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IMPACT ANALYSIS OF THE CHANGES TO THE PENSION SYSTEM

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Impact analysis of the changes to the pension system

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Abstract

In August 2019 the Estonian government confirmed the principles for the reform of the second pension pillar. The planned reforms are intended to make joining and leaving the second pillar voluntary. People will be able to choose between three options for how to use the pillar. The first is to continue saving in the second pension pillar as previously. The second is to stop contributing to the pillar but to keep all of the assets that have been built up on their pension fund account so far. The third option is to stop making payments into the second pillar and to withdraw everything that has been saved up in it so far.

The analysis focuses on the following topics. Firstly we consider the architecture of pension systems that international organisations like the OECD and the World Bank recommend to their member states, and the specific recommendations that have been given to Estonia. Secondly we analyse how the planned changes to the pension system will affect the size of pensions and the tax burden in the future. Thirdly we look into how the changes will affect the savings behaviour of private individuals. Fourthly we research how making the second pension pillar voluntary will affect the Estonian macroeconomy. Finally we evaluate how the proposed reform will impact the Estonian financial sector, focusing particularly on second pillar funds.

JEL classification: J26, J11, G17

Keywords: pension, pension system, size of pensions, population, macroeconomy, financial sector

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INTRODUCTION

In August 2019 the Estonian government confirmed the principles for the reform of the second pension pillar. The planned reforms are intended to make joining and leaving the second pillar voluntary1. People will be able to choose between three options for how to use the pillar. The first is to continue saving in the second pension pillar as previously. The second is to stop contributing to the pillar but to keep all of the assets that have been built up on their pension fund account so far. The third option is to stop making payments into the second pillar and to withdraw everything that has been saved up in it so far.

Under the Eesti Pank Act, Eesti Pank advises the government on monetary policy issues and the government does not take any important economic policy decisions without first listening to Eesti Pank's opinion. Eesti Pank mainly focuses on economic policy questions that affect the Estonian financial sector and macroeconomic developments. The proposed changes to the pension system will affect the local financial sector and the Estonian macroeconomy over both the short-term and the long-term.

Following from this, this analysis will focus on the following topics. Firstly we will consider the architecture of pension systems that international organisations like the OECD and the World Bank recommend to their member states, and the specific recommendations that have been given to Estonia. Secondly we will analyse how the planned changes to the pension system will affect the size of pensions and the tax burden in the future. Thirdly we will look into how the changes will affect the savings behaviour of private individuals. Fourthly we will research how making the second pension pillar voluntary will affect the Estonian macroeconomy. Finally we will evaluate how the proposed reform will impact the Estonian financial sector, focusing particularly on second pillar funds.

1 The principles are described in more detail in Estonian at: https://www.valitsus.ee/et/uudised/valitsus-kinnitas-ii-pensionisamba-reformi-pohimotted.

1. THE VISION OF INTERNATIONAL ORGANISATIONS FOR THE ORGANISATION OF PENSION SCHEMES AND THEIR RECOMMENDATIONS TO ESTONIA

1.1 THE PENSION SYSTEMS RECOMMENDED BY INTERNATIONAL ORGANISATIONS

The pension reform in Estonia at the start of the 2000s was largely based on the analysis and recommendations of the World Bank. Experts from the World Bank recommended in their report *Averting the Old Age Crisis: Policies to protect the old and promote growth* published in 1994 that sufficient incomes in retirement should be ensured for the elderly through a combination of a pay-as-you-go (PAYG) system and funded pensions paid from savings built up during years of work.

They considered that the advantage of this system is that the responsibility for ensuring an income for the elderly is divided between different pension pillars. The first pension pillar uses redistribution to mitigate the risk of poverty in old age. The second pillar, which is the mandatory funded pension, encourages people to save and allows them to smooth their income over their whole life. The World Bank also argued that the second pension pillar supports the development of capital and financial markets, which in turn promotes growth in the economy. Saving in the third pension pillar, which is the voluntary funded pension, gives additional security to those who want to save more for their retirement. The bank argued that distributing the roles and risks helps to create certainty in an uncertain world (The World Bank 1994, 15–16). The World Bank proposed a further development of the three pillar system in 2005 with the five pillar pension system, which has two additional pillars alongside the original three. One of these was called the zero pillar, which guarantees a minimal income in retirement for everybody even if they had never previously contributed to a pension system, and the other new pillar was the fourth pillar, which was mainly a non-financial pillar that gave people access to various social programmes such as healthcare and housing and provided them with various support services (The World Bank… 2008, 2–3). Both the zero pillar and the fourth pillar were primarily intended to ease poverty (The World Bank… 2008, 8).

The second principal source of expertise on pensions is the Organisation for Economic Co-operation and Development (OECD), which states that the main function of a pension system is to provide an income in old age. This can be done in three ways. The first is to ease poverty by making sure that people do not fall into poverty on retirement, the second is to smooth consumption by encouraging people to save while working so they would have income available in retirement, and the third is to insure against specific risks by providing a range of sources of income in retirement (OECD 2018, 22).

The OECD considers that ageing populations will in future pose the main risk to state pay-as-you-go pension systems. Worries about fiscal sustainability may lead policy makers faced with demographic changes to review the criteria and equations that are used to calculate pensions after retirement (OECD 2018, 37).

The OECD emphasises that pay-as-you-go and funded pension systems complement each other. Combining pension systems reduces specific risks that people could face both before and after they retire, such as demographic, social, labour market, macroeconomic, and financial risks. It also helps the pension system to achieve its general goals better, such as easing poverty, smoothing consumption, redistributing wealth, and maintaining sustainability in the system. For this reason the OECD recommends that pension systems should have a PAYG component and a funded component (OECD 2018, 18 and 24–25).

