives, and can also put countries economy at risk, lead to higher tax rates therefore all the above-mentioned objections are especially critical.

1.2. Overview of different pension systems.

Various types of pension systems have been classified over time. According to Barr and Diamond (2006) pensions can be structured in a variety of ways, depending on how they are organized and how payments and benefits are linked (see Table 1).

Table 1

Different types of pension schemes based on N. Barr & P.Diamond

Type of Pension	Definition
Fully funded schemes	*''Fully funded schemes are based on savings – contributions are invested in financial (or possibly physical) assets, the return on which is credited to the scheme's fund.''*
PAYG schemes	*''PAYG schemes are usually run by the state. They are contractarian in nature, based on the fact that the state can, but does not have to, accumulate assets in anticipation of future pension claims, but can tax the working population to pay the pensions of the retired generation.''*
Defined-contribution schemes	*''In a defined-contribution (DC) scheme, also called funded individual accounts, each member pays into an account a fixed fraction of his or her earnings.''*
Defined-benefit schemes	*''In a defined-benefit (DB) scheme, a worker's pension is based not on his accumulation, but on his wage history, possibly including length of service.''*
Notional defined-contribution (NDC) schemes	*''NDC pensions mimic funded DC schemes by paying an income stream whose present value over the person's expected remaining lifetime equals his/ her accumulation at retirement, but with an interest rate set by government rules, not market returns."*

Source: Barr & Diamond (2006)

Since there are so many pension schemes, they all have their advantages and disadvantages as well.

When it comes to fully funded schemes, this scheme has many advantages along with some disadvantages. Starting with advantages of the fully funded scheme, individuals choosing this scheme has a greater flexibility as well as it provides higher returns from competent capital investment. Furthermore, fully funded scheme promotes the development of financial markets as well as savings and growth. Yet, significantly large administrative

costs and a potentially high chance of losing money because the return is not promised are the disadvantages to this system. (Verulava, 2018) The size of the savings will always depend on three main variables: the size of the contribution to the savings, the accumulation period, as well as economic and financial market fluctuations. However, also one of the disadvantages to this scheme is that no one can predict the financial market, so people need to be informed and well educated to choose the pension plan that suits them best.

From an economic standpoint, PAYG schemes can be viewed in a variety of ways. Usually, PAYG schemes are run by the government. From the viewpoint of an individual, in exchange for a pension when they reach retirement, they must make contributions now based on a promise made by the country. Legislation of each country are determinants on the pension individuals receive in the future when retired. Sharing the risks while also redistributing wealth between generations is the main role for PAYG schemes. (Barr & Diamond, 2006) PAYG schemes are usually the first pension pillar in most of the countries.

When it comes to presently elders, PAYG scheme have a lot of advantages since retirees can profit from it right now regardless of whether they have contributed to this scheme. Income redistribution within the same generation is another advantage. Nonetheless, the PAYG scheme has its drawbacks, such as based on international experience causing implicit burden requirement, incentivizing early retirement, and placing a load on future generations. These drawbacks may not be a problem when the pension system is first put in place, but they may become problematic as the population ages. (Wong, 2015) It can be concluded that PAYG pension schemes are more affected by the economic crisis and the aging population.

The other type of pension plan is a defined contribution scheme, which has several pros and downsides of its own. Employee contributions, as well as employer matching payments, are incorporated in defined contribution plans. The major objective of this plan is to assist employees in saving for retirement. Increased investment and contribution flexibility, as well as the instant and deferred tax benefits that may be amassed through before- and after-tax earnings and contributions, are some of the benefits of this scheme. However, this scheme does have some disadvantages. For example, it needs discipline and prudent management, as most people have other financial priorities than retirement savings, and most people lack the essential skills or expertise to comprehend how to make investments. (Defined Benefit vs. Defined Contribution Retirement plans, 2018) The rise in the value of contributions is determined by the manager of the relevant pension fund, who

manages the funds' investments. The strategy does not promise a financial advantage upon retirement, as the financial market, as previously said, cannot be foreseen.

A defined benefit pension scheme in which the benefits payable to a retired worker are calculated by a formula that takes into consideration the number of years of employment, the amount of payment received over a specific period, and other criteria. Additionally, the program establishes a fixed minimum payment amount. One of the primary drawbacks of defined benefit plans is that employers frequently request and need a minimum level of service, and government pension schemes are not guaranteed. (Defined Benefit vs. Defined Contribution Retirement plans, 2018)

Last but not least is Notional defined contribution scheme. According to Barr (2004) contributions from both employees and employers are credited and accumulated in individual accounts. Existing retirees receive the funds that are deposited in individual accounts; therefore, they are notional. According to OECD (2005) the system is comparable to a defined contribution scheme but includes a guaranteed minimum pension.

NDC schemes offer a variety of advantages, one of which, according to Barr (2004) is that it promotes desired design characteristics and improve an organization's capacity to deal with risk. NDC pension systems benefits that an individual receives in the retirement are calculated using lifetime earnings rather than a selection of highest pre-retirement earnings, which is another advantage (OECD, 2018). Additionally, NDC schemes entail less management risk and are more administratively difficult, as every cent contributed goes directly to the individual's pension. Additionally, this technique eliminates investment risk. (Barr, 2004)

Despite its numerous advantages, NDC scheme does have some drawbacks. For example, inefficiency is one of them. This disadvantage stems from the primary goal of the NDC scheme, which is to provide consumers with mechanisms for making efficient decisions regarding the timing of their consumption. (Barr, 2004) Another drawback highlighted by the author is the decline in birth rates throughout the years. As a result, the younger generation is numerically smaller than the older generation when it comes to joining the labour market and making social security obligations. As well as a pension system based on the NDC theory does not have a method for balancing the wealthiest and poorest citizens, as the system is dependent on social security contributions.

Since the author has chosen to compare Estonian and Latvian second pillar pension

funds, the pension system there stands on three pillars. ‘’Three-pillar’’ classification was firstly made by the World Bank, and it consists of three parts (see Table 2).

Table 2

World Bank three-pillar classification

Pillar	Participation	Objective	Financing
I	Mandatory	Redistributive	financed on a pay-as-you-go basis
II	Mandatory	Savings and insurance	Defined contribution
III	Voluntary	Savings and insurance	Defined benefit or defined contribution

Source: World Bank Pension Reform Primer (n.d.)

The first pillar is a publicly controlled tax-financed system in which participation is mandatory with the purpose guaranteeing minimum pension and reducing poverty among the elderly. The second pillar is a mandatory saving mechanism that is privately managed. And the third pillar being a voluntary savings. Comparingly with Wold Bank approach, OECD have made a different approach on three pillar pension system (see Table 3).

Table 3

OECD pension system classification.

Pillar	Participation	Objective	Financing
First-tier	Mandatory	Redistributive	Public sector
Second-tier	Mandatory	Insurance	Defined benefit or defined contribution

Source: OECD (2005)

Both Estonia and Latvia have been part of the member countries of OECD, which is the Organization for Economic Co-operation and Development. The OECD has developed a taxonomy that prohibits the idea of pillars. The OECD's goal is to create a worldwide categorization for pension plans, pension funds, and pension organizations, as each country has a unique retirement system with its own distinct description. (OECD, 2005) The OECD has classified two required pillars, the first of which is for redistributive purposes and the second of which is for insurance purposes. In the first pillar, similarly to the World Bank’s objective, all countries have safety nets in place to protect the elderly from poverty. All first-pillar plans are provided by the public sector and are mandatory. Apart from the first pillar, there is a second pillar that acts as an insurance, with the primary objective of ensuring that

when retirement arrives, people have an adequate amount of other income proportional to their wages before the retirement.

1.3. Background of the funded pension schemes in Latvia and Estonia

As was introduced in Section 1.2., pension systems' primary objectives are to lower the number of elderly people living in poverty and to ensure that income replacement or consumption smoothing is provided. The first objective is mostly met by the public pension system as known as first pillar, which is funded on a pay-as-you-go basis.

Funded pensions operate as a system in which pension payments are invested and benefits are paid out from earned savings upon retirement. In the recent years, because of various changes, the shape of the retirement income system has evolved in most OECD member countries, with the financed system playing a bigger role and the PAYG system playing a smaller part. (Yermo, 2012)

Funded pension systems also play a role by contributing to the economic growth. Funded pension systems can help to decrease distortions in employment and savings disincentives created by social security contributions. It can also supply with needed funds for urgently important, long-term investments such as infrastructure and they can also increase the productivity and level of financial intermediation, developing and improving growth prospects. (Yermo, 2012) In a funded pension scheme the pension amount is determined by contributions, which means that individuals who contribute more or delay retirement receive a larger income at retirement age. This idea helps not only to the acceleration of pension increases, but also to more accurate income disclosure and the decrease of the shadow economy.

There are numerous variables that have influenced funded pension system's developments in areas such as, the growth of members with pension plans, individual contributions to their plans as well as benefit payments. The author will go into further depth about each of these areas in the case of Latvia and Estonia in the Chapter 2.1.

1.4. Overview of influencing factors for the pension market structure in the case of Estonia and Latvia

There are following factors the author has chosen to analyse that are influencing the structure of pension market in Latvia and Estonia - the number of individuals taking part in

pension system in both countries, the number of contributions made into the scheme as well as the benefits what is paid to retires from these plans.

Both countries have distinct policies regarding the individuals that participate in funded pension systems. Coverage is a helpful statistic since it indicates the proportion of persons participating in funded and private pension plans. The level of pension assets in a country may influence the coverage of funded and private pension plans. Individuals can participate in a pension plan in a variety of ways – mandatory, voluntary, or through automatic enrolment. (OECD, 2019) When it comes to Latvia the participation in a funded pension scheme is mandatory, in comparison to Estonia, where it is no longer obligatory as of 2021.

Another element affecting the importance of funded pension plans is the size of contributions. The function of funded and private pensions in retirement can only be determined by the quantity of assets acquired in the pension plan. The higher the contributions made, the greater the chances of accumulating more funds until retirement. The total amount of contributions to the mandatory pension system in Latvia is 20%. It is redistributed between the 1st and the 2nd pillar. The contribution rate in the 2nd pillar is 6%, but the remaining 14% goes to the 1st pillar (Manapensija.lv, 2021). In Estonia, the compulsory contribution rate is 2% + (4% + 16%) for those who have joined 2nd pillar and 20% for those who have not joined (pensionikeskus.ee, n.d.).

The following factor is benefit payments, which are made through funded or private pension plans. The quantity of pension payments indicates a withdrawal from pension plans, hence decreasing the value of the assets. Payments from funded and private pension plans can be made in a variety of methods, the majority of which depend on specific countries legislation. For example, lump sum pay-outs, a steady stream of income during retirement, most referred to as pensions, or a mix of the two. The entity responsible for determining when the assets should be paid out might also be a public institution. Individuals in Latvia, for example, can transfer their assets to the State Social Insurance Agency, which then combines them with the funds accrued in the first pillar. (OECD, 2019)

Since the early 2000s, three-pillar systems have been operating in the Baltics; nevertheless, both Estonia and Latvia's funded second pillar and third pillar, have their own unique characteristics and similarities. Latvia implemented the obligatory funded pension system in 2001, followed by Estonia in 2002 (Leppik & Vork, 2006).

According to the Estonian Funded Pension Act (n.d.), the second pillar was compulsory in Estonia to the persons brought into the world in 1983 and later (for instance, the individuals who were under 19 now of establishment of the pillar) and was open for voluntary membership to all older workers. Now since 2021 the second pension pillar in Estonia is voluntary. In contrast, in Latvia, Latvian Law on State-Funded Pensions (2021) makes the second pillar mandatory for anybody born on or after 01/07/1971 and voluntary for everyone born after 01/07/1951.

Estonian and Latvian funded pension system depend on pension funds managed by private asset management companies. To ensure that second pillar pension investments are sufficiently safe and generate long-term profits, fund managers may invest assigned money only in compliance with investment legislation that defines the financial instruments in which second pillar pension funds may be invested, investment restrictions, and areas in which the funds is prohibited to be invested. The fund manager manages the capital for the second pension pillar via a custodian bank. Not only is the custodian responsible for holding second pension pillar money, but also for ensuring that the fund manager invests them according to the investment regulations. Capital restrictions also play a significant role in the funded pension system. Both countries, Latvia, and Estonia, have different investment restrictions (see Table 4).