It also stresses that the sustainability of the pension system needs policymakers to understand clearly what specific goals the national pension system is meeting and how the risks are distributed, and

what the purpose of the funded pension is within the general system. Different pension pillars meet different goals. Pensions paid from a PAYG scheme help to ease poverty for example, by providing a minimum level of income for the elderly. The OECD recommends that such a scheme should be funded from general taxation, and does not see how it could be successfully replaced by private sector pension schemes. Redistribution, which should provide greater equality in retirement, can also be more effectively achieved through a nationally run pay-as-you-go pension scheme. Smoothing consumption over a lifetime, which helps make sure pensions are sufficient to maintain previous living standards, can be achieved through a state PAYG scheme or through one based on private sector savings. The OECD emphasises here though that a common factor in all schemes intended to smooth consumption is that they are compulsory (OECD 2018, 18–23).

The OECD argues that funded pensions help to make PAYG schemes more sustainable. Ageing populations put a lot of pressure on the sustainability of the first pension pillar, through which in simple terms an ever smaller number of workers must pay the pensions of an ever increasing number of pensioners. The OECD finds that funded pensions encourage work and saving for retirement, and encourage older people to remain in work. People working in later life reduces the pressure on the first PAYG pillar (OECD 2018, 23 and 29).

The funded pension can also help the development of capital markets, and support growth in the economy. Assuming that the regulatory environment favours competition and is fit for purpose, directing savings towards long-term investment projects supports the development of financial markets. Large-scale investment can increase production capacity and employment, raise wages and boost the economy (OECD 2018, 29).

The OECD highlights that behavioural research has shown that compulsory elements are important in a funded pension system. Research shows that people find it hard to cope with planning for retirement and probably do not save enough while they are still working. The OECD recommends that tax relief should be provided to encourage people to participate in both compulsory and voluntary systems, and to distribute the risks between individuals, the state and other taxpayers (OECD 2018, 33).

The OECD commented on the administrative costs of pension insurance that pension schemes that offer more choices may be more expensive. Inefficiencies in the market such as asymmetric information mean that market mechanisms often do not lead to costs and fees being aligned (OECD 2018, 13–14).

1.2 ASSESSMENTS AND RECOMMENDATIONS OF THE ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT AND THE INTERNATIONAL MONETARY FUND FOR THE ESTONIAN PENSION SYSTEM FOR 2010–2019

The Organisation for Economic Co-operation and Development has analysed the Estonian pension system and made recommendations for how it can be improved. In the past decade the OECD produced a more thorough analysis of the Estonian pension system once Estonia joined the OECD. The analysis was called *Estonia: Review of the private pensions systems*, and was published in 2011. The OECD produces regular Economic Surveys of its member states, and these have also contained assessments of the Estonian pension system. It also produces regular statistics on the returns on Estonian pension funds compared to those of other OECD countries.

The OECD has generally been satisfied with the functioning of the Estonian pension system in its detailed reports. The 2011 report found that the law and the supervisory framework were generally appropriate, and it recognised the efforts made by the state to improve financial literacy (OECD 2011a, 7–9). The analysis also emphasised that although the national economy is relatively small,

Estonia has managed to make its pension funds into a part of the financial sector with great potential for growth (OECD 2011a, 19).

The OECD recommended that the excessively high fees of pension funds in Estonia should be reviewed, and the second pension pillar should be extended. The report had two main questions concerning the first pension pillar in Estonia, asking how its financial sustainability can be maintained and how the pensions paid out from the first pillar can be kept large enough. The OECD argues that a funded pension system can partially compensate for a reduction in the pensions paid out from the first pillar (OECD 2011a, 16). It notes that a weakness of the second pension pillar is that management fees at Estonian pension funds are high, though it notes that changes to the law mean that this problem has been partially resolved (OECD 2011a, 10). The report gives several recommendations for how the funded system can be improved in Estonia. One recommendation is that how changes in the law affect competition between pension funds and the efficiency of the funds should be monitored, and if necessary alternative ways of reducing management fees further should be considered, and the legal framework regulating conflicts of interest should be reviewed, as should how appropriate current investment strategies are, meaning the lifetime logic that younger people should invest in funds that focus more on shares (OECD 2011a, 8).

The main worries that the OECD found about the Estonian pension system in its country report were that pensions are small and the return on pension funds is weak. The economic review of OECD member states gave a thorough assessment of the development and state of the Estonian pension system in the country reports of 2011 and 2015. The report for 2011 recognised the measures taken by Estonia to improve the sustainability of the first pillar, such as raising the retirement age, but noted that this did not resolve the problem of pensions being small. It emphasised that as the second pillar is supposed to provide a large part of the income of pensioners in the future, it is important to avoid contributions to the second pension pillar being reduced (OECD 2011b, 56–58). The large management costs of the pension funds and the weaker return in Estonia than in other countries was covered in detail in the 2015 report. The OECD considered that the fees of pension funds and other administrative costs such as marketing costs were relatively high in Estonia in international comparison, putting too much of a burden on workers (OECD 2015, 76–77). The report accepted that Estonia has already taken steps to reduce the fees of pension funds, but if they did not work and if competition between pension funds did not increase, the Estonian government might need to consider more fundamental changes like the steps taken in Sweden to cut the fees of pension funds (OECD 2015, 30–31 and 76–79). Pension fund fees were also briefly discussed in the 2019 report *Economic Snapshot: Reform Priorities*, which again recommended limiting the fees of pension funds, including marketing expenses, by publishing information on the costs of pension funds in a single comparable form for example (OECD 2019, 131).

Another criticism from the OECD is that the state stopped making payments into the second pension pillar during the economic crisis. The 2011 economic report criticised the decision taken in Estonia during the economic crisis to stop state contributions temporarily to the second pillar. It argued that this cost the Estonian pension system public trust and made people less inclined to save for their pensions in the third pension pillar. It recommended that the government make sure that contributions to the second pension pillar were larger in the near term and that they offset the payments that were stopped during the crisis (OECD 2011b, 12 and 58–60).