Table 4

Investment restrictions in Latvia and Estonia, 2022

Country	Pension fund investment strategy		
	Active (Aggressive)	Balanced (Medium)	Conservative
Latvia	Investments into shares up to 100% of the total plan assets. Up to 20% is allowed to invest in other foreign currencies.	Up to 50% of the plan assets may be invested in equity investment funds.	Only a limited part of the managed funds can be invested in debt securities of one company (10%) or equity securities (5%), in one investment fund (10%) or deposited in one bank (10%), in the venture capital market (10%).
Estonia	each fund's management business must identify and publicize its risk level.	each fund's management business must identify and publicize its risk level.	investments, equal to 10% of the value of the portfolios

Source: Manapensija.lv (n.d.); Moss (2019)

When it comes to the investment restrictions, both countries have different legislation and policies that fund managers need to follow when investing pension funds. When it comes to Latvia, because of positive legislative reforms starting from 2021, population have access to active second pillar pension plans, which can invest up to 100% of their assets in businesses. Funds may be invested in securities of state, local government and international financial institutions, shares or debt securities of commercial companies, deposits in a credit institution, investment funds, alternative investment funds, derivative financial instruments, risk capital market (Latvian State Funded Pensions Law, n.d.) Corporate debt instruments and common stock must be listed on an official stock market, which allows for the registration and trading of only the largest and greatest corporations in the country that fulfill specific quality standards.

Relatively, Estonia has its own investment regulations. According to Investment Funds Act (n.d.), fund assets may be invested in credit institution deposits, precious metals, and securities specified in the Securities Market Act, including any securities whose underlying assets are precious metals or whose price is contingent on precious metals and immovables. The prior classification of second-pillar funds according to their equity risk (25

percent, 50 percent, and 75 percent funds) has been abandoned due to its perceived inaccuracy. Rather than that, each management firm is responsible for determining and disclosing the risk level of each of its funds. (Moss, 2019)

Currently the retirement age in Latvia according to the Latvian State Social Insurance Agency (n.d.) is 64 years and 3 months. In Estonia, according to Social Insurance Board (n.d.) pension increases gradually to 65 by 2026 and will depend on life expectancy since then.

When it comes to asset managers, according to Pensionikeskus (n.d) there are 5 second-pillar private asset managers in Estonia by the end of 2021, and they offer 26 pension plans. In Latvia according to Manapensija (n.d.) there are 6 asset managers, and they offer 29 pension plans as of end of 2021.

There are many different investment plans with different degrees of risk. In Latvia they can be divided into 3 types, in comparison with Estonia where there is also a choice of three different risk category investment plans, which are similar with Latvian plans, the only difference is the titles (see Table 5).

Table 5

Pension fund investment plan degree of risk in the case of Latvia and Estonia, 2022

Country	Latvia	Estonia
the degree of risk of the pension plans	Active Balanced Conservative	Aggressive Medium Conservative

Source: Manapensija.lv (n.d.) & Pensionikeskus.ee (n.d.)

As it can be seen from the Table, Latvia and Estonia share similar degrees of risk for the offered investment plans. Active plans invest in the stock of numerous companies, as stocks historically provide the best long-term returns. Nonetheless, because this plan invests in equities, it also carries a larger risk. Balanced plans invest in the financial capital markets in such a way that profit-making and the uncertainty (risk) connected with it are balanced against pension capital preservation and investment security. Conservative plans invest in stable, safe assets, often government or corporate bonds. These are low-yielding investments, but they are not as volatile as equities.

1.5. Overview of empirical literature about comparison of the market of second pillar pension funds

To provide a better baseline understanding of current situation and trends of second pillar pension fund markets in the countries which author aims to research, empirical findings and methods of previous research were examined. In addition, author has chosen to focus on research papers about Latvia and Estonia because different countries around the world have faced very different economical and regional circumstances which also make for different environments in which the same legislation and market factors could produce very different outcomes. Different research papers were found using different databases like EBSCO Discovery, ScienceDirect and more. When comparing the different methods used by the authors of the studies, the most common was (see Table 6) data analysis using data from different countries databases. In the following part author will focus on analysing the previously done studies as well as to highlight essential elements that will help the author in the empirical part of the research.

Table 6

Different methods used to analyse pension system

Author(s)	Year	Country	Data and Method(s)	Topic
Lieksnis	2010	Latvia and Estonia	Comparative and statistical analysis of time-series data	Evaluating the Financial Performance of Latvian and Estonian Second-Pillar Pension Funds
Rajevska	2013	Latvia, Estonia, and Lithuania	Comparative analysis of statistical data	Funded Pillars in the Pension System of Estonia, Latvia and Lithuania
Mavlutova, Titova & Fomins	2016	Latvia	Qualitative methods and interviews with experts as well as quantitative research methods like statistical data analysis, forecasting and other financial calculations	Pension System in Changing Economic Environment: Case of Latvia
Medaiskis & Gudaitis	2017	Latvia, Estonia, and Lithuania	Comparative statistical analysis of different data	Evaluation of second pillar pension funds' supply and investment strategies in Baltics
Chlon-Dominczak	2018	Poland	Analysis of different data	Impact of changes in multi-pillar pension systems in CEE countries on individual pension wealth
OECD	2021	OECD member countries (including Latvia and Estonia)	OECD countries' pension policies and outcomes compared using several measures.	Pension at a Glance 2021 – OECD and G20 indicators

Source: compiled by the author

All the papers focus is on the funded pensions, however, there are some differences as well. The first paper produced by Lieksnis (2010) examines the efficiency of the Latvian and Estonian pension fund managers and tries to find the source of the differences in these performances through examining the portfolios, their constraints, and choices of managers over time by applying different regression models. The paper about "Funded Pillars in the Pension Systems of Estonia, Latvia and Lithuania" focus is to compare legal frameworks and performance of funded pillars in the pension systems in the Baltic States (Rajevska, 2013).

The third paper, titled "Pension System in Changing Economic Environment: Case of Latvia," examines whether the Latvian pension system as it currently exists is operating efficiently considering the constantly changing economic environment to achieve the goal of providing a suitable pension level for retired people (Mavlutova, Titova & Fomins, 2016). The next paper by Medaiskis & Gudaitis (2017) fills the gap between comparative research on investing techniques, risk, and pension fund returns in the Baltics and individuals who want to compare them based on risk aversion, performance, and investment strategies. The following study, "Impact of changes in multi-pillar pension systems in CEE countries on individual pension wealth," focuses on the impact of changes in multi-pillar pension schemes on individual pension wealth in six Central and Eastern European countries (Chlon-Dominczak, 2018). The final is the OECD report “Pension at a Glance 2021 – OECD and G20 indicators” provides a range of statistics for comparing OECD countries' pension policies and their outcomes (OECD, 2021).

To begin, when it comes to legislation changes and main finding, many authors had different findings and conclusions. Rajevska (2013) concluded that Latvia and Estonia have many similarities in terms of both successes and challenges in pension system sector. However, in several subtopics, Estonian legislation is more developed and equitable in comparison. Based on the findings of the studies, several authors made recommendations to improve the existing pension system. Mavluta, Titova & Fomins (2016) recommends in addition to continuously increasing payments to the second pension pillar, it is essential to reduce the shadow economy by aiding honest enterprises and creating conditions favourable to conversion to the official sector. Nonetheless, Chłoń -Domińczak (2018) argues that it should not be forgotten that the change in contribution rate influences the future risk diversification of pension money. Additionally, Medaiskis and Gudaitis (2017) indicates that the second pillar pension market in all Baltic states has been increasingly concentrated over the previous decade. The global financial crisis, unpredictable government decisions, and alterations to second-pillar pension features such as contribution amounts have accelerated market concentration. Due to accumulation periods of 30 years or more, pension fund investors have fewer alternatives for selecting pension funds with varied investment strategies and risk levels, according to the current study. (Medaiskis and Gudaitis, 2017)

Furthermore, Lieksnis (2010) argues that, even though both countries had relatively comparable regulatory frameworks throughout the period 2003 to 2009, pension fund managers in both countries had significantly different approaches to how their portfolios

should be managed during that period. In comparison to Estonian managers, just roughly 14 percent of Latvian managers' total assets were invested in stocks on average, according to the statistics. (Lieksnis, 2010) Additionally, Medaiskis and Gudaitis (2017) concludes that despite the availability of a significant number of second pillar pension funds in both countries, the selection of investment strategies is constrained by regulation and the number of second pillar pension funds offered in certain risk categories. Under Latvia and Estonia, just four funds were accessible in the "Balanced" and "Aggressive" categories.

When it comes to the performance of the investment plans, Lieksnis (2010) finds that even though Estonian fund managers invest in equities, 50% of Estonian fund managers can beat a local currency deposit and a composite benchmark portfolio that includes a broad stock market index. However, neither performance of Estonian nor Latvian fund managers relative to the European stock market and composite indexes was outstanding statistically. In 2013, almost all plans (with the sole exception of a few dynamic plans in Estonia) had negative return. This is because of the high inflation rate seen during the so-called "at years" and the subsequent financial crisis in 2008. Estonian fund managers were essentially more efficient during the "fat years" than Latvian fund managers. By the end of 2007, the average weighted value of one share had increased by 54 percent, compared to the twice-as-low 27 percent in Latvia. (Rajevska, 2013)

Also, when it comes to return of the pension plans and earnings, Rajevska (2013) argues, that the significant decrease in the value of equities in developed nations and a dramatic policy-induced decline in interest rates have increased the financial insecurity of current and prospective retirees who expect to rely on private pension plans for the entirety of their pension earnings. Besides, Medaiskis and Gudaitis (2017) statistical research revealed that the traditional classification of pension funds is not always useful, and even if two funds belong to different risk categories, this does not always imply that their investment strategies and actual results would differ significantly.

The most recent study made by OECD (2021) contained many conclusions regarding how the COVID-19 crisis affected pension system, as well as indicated that Estonia made payments to private pensions voluntary and permitted pension funds to be withdrawn.

To conclude, the author has noticed while analyzing the empirical literature, that similar findings link some of the authors. For instance, Rajevska (2013) and Mavluta, Titova & Fomins (2016) share likewise views on both countries legislation and states that improvements should be done to make the pension system more efficient. As well as most of

the authors make conclusions about the fund manager performance and investment plans returns. It can be concluded that returns on pension plans have been weak and failing to outperform European stock market and other averages. In terms of pension plan profitability, Estonia has outpaced Latvia, although for both countries' second pension pillar market the preceding decade has seen an increase in concentration. As well as public does not have many alternatives for investment plans with diverse investment policies that could suit the current person's age.

2. Empirical part

To reach the aim of the thesis, the author will do empirical research in Section 2., which will include statistical and graphical analysis of different data about the second pension pillar in Estonia and Latvia.

At the beginning the author will do the legislation analysis of pension laws in Latvia and Estonia. The Baltic state countries have taken substantial measures to enhance the pension system through a variety of legislative and policy changes. In 1996, the former flat-rate pension plan with benefits only dependent on service years was phased out and replaced by a notional defined contribution (NDC) earnings-related pension plan modelled by funded pension systems (Rajevska & Rajevska, 2016). The reform was completed in 2001, with the implementation of a new three-pillar pension system.

Comparatively, there are fewer English-language articles about the Estonian pension changes; nonetheless, the focus of some of these articles varies. The compulsory funded pension system initially started in 2002 and is structured after the pension plans of private asset management companies (OECD, 2011). Estonia's 2021 pension reform establishes a completely optional second pillar fundraising process.

The author has chosen to analyse different factors that affects the amount of money accumulated in the second pillar:

1) the amount of salary and labour market situation;
2) the amount of contributions to the second pension level and participation conditions;
3) profit, which is determined by the manager of the person's funded pension fund and investment strategy;
4) fund manager's costs.

The author will dive into each of these factors to make conclusions if they have influenced second pension fund markets. As well as the author will add to each factor what pension laws and reforms have influenced the pension system. The author has chosen to analyse pension law reforms during year 2007-2021.

2.1 Labour market situation and earnings

The amount of earnings is an important factor, because the main principle of the pension system is that the larger today's social security contributions will be, the higher will be tomorrow's pension.