International organisations have also commented on the changes that are now planned to the Estonian pension system, and the International Monetary Fund (IMF) has recommended caution. The IMF believes that the planned changes may increase short-term and long-term fiscal risk, reduce the incomes of pensioners in the future, and in an extreme case cause the second pillar to disappear. It argues that a large-scale one-off injection of a large amount of money into the economy could boost

consumption, state budget revenues and economic growth for a short time, but reduce the size of pensions in the long term. Making the second pension pillar voluntary will directly affect the state budget, as some of those who abandon the funded pension may need to ask for additional help from the state in future, especially given that the ageing population means the first pillar resources may not be sufficient to pay a reasonable pension. In this way the planned changes will substantially increase the financial burden on future generations if the overall pension savings in society decline. People are more exposed to investment risk if they invest off their own bat, and this can increase costs and reduce welfare. For this reason the IMF recommends that the grounds for the planned changes should be considered carefully and discussed thoroughly with all the stakeholders in society (IMF 2019).

2. HOW THE PROPOSED CHANGES TO THE PENSION SYSTEM WILL AFFECT THE SIZE OF PENSIONS AND THE TAX BURDEN OVER THE LONG TERM

We analyse the long-term impact of changes to the pension system using a model that estimates how the old-age pension will look under different assumptions. As the model uses the Eurostat population forecast that runs out to 2081, the forecasts for the size of pensions also run to 2081.

The long-term forecast for pensions depends a great deal on the assumptions used in it. The key assumptions are those for changes in the population, growth in the economy, employment, the retirement age, indexing of pensions, taxes, and the return on the second pension pillar. The main assumptions for our baseline forecast are shown in Table 2.1.

Table 2.1. Assumptions in the baseline forecast

	2020	2040	2080
Population	1 317 940	1 283 732	1 140 304
Labour productivity as % of the EU27 in PPS	78%	95%	95%
Employment rate (2018 = 100)	100	100	100
Unemployment rate (%)	6.1%	8.0%	8.0%
Wages as a percentage of GDP (%)	48.5%	47.3%	47.3%
Retirement age	63.75	66.53	70.71
By how many years a rise of one year in the retirement age will affect duration of employment	0.33	0.33	0.33
Indexing			
Social tax share	1	1	1
CPI share	0	0	0
Base share	1.1	1.1	1.1
Yearly value	0.9	0.9	0.9
Taxes			
Social tax for those only in the first pillar (%)	20%	20%	20%
Social tax going to the first pillar for those in the second pillar (%)	16%	16%	16%
Social tax going to the second pillar for those in the second pillar (%)	4%	4%	4%
Additional contribution on top of social tax for those in the second pillar (%)	2%	2%	2%
Net nominal return on the second pillar			
During saving (%)	4.5%	4.5%	4.5%
During payouts (%)	2%	2%	2%

As already noted, the assumptions used in the model for the population are based on the Eurostat population forecast to 2081. Eurostat produced one baseline scenario and five additional scenarios for Estonia. The additional scenarios are: (1) a lower birthrate, (2) a lower death rate, (3) increased immigration, (4) reduced immigration, and (5) no immigration. The model can forecast the size of the pension under all the scenarios. Our baseline forecast uses the Eurostat baseline scenario that sees the Estonian population fall to around 1.14 million people by 2080.

The assumption for long-term growth in the Estonian economy in the baseline forecast is that by 2040 Estonian GDP per person at PPP will have reached around the same level as the average for the other member states of the European Union; it is currently a little over 80% of that figure. As unemployment is higher in Estonia than in other European Union countries, labour productivity in Estonia will be 95% of the European Union level by 2040 in comparable terms. We assume that after 2040 Estonian labour productivity will grow at the same rate as the European Union average in constant prices, which is 1.5% a year. Finally we assume that the convergence of Estonian income levels will by 2040 be accompanied by a convergence of the price level in the baseline forecast, with the result that the Estonian price level in 2040 will be around 95% of the European Union average; it is currently a little below 80%. The price level in Estonia and the European Union average will rise after that at the same rate.

The retirement age in the baseline forecast is based on the changes made to the State Pension Insurance Act at the end of 2018, which linked retirement age to life expectancy at 65 from 2027. This will cause the retirement age to rise from 65 in 2026 to around 71 by 2081.

In the baseline forecast we did not use the current formula for indexing the old-age pension paid from the first pillar. In calculating the current yearly index for pensions, 80% comes from the change in the receipts of pension insurance paid from social tax in the previous year, and 20% from the change in the previous year in the consumer price index. Using this formula creates a substantial surplus in the first pension pillar by the end of the forecast horizon, while the pension paid out from the first pillar falls substantially in relation to the average net wage. This combination of falling pensions and rising surplus is not probable. The average old-age pension in 2002-2018 actually increased a little faster than social tax receipts. For this reason we use a formula in the baseline forecast that equates growth in pensions to growth in social tax receipts.

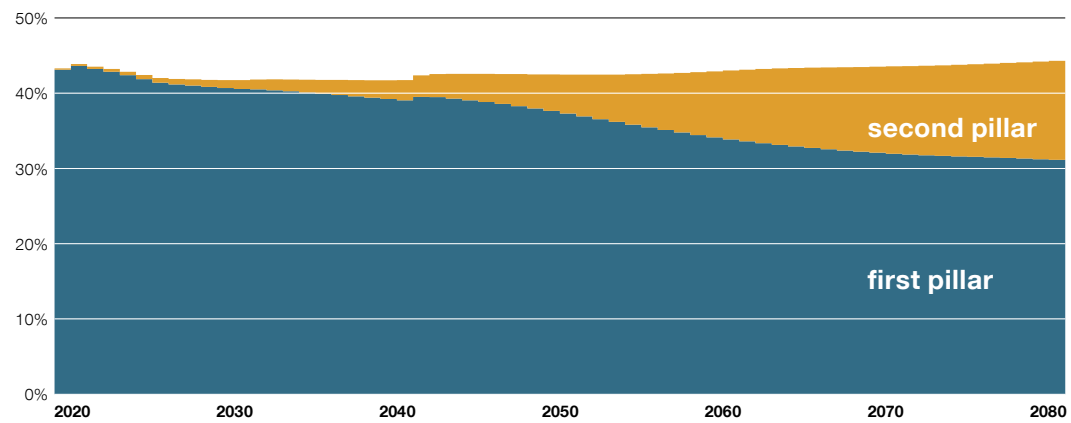
We have assumed in the baseline forecast that social tax rates and payments to the second pension pillar will remain at current levels. The social tax that goes to pension insurance is 20% of wages for those who have not joined the second pension pillar. For those who have joined the second pillar, 16% of their wages goes to the first pension pillar and 4% to the second pillar with an additional 2% personal contribution.

We have made separate assumptions for the return on the second pension pillar for the saving and payout phases. In the baseline forecast we use a nominal return after service fees during the saving phase of 4.5% and one of 2% during the payout phase.

We consider that the assumptions used in this model best describe the future developments in the Estonian economy. As already noted, all those assumptions can be changed in the model and other assumptions can be used to calculate different indicators for the pension system such as the average size of the old-age pension, the ratio of the average pension to the average wage, the ratio of total spending on pensions to GDP, and so forth.

While the current system continues to apply, the baseline forecast finds that the pension paid out from the second pillar will be around 30% of the old-age pension (see Figure 2.1). The pension paid out from the second pillar will increase slowly, as joining it has only been compulsory for those born in 1983 or later, and those age cohorts will only reach retirement age after 2050. If the current system is maintained though, the majority of those receiving an old-age pension at the end of the forecast horizon will be in the second pension pillar.

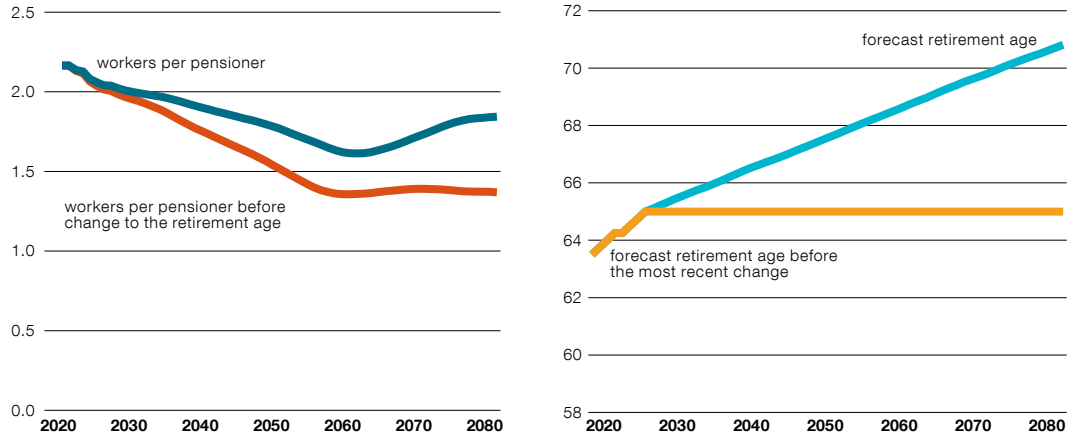
Figure 2.1. Baseline forecast: old-age pensions paid out from the first and second pillars



Source: Eesti Pank

The ageing population means the ratio of workers to the retired will be smaller in future. Despite the rise in the retirement age agreed at the end of 2018, the ratio of people working to those in retirement will continue to fall over the coming decades (see Figure 2.2). The critical point will arrive in 2060, when there will be 1.6 people working for every pensioner, down from 2.2 workers at present.

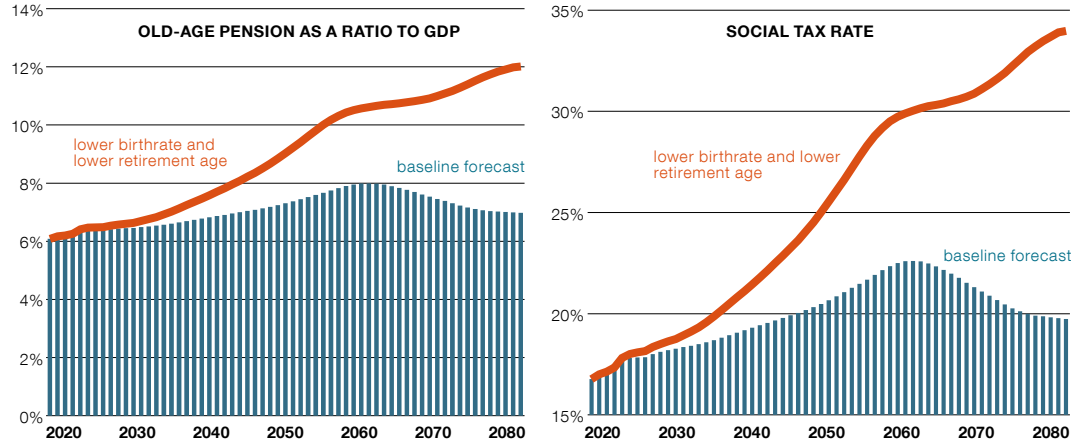
Figure 2.2. The ratio of workers to pensioners and the change in the retirement age



Source: Eesti Pank

The more that the currently planned changes reduce the pension savings that have been built up in the second pillar, the greater the pressure will be in future to increase the pensions paid through the first pillar and to raise taxes. If we want the average pension paid out from the first pillar to be 40% of the average net wage, then the assumptions in the baseline forecast show that the amount paid in old-age pensions as a ratio to GDP will increase from a little over 6% today to 8% by 2060 (see Figure 2.3). If pensions are funded from social taxes, then the social tax rate that will be needed to maintain a 40% equivalent ratio for the old-age pension to average net wages will rise from around 17% today to around 23% by 2060.