Employment and productivity are key economic and social principles for a country's economic progress and social stability. As the unemployment rate grows, the number of social security contributions decreases. (Dundure, 2017)

The highest unemployment in both countries were in 2010. The unemployment rate in Latvia was 19,48% and in Estonia – 16,71% (see Figure 1). Estonia's and Latvia's labor markets had difficult years in 2009 and 2010, because of the worldwide economic and financial crisis, that led to tens of thousands of individuals losing their jobs.

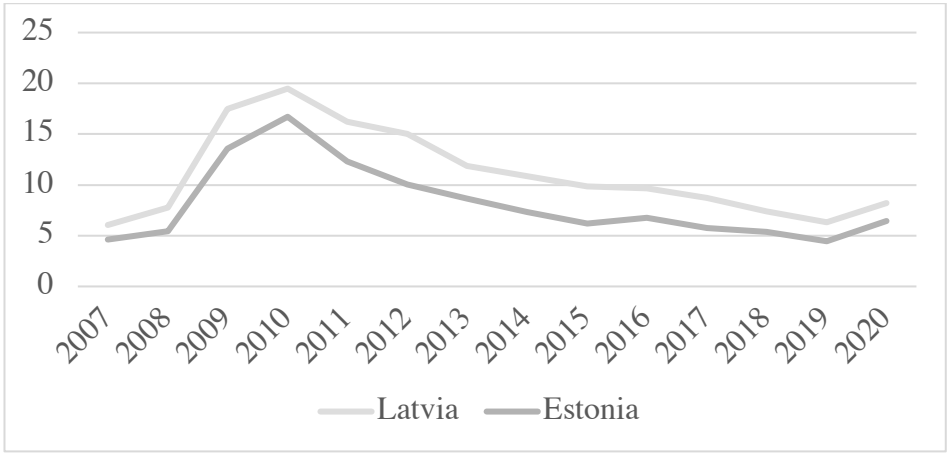

Figure 1. The unemployment rate in Latvia and Estonia 2007-2020 (%)
Source: O'Neil (2021)

As the graph (see Figure 1) indicates, the fall in employment and increase in unemployment began in 2008 and continued through 2009 and into 2011, when it began to reduce and recover. According to the World Bank (n.d.), the crisis influenced benefits for funded pension systems owing to dropping asset values for the financial instruments in which the pension funds invest, as well as because those who are unemployed contribute less or nothing to the second pillar. It also affected total amount of contributions to the second pillar.

In Latvia the total amount of contributions in 2009 reached 164 675 766 (LVL), the author has compared it to the % from GDP in period from 2007-2020 (see Figure 2).

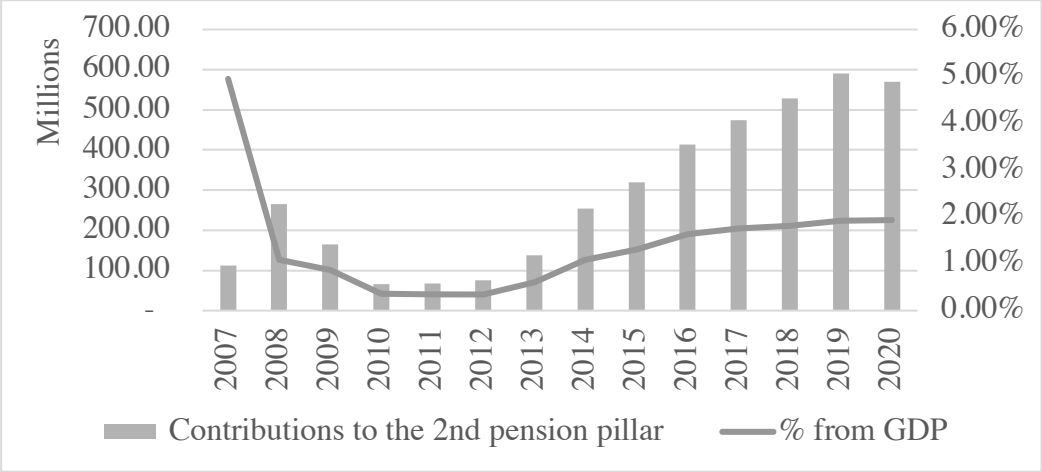

Figure 2. Contributions to the second pension pillar expressed as a % from GDP - Latvia, 2007-2020

Source: Portal of official statistics of Latvia, (n.d.), Manapensija.lv, author's calculations.

While the economy recovers from the 2008 financial crisis, the amount of money paid into the second pension pillar is decreasing, according to the data that describes Latvia. However, beginning from 2013, investments are starting to grow faster than GDP, and an increasing number of new members begin or continue to make contributions and pay taxes, thereby accelerating the formation of pension savings. In comparison, the author gathered data and made calculations for Estonia (see Figure 3).

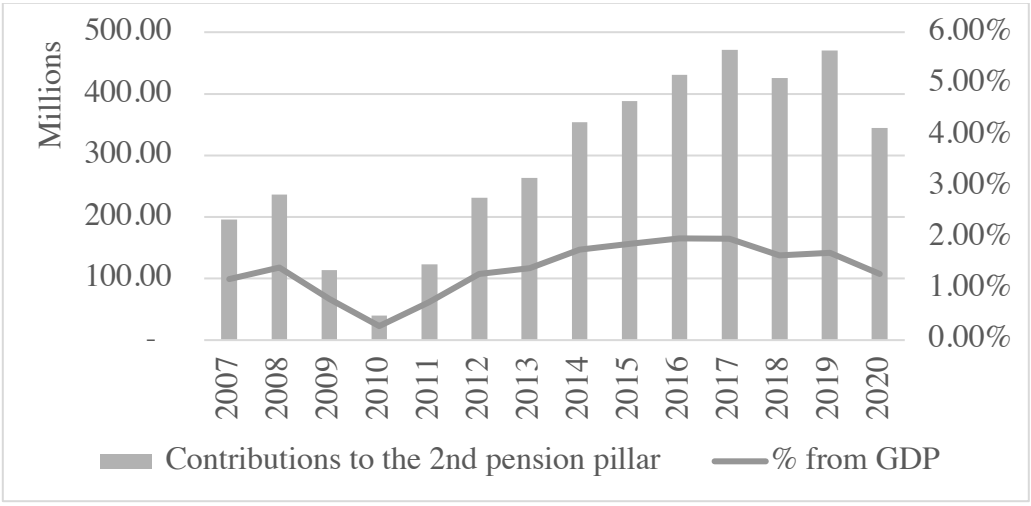

Figure 3. Contributions to the 2nd pillar expressed as a % from GDP – Estonia, 2007-2020

Source: Statistics Estonia: Statistical database. (n.d.), Pensionikeskus.ee, author's calculations

Source: Statistics Estonia: Statistical database (n.d.), Pensionikeskus.ee, author's calculations
Relatively to Latvia data, the Estonian contributions remain more stable, facing only one significant drop in 2010, which can be explained due to the decrease of contributions to the second pillar, which were cut from 8% to 2% as well as a drop in the population's total income level due to the recovery from crisis. Starting from 2011, the contributions increase, and the next decrease happens in 2020, which can be explained due Covid-19.

Looking at the average gross salary in Estonia and Latvia (see Figure 3), it has increased since 2008, which is a positive trend.

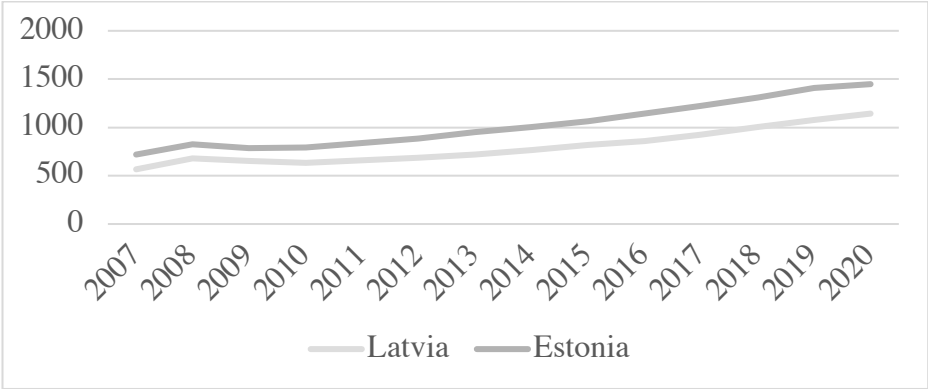

Figure 4. Average gross wages in Latvia and Estonia from 2007-2021(EUR)
Source: Statistics Estonia & Official statistics of Latvia (2021)

Latvia has traditionally lagged Estonia in terms of income. Estonia was around 10% ahead of Latvia in the early 2000s but is presently 15% ahead in 2021. Latvia's GDP per capita (i.e., population productivity) has consistently lagged below Estonia.

2.2 Amount of contributions the second pension level and participation conditions

In Latvia, the entire contribution capital (20 percent of the employee's salary) is redistributed between the first and second pension levels, requiring no further contributions to the individual's social insurance contributions at the first pension level. Since the beginning of Latvia's multi-level pension system, the percentage of this distribution has altered several times. According to the State Social Insurance Agency (n.d.) in year 2007 the contribution rate was raised to 4% and the next year, in Latvia the highest second-pillar contribution rate to date 8% was recorded.

Instability in the financial markets starting in 2008 has influenced both the performance and the legislation governing the state-funded pension system in both Latvia and Estonia. Estonia decided to utilize second-pillar payments to support deteriorating public finances from 2009 to 2012, along with Latvia, where government second-pillar contributions

were reduced from 8% to 2% (Volskis, 2012). In Estonia, however, there was still the option of making private contributions of 2% to the funded pension scheme. (OECD, 2018).

After Estonia's governmental finances had steadied and restored to positive balances in early 2012, the former 2 percent plus 4 percent scheme was resumed to mitigate previously identified demographic problems. Similarly, in Latvia, the funded pension scheme contribution rate was raised to 4% in 2013 and 2014. (Volskis, 2012) Also, according to OECD (2018) from 2014, the contribution rate in Estonia was increased to 8%. Both countries raised their contribution rates due to the economic recovery after world crisis.

During the year 2015, there were no significant changes in regulations influencing the contribution rate to the second pillar pension in Estonia. The same is applicable for 2016, except for Latvia, that increased contribution rates from 5% in 2015 to a split of 14% for the NDC program and 6% for the funded pension scheme, where it is now remaining.

As a part of a crisis response to the Covid-19 emergency according to the Social Security Board (n.d.) the Estonian government has agreed to suspend state contributions (4%) to the second pension pillar from 1 July 2020 to 31 August 2021.

According to State Social Insurance Agency (2020) in Latvia from the income earned in 2020, 6% of the persons personal social insurance contributions was transferred to the state-funded pension system. During the year 2020 in Latvia, participants in the state-funded pension scheme contributed a total of 569 million euros (see Table 5). Comparatively, in Estonia in the year 2020 the total contribution to the scheme was 344 490 741 million euros (see Table 7).

Table 7

Participants contributions to the second pillar 2020

Country	Total number of participants	Contributions to the second pension pillar (EUR)	Average amount of contribution per 1 participant (EUR/year)
Latvia	1 295 745	569 230 700	439,30
Estonia	706 357	344 490 741	487,70

Source: State Social Insurance Agency (2020) & pensionikeskus.ee

To compare both countries, Latvia is ahead in both – total number of participants as well as contributions made to the funded pension scheme. This difference can be explained because of the different contribution rate in both countries as well due Covid-19 situation that

caused the loss of job for many people due to the restrictions. However, the average amount of contributions per 1 participant is higher in Estonia due to the higher wages.