Figure 2.3. The old-age pension as a ratio to GDP and the social tax rate needed to maintain it at 40% of average net wages



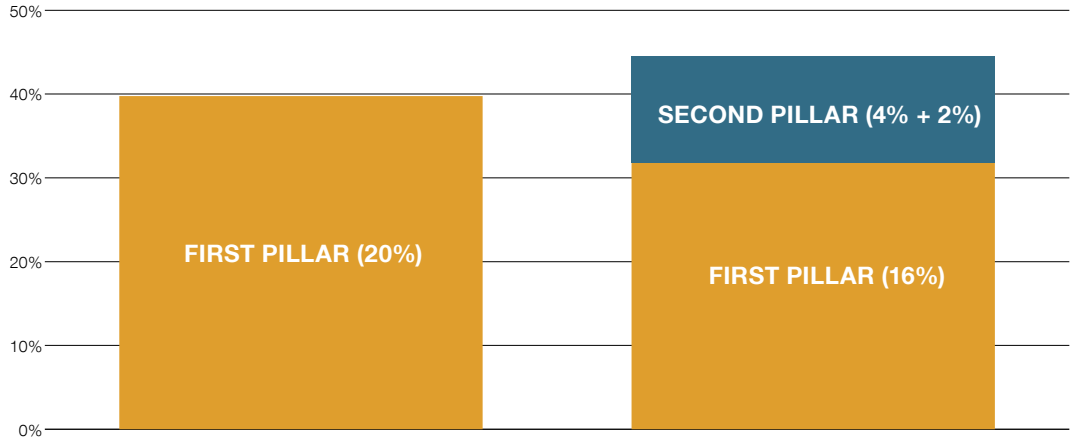
Source: Eesti Pank

As the different pension pillars reduce different risks, they together give greater confidence that old-age pensions will be large enough. Like the OECD recommendations, our calculations indicate that the first and second pillars complement one another, as they reduce risks of different types. The pension paid out from the first pillar does not depend directly on international financial markets for

example, while the pensions paid from the second and third pillars depend directly on them. As the second pillar pension does not depend so much on events in Estonia however, the funded pension is important if the Estonian population declines by more than expected, the Estonian economy grows by less than forecast, or the currently agreed rise in the retirement age is not fully rolled out over the decades. So if the lower birthrate scenario of Eurostat is fulfilled and Estonia decides not to raise the retirement age above 65, maintaining pensions at 40% of average wages would need the amount going to first pillar pensions to be doubled as a share of GDP (see Figure 2.3). This would then mean increased pressure to raise taxes.

The size of pensions in future will be affected by the individual additional contribution to the second pillar. The growth in social tax receipts for the whole of the period 2019-2081 in our baseline forecast is equal to the return on the second pension pillar. This means that the expected old-age pension will depend on the size of state pension insurance and the total amount paid into the second pillar funds. For those who have not joined the second pillar this is 20% of their wages, but for those who have joined it is 22%. It follows from this that if the current system remains in place, the ratio of the average pension and the average net wage will by 2080 be around a tenth higher than if only there was only the first pension pillar, into which 20% of the wages of workers go (see Figure 2.4).

Figure 2.4. The ratio of pensions to wages in 2080 depending on whether people are in the second pillar or not (the effect of withdrawing pension savings on the size of the pension)



Source: Eesti Pank

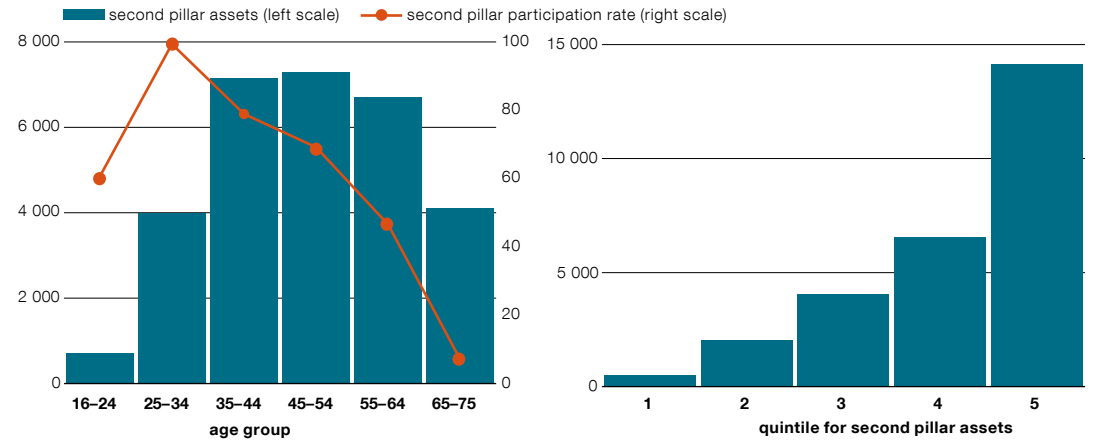
The longer that people have been saving in the second pillar, the more that withdrawing their savings and spending them will affect their future pension. Many of those who are currently in the second pillar have only been contributing to their funded pension fund for a fairly short time, and so their pension savings are small. By the end of the period though as much as 30% of the pension on average will be received from the second pillar. If that amount is spent immediately, the pension in the future will be substantially smaller.

3. HOW THE PLANNED CHANGES TO THE PENSION SYSTEM WILL AFFECT THE SAVINGS AND CONSUMPTION BEHAVIOUR OF PRIVATE INDIVIDUALS

This section analyses how the planned changes to the pension system will affect the savings and consumption behaviour of residents of Estonia. It reviews the savings in the second pillar and their importance relative to other financial assets, and analyses what the motivations would be for different households to use their second pillar savings for spending earlier. It also researches whether the people who do not currently have second pillar savings have saved more in other ways as an alternative. This is done using the data collected during the 2013 and 2017 waves of the Estonian Household Finance and Consumption Survey (HFCS)2.

There was a substantial increase in the total amount invested in the second pension pillar between the two waves of the HFCS. The average amount invested in the second pillar by those who had joined was 2900 euros in 2013 and 5500 euros in 2017. Figure 3.1 shows the share of each age group that has joined the second pillar and the value of second pillar assets in 2017 for those who had joined. The middle aged group aged 35-64 has invested most in the second pillar, and has quite a high participation rate. At the time of the survey, it was compulsory for those aged 34 and below to make payments into the second pillar. The participation rate for those aged 25-34 was almost 100%, but it was lower among those who were younger than that because many of them had not yet started work. As younger cohorts have had less time to make payments into the second pillar, their second pillar investments are also smaller than those of the older cohorts. The median value of second pension pillar investments in 2017 was 4200 euros, and the mean value was 5500 euros. People in the lowest quintile had on average 500 euros in second pillar assets, and those in the highest quintile had 14,000 euros.

Figure 3.1. Second pillar participation rate in % and investment in euros, 2017



The people who are most likely to stop making payments into the second pillar and to spend their savings are those who have high liquidity and credit constraints and few other savings. Figures 3.2 and 3.3 show the shares of people with credit and liquidity constraints, those living hand to mouth, and those whose liquid assets are smaller than their second pillar assets. They are shown by age group and by value of second pillar assets. The question in the HFCS that shows liquidity constraints most clearly is whether the respondent would be able to borrow 5000 euros from friends or

2 The Household Finance and Consumption Survey for Estonia is covered in more detail in Eesti Pank Occasional Paper 1/2019: https://www.eestipank.ee/en/publication/occasional-papers/2019/jaanika-merikull-tairi-room-estonian-household-finance-and-consumption-survey-results-2017-wave.

relatives outside of the household3. We can assume that those who answer yes to this question do not have liquidity constraints. This means they have no need to withdraw their investments from the second pillar and spend them if they suddenly need to access liquid assets. The same applies to credit constraints4. We may assume that those who need credit but cannot get it may use their second pillar investments to meet their needs for credit. People with credit constraints are those who have applied for a loan but have been refused, and also those who have not applied for a loan because they assumed that they would not be granted one. We find that 62% of those in the second pillar have liquidity constraints, and 11% have credit constraints. There is no clear relation between age groups and liquidity and credit constraints (see Figure 3.2), but there is a negative link between total second pillar assets and those constraints (see Figure 3.3). Access to financial assets suggests that those who are least likely to spend their pension investments are those who have the largest investments in the second pillar.

Figure 3.2. Credit and liquidity constraints and lack of liquid assets of those in the second pension pillar by age group (%), 2017

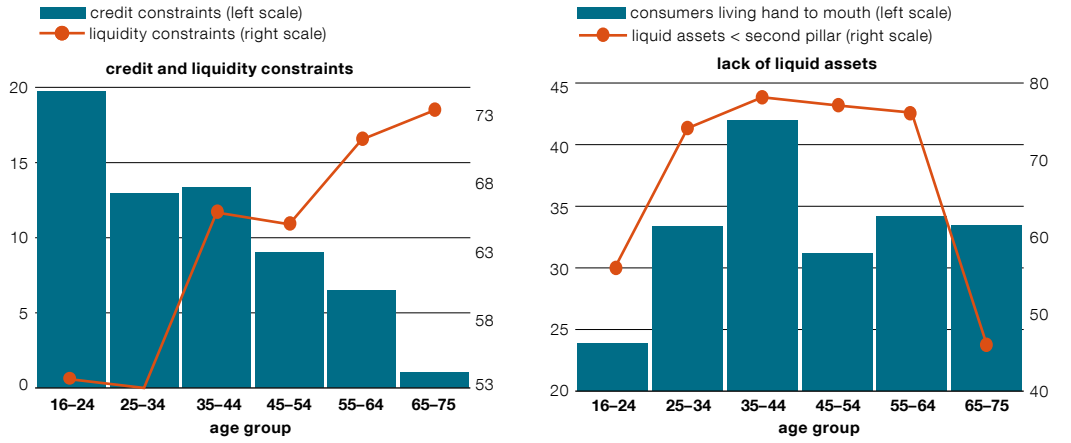
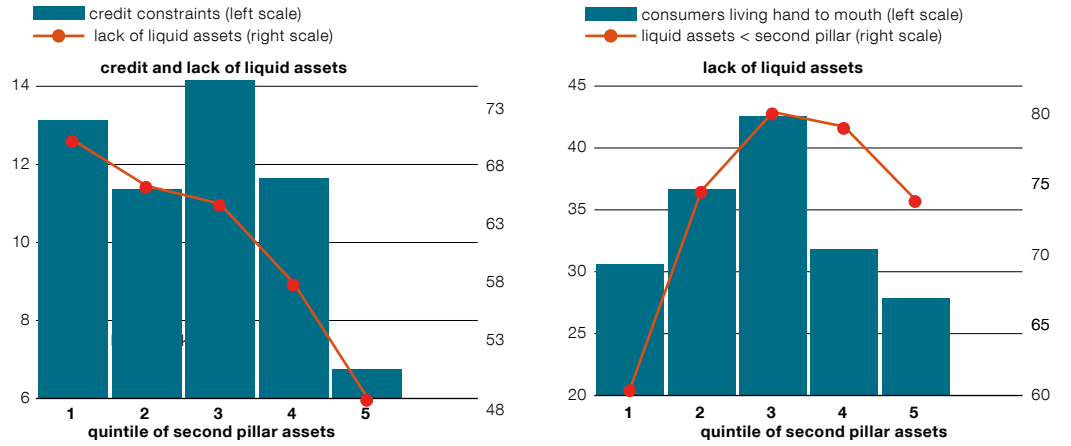


Figure 3.3. Credit and liquidity constraints and lack of liquid assets of those in the second pension pillar by second pillar assets (%), 2017



People with few savings have a greater incentive to use their second pillar investments than those who have a lot in savings. We found that 34% of those in the second pillar are living hand to mouth, meaning their liquid assets are worth less than half of their monthly income. Some 74% of people own less in liquid assets than they have in second pillar investments, meaning that the second pillar

3 The answers to this question are responded at the household level, and so the information is given on whether the household is able to get this sort of financial aid, not the individual person. . The same applies to credit constraints.

4 Data on credit constraints are also collected at the household level.

is their main financial asset. Those with the smallest savings are the middle-aged and those whose second pillar investments are of average value. This means that their lack of savings makes them the most likely to spend their second pillar savings if they have the chance to do so.