When it comes to participation conditions, according to the Law on State-Funded Pensions (2021), participation in the second pension pillar is obligatory in Latvia, and all people born after July 1, 1971, are automatically enrolled as members of the second pension pillar. Those born between July 2, 1951, and July 1, 1971, have the option of participating in the second pension pillar. According to pensionikeskus.ee (n.d.), in Estonia, before the legislative changes made in 2021, those born in 1983 or after were obligated to join the funded pension scheme. The right and responsibility to pay contributions began on January 1 of the year after a person reached 18 and became an Estonian tax resident. The year 2021 was a turning point for Estonia's second pension pillar. As previously stated, the legislation enables an individual to withdraw assets from the second pillar before attaining retirement age. It is worth noting that the system permits the same person to re-join the second pillar after 10 years. Residents of Estonia now have 5 options to choose from to decide what to do with their second pension pillar savings (see table 8)

Table 8

People's choice options on how to use second pillar savings in Estonia since 2021

Retirement saving options	
Option 1	If the resident has not yet enrolled in the system, there is an option to join the II pension pillar.
Option 2	Continue to collect in the II pension pillar in the current pension fund.
Option 3	Continue to save in the II pension pillar by opening a pension investment account and investing the pension savings.
Option 4	Stop contributing to the II pension pillar but leave the money that has already been saved in it.
Option 5	Stop contributing to the II pension pillar and withdraw the pension savings.

Source: LHV (n.d.)

A withdrawal before retirement is subject to a 20% income tax, and since the implemented reform significantly liberalized the social 'treatment' of the second pillar, Pensionikeskus (2021) observes that greater freedom also implies greater responsibility for securing an adequate retirement income in the future. The author points out that reform can

lead to poverty in the future, as those with inadequate financial abilities may spend the money on impulsive purchases such as a new car or a vacation.

According to the data from report made by China-CEE Institute (2021), 152,179 valid applications for withdrawals from the second pillar were made from January to March 2021, implying that the public will withdraw almost EUR 1.29 billion. The entire value of second pillar assets was EUR 4.47 billion that same year, indicating that one-third of the money saved in the funded pension scheme was withdrawn.

In both countries, the retirement age for the second pillar is the same as for the first. Starting on January 1, 2017, according to Pensionikeskus.ee (n.d.) the pension age in Estonia will slowly increase until it reaches 65 by the year 2026. The eligibility age for a retirement pension increases according to the year of birth. Comparingly, in Latvia, according to data of European Commission (n.d.) in 2021, both men and women will be eligible to retire at the age of 64. The retirement age will increase by three months every year until it reaches 65 on January 1, 2025.

2.3 Profit depending on the fund manager and the pension plan

A portion of social contributions (stocks, bonds, other assets, and bank deposits) are invested in the financial and capital markets by a fund manager. The value of a pension is determined by the quantity and net asset value of its shares. The growth or decrease in net asset value shows the performance of a private fund manager. Actual pension capital is clearly seen only when the value of a single share increases faster than the consumer price index (Bule & Leitane, 2017).

The amount of second pension pillar fund manager offered investment plans in Latvia and Estonia have changed significantly through years 2007-2021 (see Figure 5).

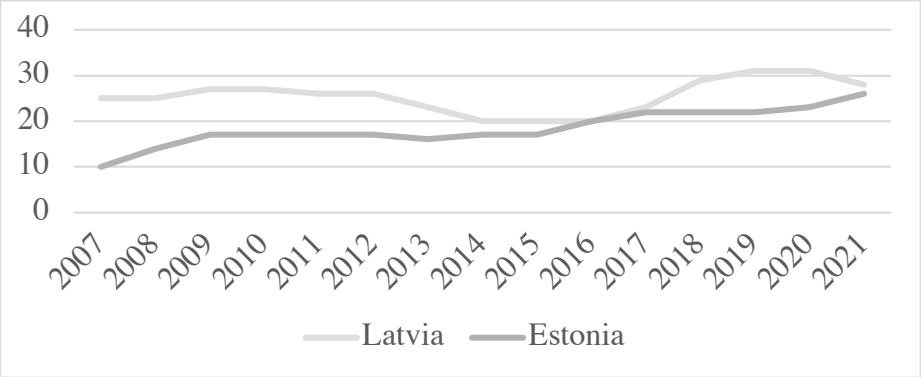

Figure 5. Number of II pillar investment plans in Latvia and Estonia 2008-2021
Source: Manapensija.lv (n.d.) & Pensionikeskus.ee (n.d.)

As of 2008 Latvian residents had access to 25 pension investment plans provided by 5 pension fund managers. In comparison, in 2008 there were only 10 investment plans provided by 3 pension fund managers available in Estonia. For Latvia the leading market share holder were Swedbank taking 44% of the market, followed by CBL and SEB with 23% of the market and INVL and Luminor each having a 5% share (see figure 6).

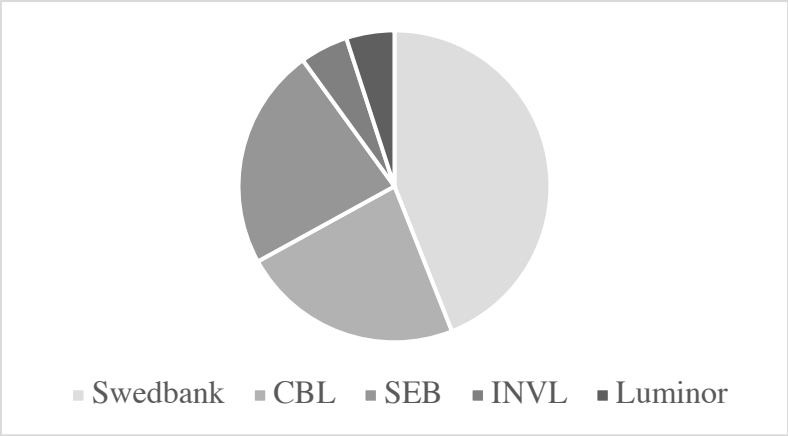

Figure 6. Pension fund market share in Latvia (%) in 2008
Source: Manapensija.lv (n.d.) and author's calculations.

However, at the beginning of 2008 in Estonia the market was only shared by three second pension pillar fund managers – Swedbank with 62%, SEB with 33% and LHV with 5% of the whole market (see figure 7).

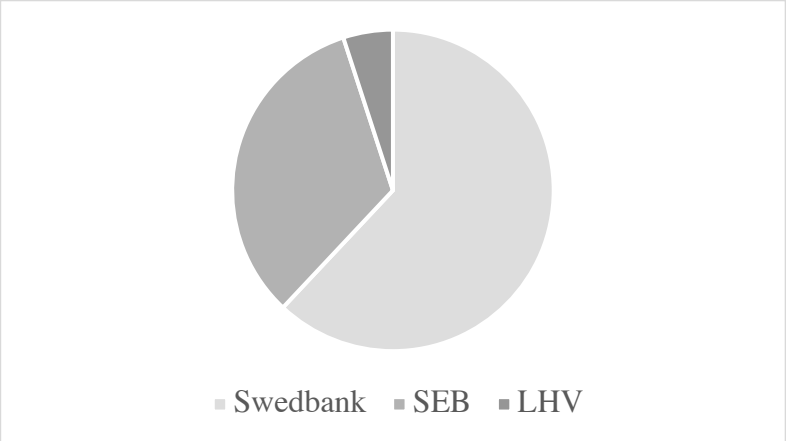

Figure 7. Pension fund market share in Estonia (%) in 2008
Source: Pensionikeskus.ee (n.d.) and author's calculations.

According to Manapensija.lv (n.d.) the second pillar pension is now managed by six investment management joint stock companies in Latvia. Employees can assign their

retirement savings to any pension manager who offers a range of investment plans. In Latvia, fund managers offer 29 investment plans available from which to choose. The investment plan selection varies, for example, from INDEXO Asset Management's three investment plans to "Swedbank Ieguldījumu Pārvaldes Sabiedrība AS" six investment plans. Each of the proposed plans has its own pricing structure and investment strategy. In Estonia, according to Pensionikeskus.ee (n.d.) currently there are 5 pension fund managers available, in total offering 26 pension plans.

Each second pillar pension fund may provide one or more investment plans that fall under one of the active, balanced, or conservative investment approach categories.

The investment policy legislation has changed through time. In 2007, Estonian investment restrictions were raised to a maximum of 50 percent venture capital funds (up from 30 percent in 2007). In 2008, Estonia passed a law permitting the creation of funds with a maximum equity investment of 75% of total assets under management. (OECD, 2018) Regardless of risk levels and investment objectives, all pension fund investment plans are susceptible to investment risk.

Comparatively, when it comes to investing, Latvia was one of the OECD member countries with the most stringent limitations on equity investments. After an increase in 2007 (when the cap was 30%), the maximum equity investment limit in Latvia increased to 50%. In 2018 the cap was raised to 75%. (OECD, 2018) Starting from 2021, in accordance with the Latvian Law on State-Funded Pensions (2021) and Investment Funds Act (n.d.), the Ministry of Finance has repealed some investment regulations, and the 100% of the fund can now be invested in shares.

Because there are so many investment plans available to the public, it is common for individuals to be unsure of which one to choose. According to the State Funded Pensions Law (n.d.), revisions that took effect on January 1, 2018, made it illegal in Latvia to link the second pension level to other goods. Prior to that, banks were legally authorized to provide lower-interest loans and special "gold" customer status, as well as to remove them if the client's 2nd pension level was not committed to their bank. As a result of these changes, any individual can select any pension fund manager and any investment plan without fear of being punished or otherwise biased against by the bank.

In Latvia active plans (50%) are currently the most popular category of investment plans, which are also acceptable for persons aged 47-57. In these investment plans, 50 percent of assets are held in government bonds and 50 percent in company stock. The goal of the investing strategy is to increase asset value over time while avoiding severe drops caused by

the financial crisis. In Latvia, there are currently 7 investment plans offered in this category (see figure 8). Most persons working in Latvia picked these investment plans, making up the total number of 635 472 participants. By the number of participants, the most chosen plan is Swedbank ‘’Dinamika”.

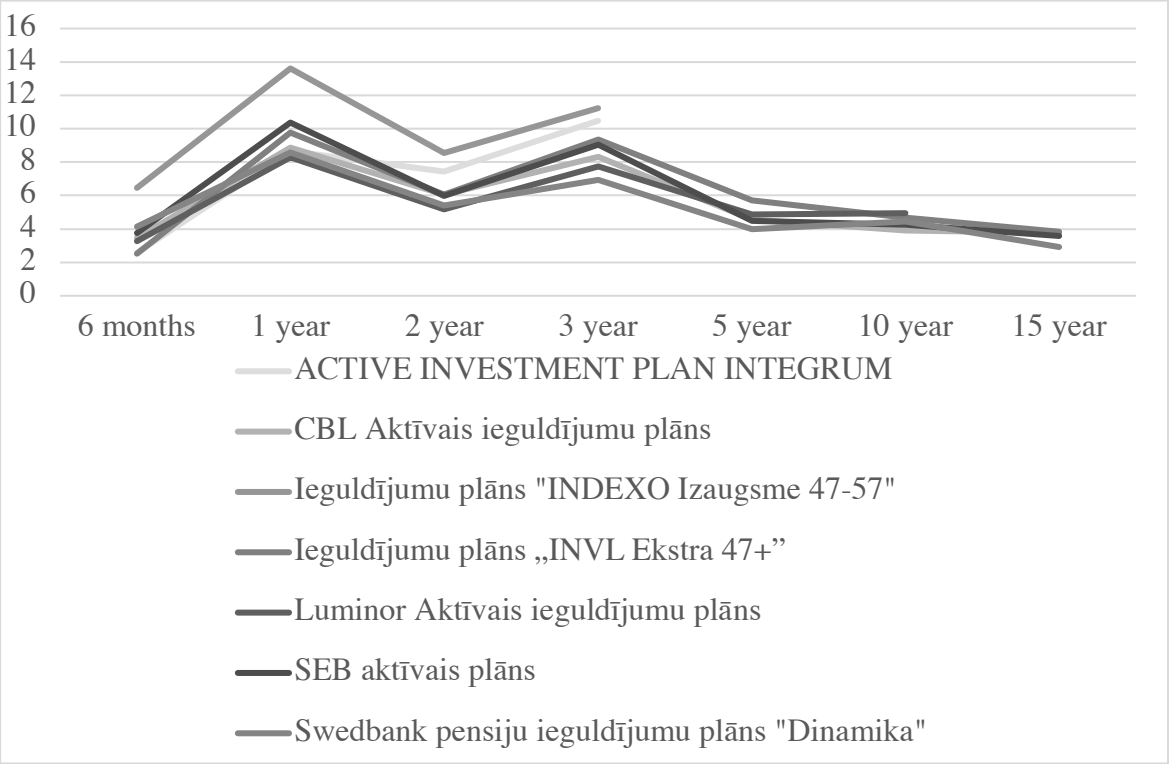

Figure 8. Return on active plans 50% in 2021

Source: Manapensija.lv (n.d.)