The second pension pillar is the main financial asset for many people. The more detailed statistics presented in Table 3.1 show how much those in the second pillar have in liquid assets and how large their second pillar investments are by deciles for liquid assets. Many of those in the second pillar have no substantial savings in any other form, and 30% of people have less than 200 euros in liquid assets. The value of assets at the 30th percentile of the second pillar is around 3000 euros. Half of those in the second pillar have fewer than 800 euros in liquid assets. The median value of liquid assets is 804 euros, which is notably less than the median value of the second pension pillar accounts of 4173 euros. The figures in Table 3.1 show there to be much greater inequality in liquid assets than in second pillar assets. This means the second pillar plays a role in distributing financial assets more evenly. Looking only at the third of second pillar assets that people pay in directly from their gross wages shows that 55% of those in the second pillar have less in total liquid assets than they have themselves paid into the second pillar. This means that second pillar savings are the most important financial asset even if the two thirds of them that are paid in from social tax are excluded. Second pillar investments are an especially important financial saving for those who otherwise have very little in savings.

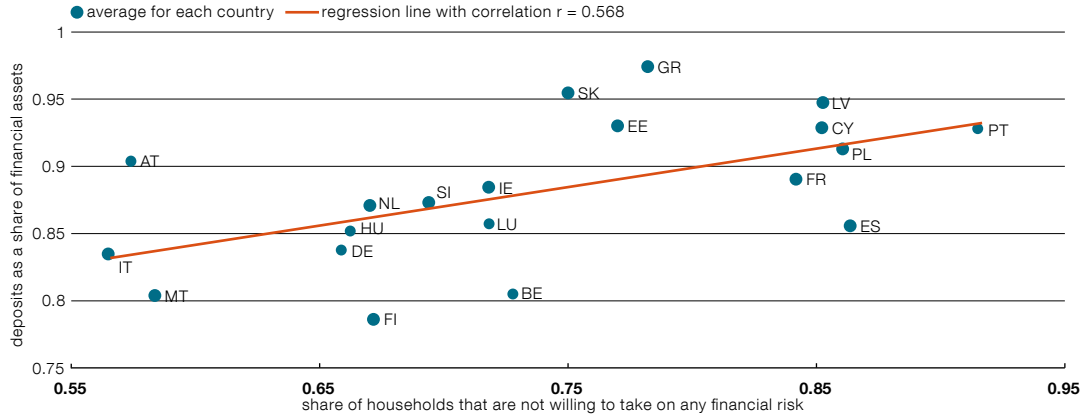
3.1. Division of financial assets of those in the second pillar, 2017

Decile for liquid assets	Liquid assets	of which deposits	Second pillar assets	Liquid assets < second pillar assets	Second pillar assets, personal contribution	Liquid assets < second pillar assets, personal contribution
first decile	10.2	3.6	2 976.2	0.997	992.1	0.966
second decile	48.3	23.1	2 980.0	0.970	993.3	0.911
third decile	129.3	66.7	3 707.9	0.944	1 236.0	0.873
fourth decile	276.6	167.9	4 034.1	0.899	1 344.7	0.820
fifth decile	569.3	404.1	4 687.8	0.938	1 562.6	0.803
sixth decile	1 149.1	911.8	5 307.6	0.841	1 769.2	0.630
seventh decile	2 201.3	1 590.9	5 888.7	0.766	1 962.9	0.386
eighth decile	4 289.5	3 357.6	5 913.2	0.600	1 971.1	0.083
ninth decile	8 857.3	6 641.4	7 907.8	0.327	2 635.9	0.026
tenth decile	56 715.0	28 469.0	11 319.9	0.068	3 773.3	0.004
Average	7 398.2	4 146.6	5 463.3	0.736	1 821.1	0.551
Median	804.0	390.0	4 173.0	1.000	1 391.0	1.000

Notes. The table shows the average value in euros for liquid assets, deposits and second pillar assets in each liquid asset decile for those that have made second pillar investments. Liquid assets are defined as the total of deposits, mutual funds, bonds, the value of non-self-employment businesses, shares, other financial assets and cash. Cash is measured at the household level and is divided by the adult members of the household to get the values at individual level.

The financial assets of Estonian residents are not very diversified and a very large part of the financial assets are in low-risk assets with low returns such as sight accounts and saving accounts. Meanwhile, residents of other countries in the euro area are much more active in investing in riskier assets with higher return such as shares and investment funds (see also Meriküll and Rõõm 2019). One reason why the financial assets in Estonia are invested in deposits with low return may be that Estonian households are very risk averse. The majority of residents are generally not willing to take on any financial risk at all when they are given the option of taking it on under the assumption that they could earn higher income, i.e. from it. Figure 3.4 compares the role of deposits in different countries and the risk appetite of households using data from the 2013 HFCS. In countries where a larger share of households are generally not willing to take on financial risk, a larger share of the financial assets of households are placed in deposits. Estonia is one of the countries where households are the most risk averse and where the largest share of financial assets is in deposits.

Figure 3.4. European countries by risk appetite and share of deposits, 2013



Notes. Households living hand to mouth, whose liquid net assets are less than half their monthly income, i.e. who do not save systematically, are not included in the sample. Pension assets are excluded from financial assets as there are differences between countries in whether money is invested in them voluntarily or not.

The next question is whether people would still invest in their pensions if they left the second pension pillar. This can be answered by comparing the savings behaviour of those who have joined the second pillar voluntarily with that of those who have not joined it. This comparison indicates whether the people who do not currently have second pillar savings have saved more in other ways as an alternative.

We repeat the in-depth analysis that used the data from the 2013 wave of the HFCS (Meriküll 2019), but using the later data from 2017 instead. The methodology remains the same. We analyse only those cohorts who did not have to join the second pillar, which is those born in 1942-1982, who were aged 34-75 at the time of the survey. As the choice of whether to join the second pillar was not random for those cohorts, we carry out matching analysis that compares the financial positions of those who did and did not join the second pillar, while allowing for differences in their observable characteristics. Those variables include age, income, years of work, employment, education, and other socio-demographic indicators (for more on the model used for the matching analysis, see Appendix 1). The matching analysis shows that the group of those who joined the second pillar are comparable to the control group of those who did not.