This investing strategy has produced reasonably small returns over time, ranging from 2.92 percent to 4.94 percent every year. Swedbank's Dinamika plan and other market investment plans can only cover inflation with such a long-term return. According to Latvian official statistics portal (n.d.), since 2007, Latvia's average annual inflation rate has been 3.08 percent. It can be concluded that the results, based on long-term data, have been quite poor.

As already mentioned, due to changes in the law, the pension plan starting October 2021 will invest up to 100% of its assets in stocks, rather than the present 75%, and will be known as an Active 100% pension plan. Therefore, due to these changes only 2 plans have left in category active plans 75% (see Figure 9).

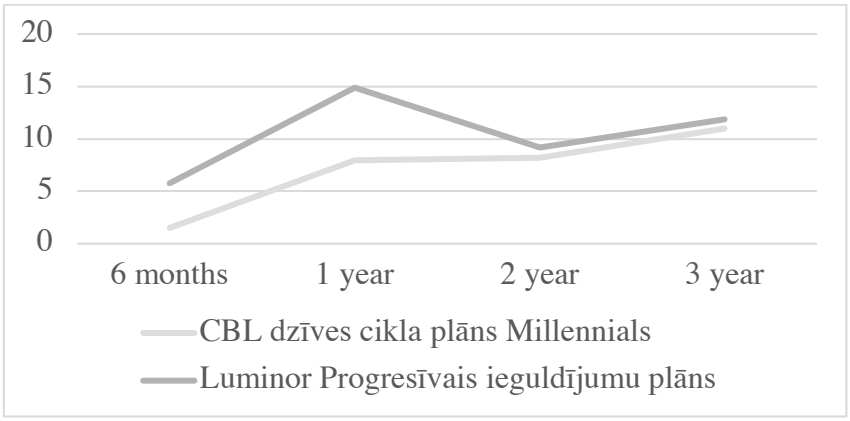

Figure 9. Return on active plans 75% in 2021.

Source: Manapensija.lv (n.d.)

Active pension plans, with equity investments ranging from 75% to 100%, are the riskiest and best suited to the young. It can be concluded from the results displayed in the graph, that the average return for both plans is 10,51%. The highest long-term result has showed Luminor Progresīvais investment plan with an average return of 11,97%.

When it comes to “100 percent” active investment plan, in 2021 the investment plans in this category were chosen by 237 167 individuals. These investment plans should have the most participants because they are ideal for adults aged 16 to 50. A total of 10 pension plans are available in the 100% category (see Figure 9).

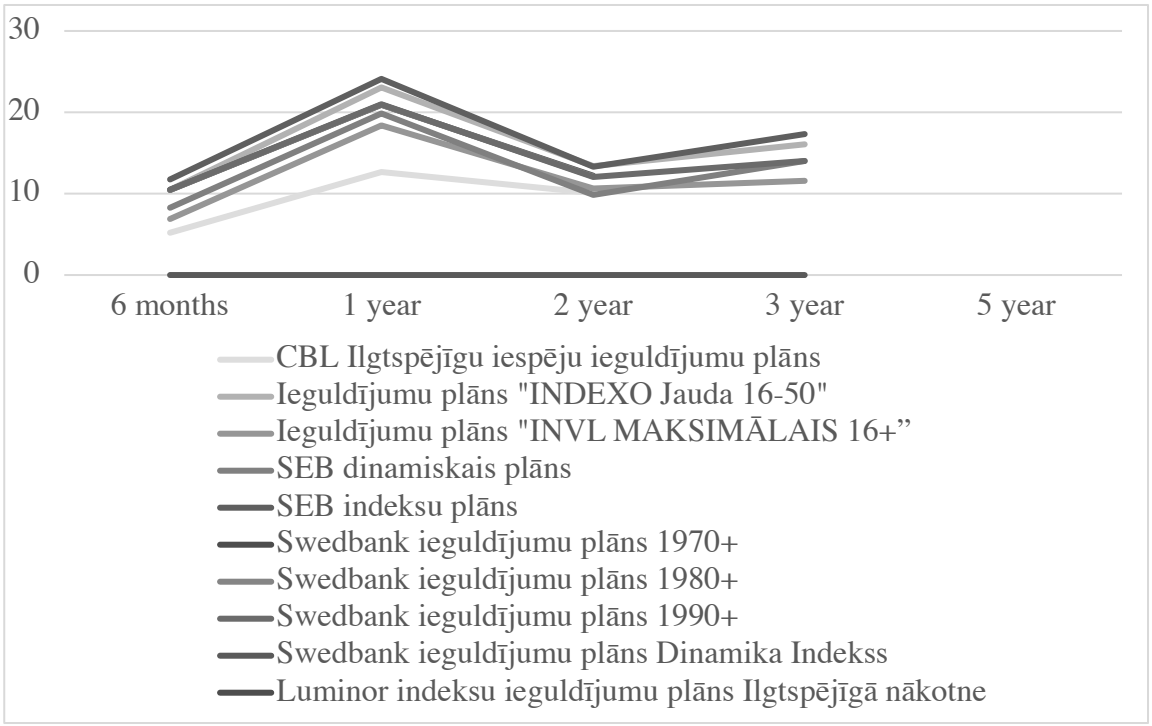

Figure 9. Return on active plans 100% in 2021.

Source: Manapensija.lv (n.d.)

Since the beginning of operations, the average annual return on all investment plans has been between 11% and 17%. All the available investment plans since the beginning of their operations have shown positive returns, except for Swedbank investment plan "Dinamika Indekss" and Luminor investment plan "Indeksu Ilgtspējīgā nākotne", who does not have results of returns yet, because the plan only started operating from the middle of 2021.

Balanced plans are the next category of investment plans, with a relatively lower risk. The assets in them are typically distributed as bonds, with up to 25% of the assets invested in firm shares. In Latvia, there are three balanced plans to choose from (see Figure 10). Balanced investing strategies are best for adults between the ages of 53 and 58.

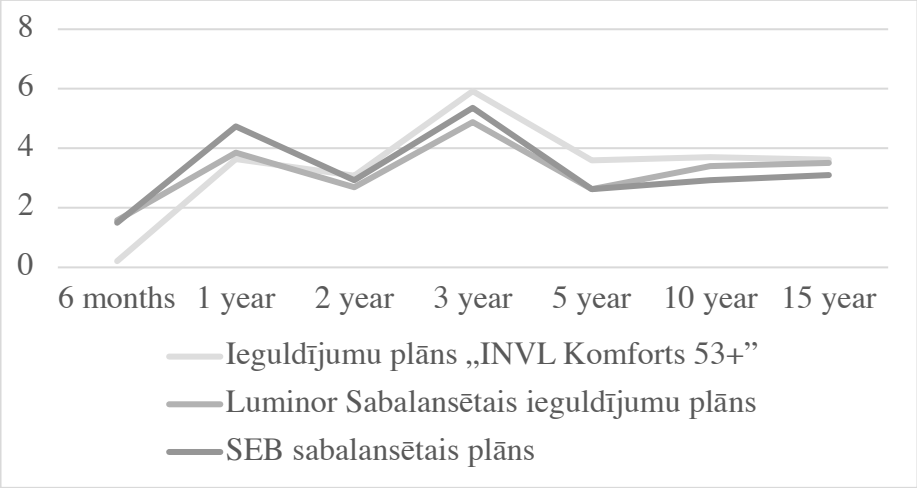

Figure 10. Return on balanced plans in 2021.
Source: Manapensija.lv (n.d.)

Now, 92 399 Latvian employees have chosen one of the balanced pensions plans available. In terms of profitability, it has fluctuated from 2.9 percent to 3.9 percent each year in the long run (during a period of 5-15 years).

The last but no least investment plan category is conservative plans that invest 100 percent of their pension funds in government bonds and deposits have the lowest risk, but also the lowest return. In Latvia, there are 6 conservative investment plans to choose from (see Figure 11). Conservative pension plans are appropriate for those over the age of 55. The investing strategy's goal is to avoid major swings to preserve the pension capital built up during working life. Currently, 320 639 Latvian employees have chosen one of the conservative plans.

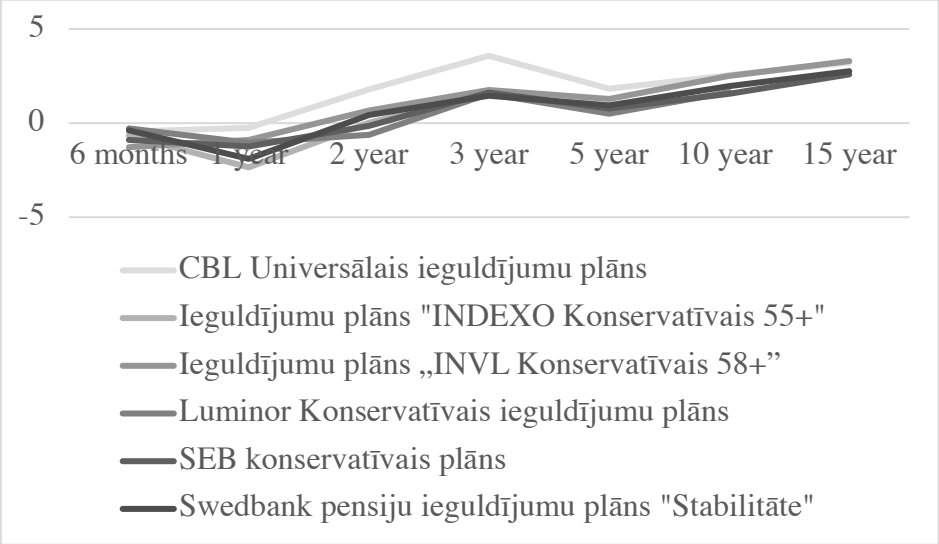

Figure 11. Return on conservative plans in 2021.

Source: Manapensija.lv (n.d.)

Because of the investment strategy, government bonds, and commissions withdrawn, conservative pension plan rates vary widely, but in the long run, the average yield has been between 1,55% and roughly 3,22% per year. The best results in long term (10-15 years) have showed CBL Universālais investment plan with the return of 3.22%, however in the short term (1 year) the lowest results have showed INDEXO Konservatīvais 55+ investment plan with the return of -2,35%. In 2021, because of the central bank's efforts to fight inflation, yields of conservative plans are falling, while the financial markets anticipate the curves to climb; nevertheless, this has a negative impact on bond funds in the short term.

To conclude about Latvia, based on the results of the analysis, it can be concluded that the results of each investment plan are clearly different, but active investment plans, who in theory, are made for younger individuals, who can allow higher investment risks, but also have a bigger potential growth in the future in the investment plan's value; however, historically long-term (10-15 years) returns have barely covered inflation. In contrast to the MSCI World global stock market index (2022), which has gained an average of 6 percent per year over the past decade, our second pension level has earned significantly less on average over the same time.

According to the State Social Insurance Agency (n.d.), a modification to the regulatory legislation stipulates that, beginning in 2022, new clients of the second pension pillar who do not choose an investment plan will be directed to one of the second pension pillar investment plans that invests no more than 50% of plan assets in shares. New members will be transferred to pension plans that invest up to 100 percent in company shares

beginning in 2023. (except for members who have reached the age of 55). This is a substantial improvement over the current system, in which all new entrants who do not select a plan are automatically assigned to one of the conservative plans.

Like Latvia, Estonia has an extensive licensing system for investment plans and fund managers. The Financial Supervision Authority (FSA) issues licenses to practically all sorts of financial institutions, and the Investment Funds Act provides the requisites, norms, and procedures. A pension plan's regulating documents must be thorough and precise. Management firms are required to provide three investment options, each with a distinct equity share. Those who do not select a fund are automatically enrolled in the fixed income fund. The default option, which may be a superior investment strategy, lacks an age-based or life-cycle profile (OECD, 2011).

According to pensionikeskus.ee (2021) there are three risk levels available for public to choose from – low, medium, and high. For Estonia the most popular choice with the most participants and net assets is medium risk level (see Figure 12).

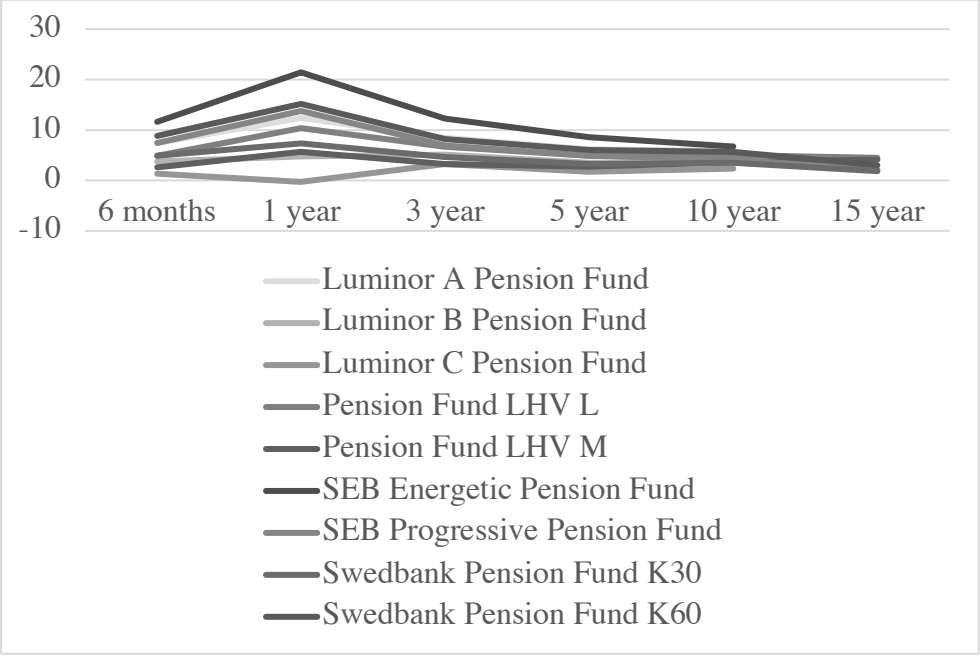

Figure 12. Return on medium risk level plans in 2021.
Source: Pensionikeskus.ee (n.d.)

In this risk category there are available 9 pension plans. In total the number of participants for this risk level is 408 924. Since the beginning of operations, the average annual return on all investment plans has been between 2% and 7%. The best return has been shown by SEB Energetic Pension fund and the lowest return has been for Luminor C Pension Fund.

By employing a passive investment technique and replicating securities markets or using an active investment technique, most of the funds invest up to 100% of its assets in shares. Investing in equities entails a high level of risk, with large swings in the value of the fund's holdings. In total there are 11 pension plans available in the high-risk level category. (see Figure 13).

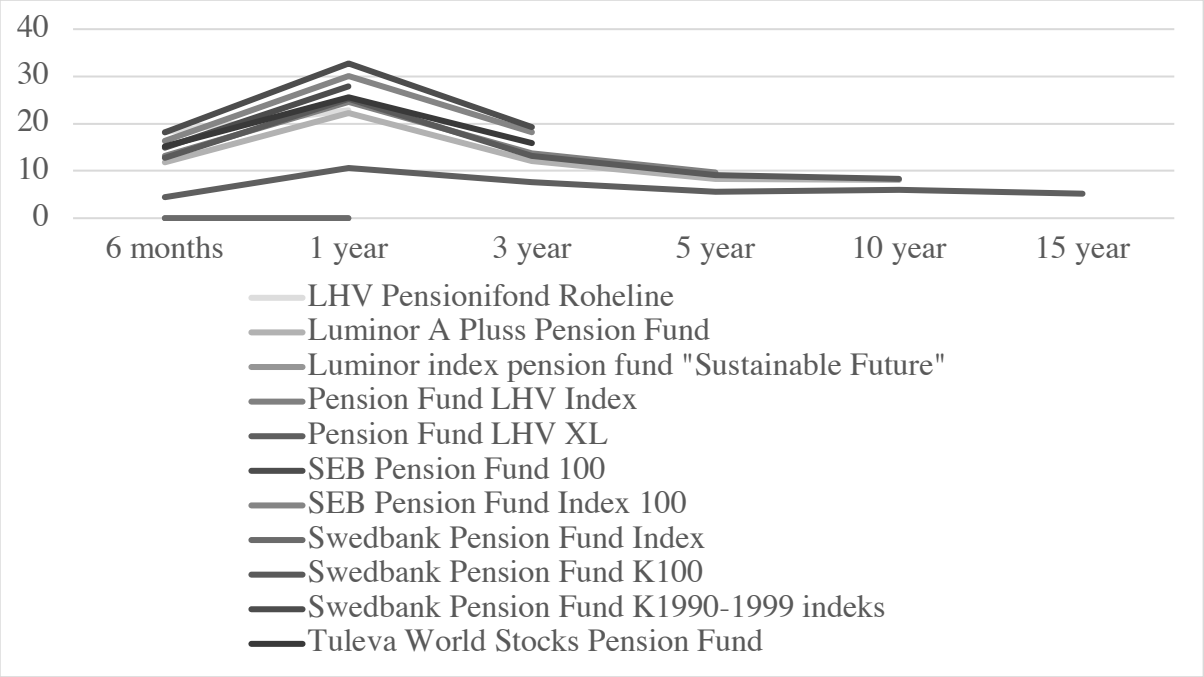

Figure 13. Return on high risk level plans in 2021.

Source: Pensionikeskus.ee (n.d.)

The average annual return on pension plans has ranged from 5% to 8% since their start of operation, however a lot of investment plans only have results from 3 years of operating. Short term results are quite similar and do not have big differences in returns.

Finally, the category of low-risk funds. The Fund's assets are invested according to the rating restrictions imposed by law on conservative pension funds. The fund's policy is to invest in low-risk debt securities, so that the accumulated funds are not subject to large fluctuations. In total there are available 6 pension plans in this investment category (see Figure 14).

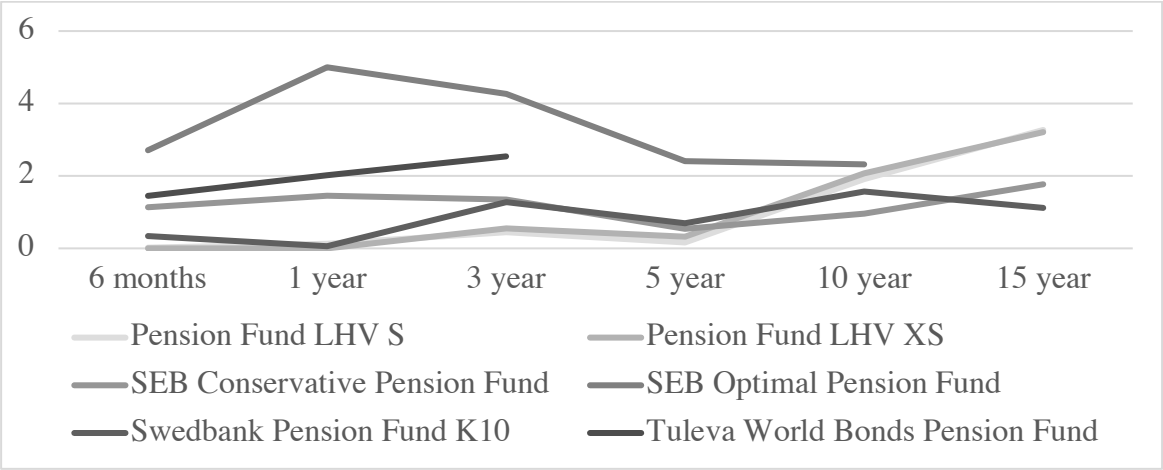

Figure 14. Return on low risk level plans in 2021.

Source: Pensionikeskus.ee

In the long term (10-15 years) the average annual return on pension plans varies from 1% to 3% per year. Also, in comparison with Latvia, none of the investment plans have shown negative return in the short term.

To conclude, both countries in the long term medium and balanced investment plans have shown poor return, with on average return of 3,10% for Estonia and 3.5 return for Latvia. However, high risk investment plans, have shown better return. Estonia is ahead of Latvia with the profitability of conservative plans. The short-term performance of financial markets is believed to represent price volatility. Therefore, one of the most important considerations when accumulating long-term savings is selecting a pension plan that is appropriate for the individual's age and optimally allocates investments between stocks and bonds.

2.4 Pension plan administrative costs

In Estonia, administrative charges of asset managers are included in the net value of a share: the management fee is deducted daily from the market value of the fund's assets, lowering the net asset value of a unit or the value of the owner's investment in the pension fund. (Rajevska, 2016)

In Latvia pension fund administrators for many years have been able to charge large fees for fund management. The State Funded Pensions Law set a commission price cap of 2% per year for active pension plans and 1.5 percent per year for conservative pension plans in 2017 (OECD, 2018). The changing point for Latvian pension fund administrative fees were, when ‘’INDEXO’’was introduced. In 2017 only one investment plan was offered, which featured half lower fees than other investment plans had (a fixed management fee of 0.75 percent of assets, no performance fee), clear operations, and indexed fund investments.

"Indexo," which is not owned by a bank, was founded by more than 30 Latvian entrepreneurs and managers in response to the high fees and low profitability of the mandatory funded pension scheme.

According to Latvian Law on State-Funded law (n.d.) from 2018 onwards, the commission price ceiling for active pension plans was lowered to 1.3% per annum and from 2019 to 1.1% per annum, while for conservative plans it was changed to 1.05% per year and in 2019 to 0.85% per year. There are still some pension plans on the market today that are allowed by law to charge the highest commission that is allowed.

The Act that came into force in January 2019 has lowered the management fees by one third but has made it possible to take a performance fee for good results (except for funds that are not allowed to invest in equities) (Piirits&Laurimae, 2019). The author has chosen to analyse average management fees for different investment plan categories – active, balanced, and conservative (see Figure 15).

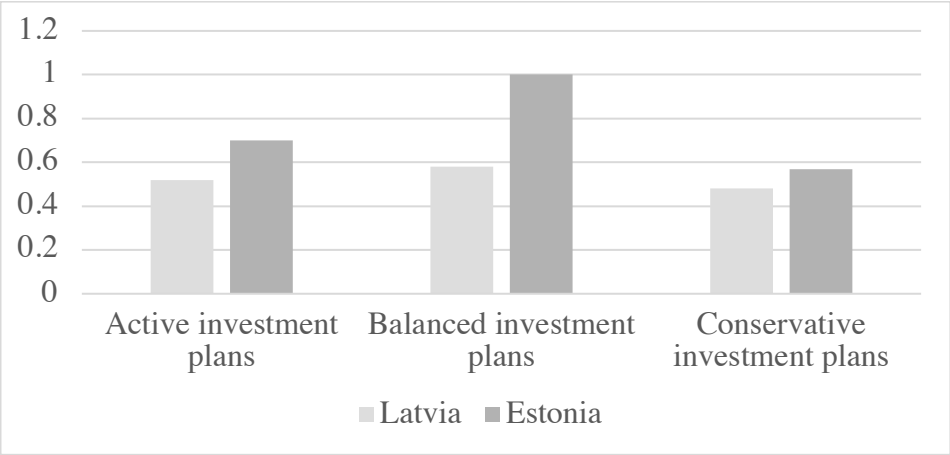

Figure 15. Average management fees for different investment plan categories in Latvia and Estonia in 2021.

Source: Manapensija.lv (n.d.) & Pensionikeskus.ee (n.d.), author's calculations.

In all investment plan categories, management fees in Estonia are higher than in Latvia. In Latvia, the average management fee in active investment plans is 0.52 percent, while in Estonia, the fee is 0.70 percent. The average fee for balanced investment plans in Latvia is 0.58 percent, which is nearly twice as low as the fee in Estonia, which is 1 percent. Finally, are conservative investment plans with small fee differences. The average fee in Latvia is 0.48 percent, while it is 0.57 percent in Estonia.

3. The Herfindahl-Hirschman Index and second pillar market concentration

As already mentioned before, the author will compare Latvian and Estonian pension plan asset structure development. For the research the author has chosen to analyse market concentration considering the value of assets the pension plans have and respectively what market share percentage they share between. The author will use data from the first days of January, in the period from 2008 to 2021. To do that the author will be using formula of the Herfindahl-Hirschman Index (HHI). The Herfindahl-Hirschman Index (HHI) is a widely used market concentration indicator. A highly concentrated industry is one in which a few numbers of firms control a substantial portion of the market, resulting in a near-monopolistic situation. A low degree of concentration indicates that the industry is approaching ideal competition, with numerous enterprises of roughly equal size sharing the market. It is calculated by squaring the market share of each firm competing in a market and then summing the resulting numbers. The formula for the calculations is stated below:

$$HHI = s_1^2 + s_2^2 + s_3^2 + \cdots s_n^2$$

The Herfindahl-Hirschman Index ranges from one (least concentrated) to 10,000 (most concentrated). A market with an HHI of less than 1,500 is considered a competitive market, one with an HHI of 1,500 to 2,500 is considered a moderately concentrated market, and one with an HHI of 2,500 or above is considered a highly concentrated market by the US Department of Justice. The figure of 10,000 is based on a hypothetical scenario in which there is only one company functioning in the industry, with a 100% market share. (Hayes, 2021) The author assumes when calculating the Herfindahl-Hirschman Index, the newer pension plans there will be available to public, the lower the index will be, because the public will have bigger choice of pension plans and the market concentration will be distributed between different fund managers. To gather necessary data, the author will be using Latvian pension website manapensija.lv and Estonian pensionikeskus.ee.

Considering all the second pillar pension plans that were available for the public from the year 2008 till 2021 in Latvia and Estonia, the author has made the calculations of the Herfindahl-Hirschman Index (HHI). The results have been displayed in the following figure (see Figure 16).

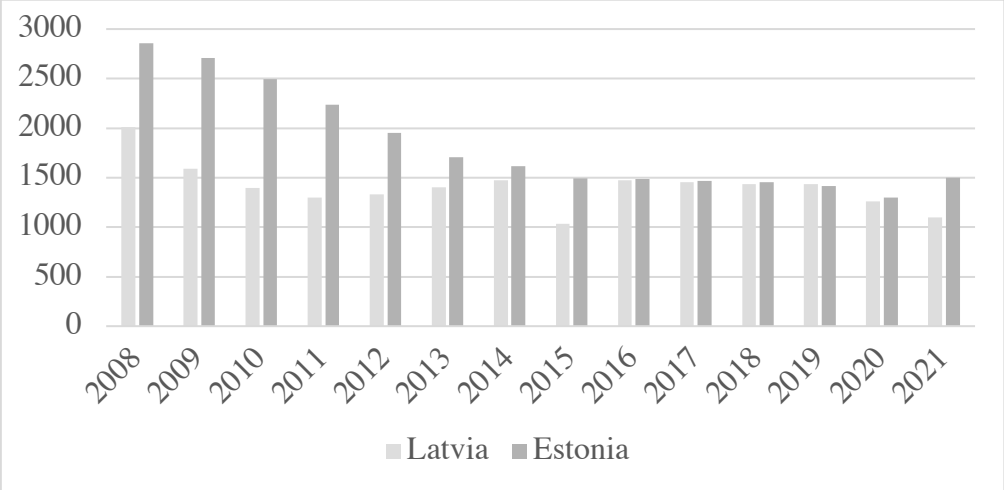

Figure 16. Herfindahl-Hirschman Index results for Latvia and Estonia.
Source: Author's calculations.

The second pillar pension industry is moderately concentrated in both - Latvia and Estonia. Looking at the results of the author's calculation, the Estonian HHI has been relatively higher almost every year, except 2019. The Latvian and Estonian pension markets were highly concentrated, but this has recently decreased as new fund managers have entered the market. If at the beginning the biggest market share holder in both countries were Swedbank, with 62% of the market in Estonia and with 44% in Latvia. Now the situation clearly has changed for both countries and the second pillar market share is distributed between more fund managers (see Figure 17).

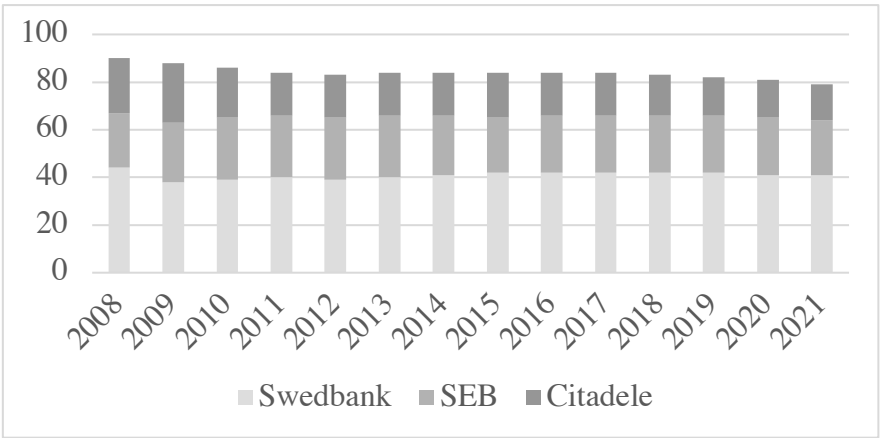

Figure 17. Largest second pillar fund manager market share in Latvia 2008-2021 (%)
Source: Author's calculations.

For Latvia the market share has not changed drastically and nowadays the situation remains almost the same it was in 2008 – the biggest market leader being Swedbank,

following by SEB and Citadele. The fund managers market share of second pension pillar have faced some changes (see Figure 18).

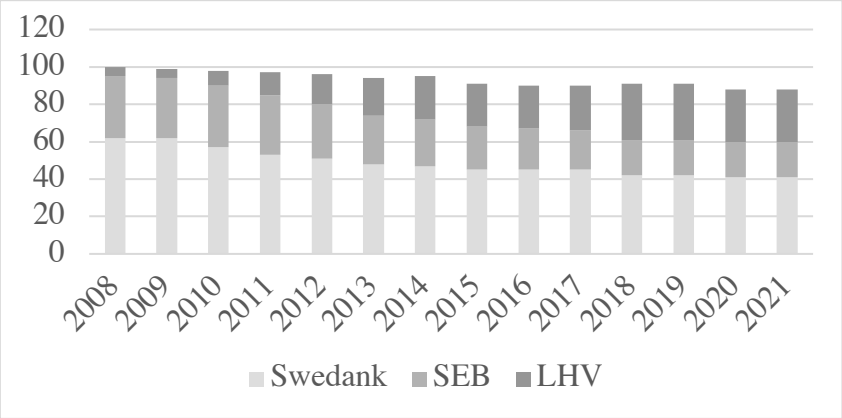

Figure 18. Largest second pillar fund manager market share in Estonia 2008-2021 (%) Source: author's calculations.

For Estonia, the same as Latvia, Swedbank is still the leader between all the fund managers. The biggest change is noticeable for Estonia, because now there are available in total 5 fund managers and Swedbank does not have almost half of the market as it did in 2008. Also, from the three market share leaders in Estonia that LHV in 2008 started with only a small percent of the whole market (5%) and through the year have grown into the second biggest market share leader (29%). LHV has also overpassed SEB and now it is the second largest market share participant.

Based on the results, the author will explain what trends are noticeable in the results comparing Latvia and Estonia and what could be the factors influencing the market concentration.

In Latvia, according to Manapensija.lv (n.d.) the great majority of asset managers are Latvian bank subsidiaries. The only asset managers not owned by banks, INVL Asset Management and INDEXO, had the lowest market shares at the end of 2017. For Estonia, according to Pensionikeskus.ee (n.d.), the only second pillar pension fund manager that is not owned by a bank is Tuleva Pension Fund.

According to OECD (2018) the relationship between asset managers and banks may create various market entry barriers. First, if a potential new entry lacks an existing presence in Latvia, brand recognition may work against them. Similarly, the ease of combining diverse financial services (such as loans, retirement savings, etc.) under a single organization may operate against potential new entrants that are not bank subsidiaries. Second, the custodians of asset managers are their mother banks. Even though the funds of the pension plans are kept separate from those of the custodian, all financial transactions in voluntary and mandatory

schemes are mediated by a custodian bank. Consequently, asset managers pay their custodial bank fees. In exchange, a bank that is the custodian for an asset manager's plans can inform its consumers about those plans. Thirdly, conflicts of interest may exist between the asset management and its mother bank. Mother banks of financial groups are typically pension fund shareholders and asset managers. Moreover, board members are typically elected by shareholders. In this circumstance, the ethical duty owed to pension plan participants by the governing body of private pension funds or asset managers may be compromised.

For Latvia from year 2008 till 2009 there was moderate concentration in the market. According to overview on the operation of the state funded pension scheme in 2009 (VSAA, n.d.) that year was the ninth year of operation of the state funded pension scheme. The overall accumulated pension capital increased by 241 million lats to 704 million lats on December 31, 2009.

As already mentioned, since the start of the 2nd pillar pension system, different reforms have taken place that has had impact on market concentration and the amount of assets.

First, commissions withheld averaged approximately 0.5% of the value of pension plan assets each year in 2021, down from approximately 1.5% four years prior. According to the Latvian Law on State-Financed Pensions (n.d.), the maximum annual commission is currently 1.1% (0.85% for conservative plans), down from 2.0% earlier. This is a significant decrease. However, the unwillingness of banks to abolish variable commissions continues to cast a shadow over the second pension pillar's openness and efficacy.

Secondly, although past performance is no guarantee of the same future results, it should be highlighted that modern index pension plans have outperformed traditional (or old-fashioned) pension products in recent years. This have also impacted the HHI and the total value of assets. For example, INDEXO Izaugsme 47-57, the first low-cost 2nd pillar pension plan, has delivered an extraordinary return of about 34% since its launch. They are on average 8.5% per year, compared to 4.7 percent per year offered on average by the largest 2nd pillar pension plan over the same period Swedbank Dinamika. According to data from Manapensija.lv (n.d.) as of the end of November 2021, Swedbank pension plan Dinamika has roughly 310 thousand members, out of a total of nearly 1.3 million participants in the second pension pillar. It also has € 1.42 billion in assets out of a total of € 5 billion in second pillar assets. It may be assumed that the performance of this pension plan has a significant effect on the environment of the second pension pillar. Dinamika's returns are lower than those of other second pension pillar investment plans, and over the long term, they even lag inflation. The

above example of Latvia's largest 2nd pillar pension plan "Dinamika", which holds about a quarter of all 2nd pillar pension funds, demonstrates that there is still space for considerable improvement in the second pillar market.

In comparison, the second pillar's pension funds hold most Estonians' savings. And the banks have taken nearly half of people's returns year after year. Most individuals are still unaware of what is happening with their pension accounts. (Pekk, 2017)

Since the beginning of 2008, the HHI index in Estonia has changed significantly. The HHI index for Estonia is currently 1498, indicating that the second pension pillar is a competitive market. Every second pillar saver can now invest in a high-quality, low-cost index fund. In addition, the three largest market participants SEB, LHV, and Swedbank - have launched an index fund with a low fee structure. If comparing with Latvia's Swedbank plan ''Dinamika'', then for the Estonians similar plan is Swedbank pension fund K60. In the long run (15 years) it returns has been 3.01%, which is even less than the average inflation, which is 3.4%. This means that people of Estonia now have more pension plans to choose from with lower commissions and it makes the market less concentrated.

Also, worth mentioning, now the government no longer allocates pension payments from young people to bond funds with costs that exceed real rates. People who haven't chosen a pension fund for themselves at the start of their careers are now led to a low-cost index fund. (Pekk, 2021)

4. Conclusion

The author compared the second-pillar pension fund markets in Latvia and Estonia. The thesis hypothesis was that the greater the number of fund managers in both countries, the more the competition and the greater the availability of pension plan options with lower costs. The thesis analysed the link between market concentration, as assessed by concentration indices, and pension fund returns using publicly accessible data on pension funds in Latvia and Estonia. The author used yearly data from 2007 to 2021.

Starting from 2007, both countries have faced different changes in legislation that has changed both the dynamics of second pension pillar managers, the costs of investment plans and overall conditions of the second pension pillar for individuals, for instance, contribution rates, retirement age and more.

When it comes to dynamics of pension fund managers and investment plans, both countries market structure has changed. In 2008 in Latvia, there were only 5 fund managers available, the leader being Swedbank taking 44% from the second pillar pension market.

Over the time the number of managers changed and in 2021 individuals had access to 6 fund managers. However, when it comes to investment plans, in 2008 Latvian residents had access to 25 investment plans and in 2021 this number has grown to 29 plans. Comparatively, Estonia the growth was bigger, because in 2008 there were only 3 fund managers, with the leader being also Swedbank with 62% of the whole market. Till 2021, 2 new fund managers started operating and in total public has access to 5 fund managers. The number of investment plans had doubled and if in 2008 there were only 10 investment plans available, then already in 2021, the number of investment plans is 26.

When analysing pension fund investment plans, it should be recognized, however, that not all pension plan portfolios have been handled efficiently up to this point. The efficiency of a pension plan may be judged in at least two ways: by comparing it to other pension plans with comparable investment decisions and by comparing its performance to that of financial market indexes or index pension plans. Both Estonia and Latvia's long-term medium and balanced investment plans yielded an average return of 3.10 percent and 3.50 percent, respectively. Long-term gains have hardly kept pace with inflation, which has been in both countries on average, for Latvia 3.08% and for Estonia 3.4%. In comparison, Over the past decade, the MSCI World global stock market index has gained an average of 6% every year. Therefore, Latvian, and Estonian yields for medium and balanced investment plans have shown poor results in the long term (10-15 years).

Regarding high-risk investing strategies, they have proven to be more profitable. Since the start of operations in Latvia, the average yearly return on all investment plans has been between 11% and 17%. In Estonia, the average annual return on high-risk pension plans has ranged from 5% to 8%. Active investment plans with a greater proportion of shares are appropriate for individuals having more than 20 years till retirement age. The potential return is greater the more active the investment plan and the more corporations that invest in the shares. However, greater potential gains entail more risk. As to the profitability of conservative plans, Estonia is ahead of Latvia. In Latvia, for the conservative plans in the long run, the average yield has been between 1,55% and roughly 3,22% per year, in comparison where in Estonia it has been 1% to 3% per year, however in the short run the results has not showed negative yield like it did in Latvia. People over the age of 55 who are near to retirement age should not take on too much risk, since when the maturity of an investment is less than five years - the most important thing is to preserve what has already been earned, thus a more conservative investing plan is more suitable. To conclude about investment plan results, it is considered that the short-term performance of financial markets

represents price volatility. Therefore, selecting a pension plan that is appropriate for the individual's age and optimally distributes assets between stocks and bonds is one of the most significant factors to consider while building long-term savings.

Regarding second pension pillar management fees, the average commission fee in Latvia for the second pension pillar has fluctuated around 1.5 percent for a long time. However, on a medium- to long-term basis, this level of costs resulted in almost a third of investment income being paid to managers for their management services, regardless of the performance they delivered. Nevertheless, the pension fund manager dynamics and market competition, has improved the overall situation and in 2021 the average management fee is 0.52%, that is 3x times lower than it was a couple of years ago. In Estonia, the average management fees for all risk category investment plans are higher, on average being 0.75%.

Finally, the author did analysis on both countries market concentration. Concentration of the market refers to the division of a specific market among the participating companies. The second pillar pension market in both Latvia and Estonia is moderately concentrated. A highly concentrated industry is one in which a small number of firms control a considerable proportion of the market share, and a low degree of concentration is in which several businesses of roughly equal size share the market. Therefore, Latvia's and Estonia's second pension pillar market are in between regarding concentration. Between 2008 and 2021, new fund managers entered the pension markets of Latvia and Estonia, resulting in a decrease in market concentration. In both countries, Swedbank held the biggest market share. Until 2021, it remains unchanged in Latvia, although with a smaller market share of 41%. The biggest change is visible in Estonia, where there are now five fund managers to choose from and Swedbank no longer dominates roughly half of the market, as it did in 2008. Moreover, among the three market share leaders in Estonia in 2008, LHV began the year with a tiny 5% market share but increased over the years to become the second largest market share leader with 29% market share. LHV has also surpassed SEB and is the second-largest firm by market share at the present time.

In general, it has been studied that to choose the most suitable plan, criteria such as the age-appropriateness of the plan, its profitability and costs must be considered. Most importantly the hypothesis has been confirmed and larger number of managers has provided a wider choice of plans with lower commissions. The author's recommendation is to invest in a low-cost, high-quality index fund, which means that the funds are invested in diversified market indices that minimizes the risk to an individual company or industry. Additionally, in Estonia the three main market players - SEB, LHV, and Swedbank - have developed a low-

cost index funds. The same is for Latvia, where public can access better investment plans with lower fees and bigger returns.

To conclude, in Latvia the second pillar of pensions is essential for the pension system not to collapse under population pressure. This money is not now distributed to retirees, but rather saved for our future pension. Therefore, the second pension level is independent of the country's demographics. For the second pillar pension to secure the long-term viability of the pension system, it must be invested profitably. In Latvia investment management companies must take a more proactive approach to increasing people's financial education and encouraging them to select more age- appropriate, profitable pension plans. As most Latvians have chosen the pension managers of the bank's subsidiaries, this can be done by sending notifications to the mobile applications of the Internet bank or by helping to arrange it after each visit to the bank's branch.

When it comes to Estonia, because the second pension pillar is voluntary, many individuals withdraw their savings and use the funds to pay off their debts. Others will use it for day-to-day expenses. A tiny portion of it will be invested or utilized to purchase real estate. People must be better informed about money and methods to make a living in old age to prevent sliding into poverty.

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Appendix A

Herfindahl-Hirschman Index (HHI) calculations – Latvia

An example of calculations made for funds in year 2008

02/01/2008	Total market value of funds	Sum of Total fund asset value EUR	Market share	Square Value
Pension Fund LHV L		19729863	3%	0,11%
Pension Fund LHV M		2492988	1%	0,00%
Pension Fund LHV S		1780518	0%	0,00%
Pension Fund LHV XL		3463331	0%	0,00%
Pension Fund LHV XS		1038794	0%	0,00%
SEB Conservative Pension Fund		22207764	4%	0,14%
SEB Progressive Pension Fund	593 972 071	175216037	29%	8,70%
Swedbank Pension Fund K10		19718423	3%	0,11%
Swedbank Pension Fund K30		110850113	19%	3,48%
Swedbank Pension Fund K60		237474240	40%	15,98%

Source: Pensionikeskus.ee, author's calculations

Apendix B

Herfindahl-Hirschman Index (HHI) calculations – Latvia

An example of calculations made for funds in year 2008

02/01/2008	Total market value of funds	Sum of Total fund asset value EUR	Market share	Square Value
CBL Aktīvais ieguldījumu plāns		53 545 854	15,4%	2,36%
CBL Universālais ieguldījumu plāns		12 464 270	3,60%	0,13%
Citadele pensiju plāns Blūzs		268 609	0,10%	0,00%
Citadele pensiju plāns Džezs		1 697 161	1%	0,00%
Finasta pensiju plāns "EKSTRA"		3 224 195	0,90%	0,01%
Finasta pensiju plāns "KLASIKA"		5 709 532	1,60%	0,03%
Finasta universālais ieguldījumu plāns		456 764	0,10%	0,00%
Plāns "DAUGAVA"		4 390 021	1,30%	0,02%
Plāns "GAUJA"		4 463 969	1,30%	0,02%
Plāns "VENTA"		2 499 061	0,70%	0,01%
„INVL Ekstra 47+”	348 682 084	6 056 120	1,70%	0,03%
„INVL Komforts 53+”		878 295	0,30%	0,00%
„INVL Konservatīvais 58+”		2 385 065	0,70%	0,00%
Luminor (D) Aktīvais plāns		9 090 986	2,60%	0,07%
Luminor (D) Konservatīvais plāns		2 496 357	0,70%	0,01%
Luminor Sabalansētais plāns		4 662 744	1,30%	0,02%
SEB aktīvais plāns		57 499 488	16,50%	2,72%
SEB Eiropas plāns		7 343 471	2,10%	0,04%
SEB plāns "Rivjera"		166 961	0,00%	0,00%
SEB plāns "Safari"		596 202	0,20%	0,00%
SEB konservatīvais plāns		1 927 277	0,60%	0,00%
SEB Latvijas plāns		3 152 869	0,90%	0,01%
SEB sabalansētais plāns		11 295 268	3,20%	0,10%
Swedbank pensiju plāns "Dinamika"		131 066 280	37,60%	14,13%
Swedbank pensiju plāns "Stabilitāte"		21 345 265	6,10%	0,37%

Source: Manapensija.lv, author’s calculations

Summary

Bakalaureusetöö pealkiri on ''Läti ja eesti teise sambar pensionifondide turu võrdlus''. Esimesed sotsiaalkindlustuse süsteemid ulatuvad tagasi 19.sajandi Saksamaale. Esimene pensionisüsteem asutati üle 100 aasta tagasi. Sellest hoolimata arvavad enamus inimesed, et pensionisüsteemid on keerulised ja kardetakse pensioni teenuspakkujat valida.

Eesti ja Läti pensionisüsteem on ehitatud kolme sambana. Lätis saab pensionisse panustada maksimaalselt 20%, mis on ära jagatud esimese ja teise samba vahel. Esimesse sambasse läheb 14% ning ülejäänud 4% teise. Eestis on kohustuslik pensionipanus 6% palgast, mis on omakorda jagatud kaheks: töötaja panustab 2% ja tööandja 4% brutopalgast, mis on 20% sotsiaalmaksu sisse arvestatud. Eesti ja Läti kohustuslikud pensionifondid sõltuvad pankadest, mis neid haldavad. Töö autor uuris Eesti ja Läti teise samba struktuuri. Autor analüüsis mõlemas riigis pensioniplaanide arengut ja sidus selle turu kontsentratsiooniindeksitega nagu näiteks Herfindahl-Hirschmani indeks.

2021.aastal tegutseb Lätis 6 firmat, kes pakuvad pensionifondide haldamise teenust. Kokku on 29 erinevat fondi, mis on ära jaotatud erineva vanuse ja riskitasemega inimeste jaoks, näiteks konservatiivsed, aktiivsed, agressiivsed ja passiivsed fondid. Eestis on 5 firmat, mis pakuvad pensionifondi teise samba haldamise teenust, kes pakuvad kokku 26 erinevat fondi, mis jagunevad madala, keskmise ja kõrge riskikategooriasse. Saadaval olevate pensionifondide arv on muutunud ajas. Teise samba pensionifondi mõte on pensioniraha kasvatada. Raha hulk, mida panustatakse teise sambasse sõltub palgast ja isikliku pensionifondi panustamise hulga suurusest. Lisaks sellele mõjutab pensionifondi kasumlikkuse valik teise samba suurust. Lätis olid kuni 2016.aastani OECD riikide kõrgeimad keskmised fondi haldustasud, mida põhjustas kõrge inflatsioon ja madal fondide tootlus. Mõnedes Eesti pensionifondides on siiamaani kõrged haldustasud. 2018.aastal võeti Lätis vastu uus seadus, mis sätestas haldustasude piirmääraks 1.1% aastas.

Teise samba pensionifondide turg on nii Eestis kui Lätis üpris kontsentreeritud. Uute firmade turule tulek on seda natuke vähendanud. Swedbank oli pensionifondide süsteemi loomise alguses turuliider ning omas Eestis 62% ja Lätis 44% turuosa. Tänaseks on olukord natuke muutunud, kuna teise samba turuosa on erinevate pakkujate vahel rohkem jagatud. Sellest hoolimata on Swedbankil liidripositsioon mõlemas riigis. 60% läti tööealisest elanikkonnast ei ole oma staažile vastavat teise samba fondi valinud. Samuti on paljude inimeste teise samba raha sellises fondis, millel on väga väike tootlus.

Mõlemad riigid on teinud mitmeid reforme, mis on parandanud pensionifondi teise samba üldist süsteemi. Sellegipoolest on vaja veel palju teha, et muuta turgu vähem kontsentreerituks ja tõsta pensionifondide tootlust.

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12/05/2022