The results are shown in Table 3.2. The column after matching analysis shows the results of the matching analysis. Those who have and those who have not have not joined the second pillar were compared after the weights for the groups had been adjusted to allow better comparability. Those who had not joined had 281 euros more in financial assets, but this difference was small and statistically insignificant. The one type of financial assets of which those in the second pillar held statistically significantly more than those who had not joined was voluntary third pillar pension investments. This means that those who invest voluntarily through the second pillar are more likely to invest through the third pillar.

Those who have not joined the second pillar hold notably less in real assets than those who have joined. This applies for the two main categories of real assets, which are real estate and business assets. Only the value of vehicles is similar for the two groups. It is also apparent that those who have not joined have less in debt, but not by enough to offset their weak position in assets. The difference in net assets is statistically insignificant, indicating that after matching analysis there is no statistically significant difference in the net assets of those who have and those who have not joined the second pillar. The difference becomes statistically significant in favour of those in the second pillar only after second pillar assets are added to net assets.

The biggest difference from the analysis using the data from 2013 is that the net assets of those in the second pillar taken together with the second pillar assets are now statistically significantly larger than the net assets of those who have not joined the second pillar. Data from the first wave showed the difference to be quantitatively large but statistically insignificant. Second pillar investments have increased substantially between the two waves and the differences have become statistically significant. Those in the second pillar had on average 15,000 euros more in net assets, of which 8500 euros were in second pillar assets in 2017. This means that some 15 years after payments were first made into the second pillar, those who have not joined have not managed to compensate for that by investing independently in their pensions5. These results do not support the argument that after people have left the second pillar they will start to invest independently in their pensions or continue to invest independently.

Table 3.1. Division of financial assets of those in the second pillar, 2017

Assets and liabilities	Before matching analysis			After matching analysis		
	Average for those in the second pillar	Average for those not in the second pillar	Difference	Average for those in the second pillar	Average for those not in the second pillar	Difference
Financial assets	8201.5	7206.9	994.6	8201.5	8482.7	–281.2
Deposits	5933.8	6413.2	–479.4	5933.8	7148.8	–1215.1
Third pillar	1629.1	392.9	1236.2***	1629.1	732.3	896.8***
Other financial assets (shares, bonds etc)	638.7	400.9	237.8	638.7	601.7	37.0
Real assets	70514.6	53847.6	16667.0***	70514.6	60800.2	9714.4**
...real estate	63030.1	49485.9	13544.2***	63030.1	55669.6	7360.5*
...vehicles	2050.2	1603.9	446.3***	2050.2	2353.2	–302.9
...business assets	5434.3	2757.8	2676.5***	5434.3	2777.7	2656.8**
Liabilities	11638.2	3307.7	8330.5***	11638.2	8944.6	2693.6***
...bank loans	11333.8	3227.5	8106.3***	11333.8	8816.7	2517.1**
...credit card debt, credit line or overdraft	304.3	80.1	224.2***	304.3	127.9	176.4***
Net assets = financial assets + real assets - liabilities	67077.9	57746.9	9331.1***	67077.9	60338.4	6739.6
Net assets = financial assets + real assets + second pillar assets - liabilities	75624.0	57746.9	17877.1***	75624.0	60338.4	15285.6***

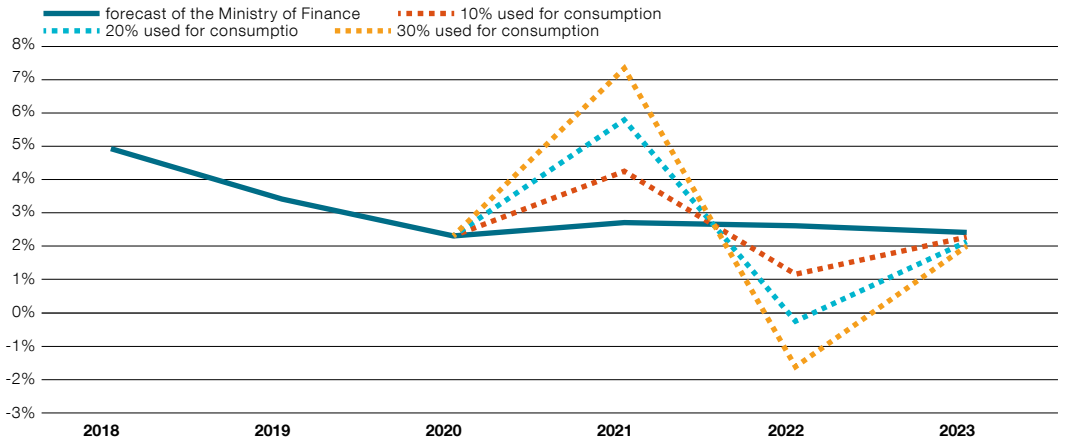
Notes. The poorest and richest 1% of households are excluded from the analysis. *,**, *** show statistical significance at the 10%, 5% and 1% levels. The number of observations was 3224.

5 It should be noted that people pay 2% of their own gross wages into the second pillar. Another 4% is paid in from their social tax, and this reduces the amount received in pension from the first pillar. So when somebody decides not to make payments to the second pillar, it is compensated somewhat by the first pillar. Our analysis does not show that those who have not joined are independently investing even the 2% payment that provides one third of all the investment in the second pillar. If only the personal contribution, which is one third of the second pillar assets, is added to net assets, the difference in net assets is still statistically significant in favour of those in the second pillar.

4. THE SHORT-TERM IMPACT ON THE ECONOMY OF MAKING THE SECOND PENSION PILLAR VOLUNTARY

Making the second pillar voluntary means allowing people to stop making payments into it, and also allowing them to take out and use the money that they have already saved up in it. If the pension savings that have been built up in the second pillar are spent at once, it will make the economic indicators for Estonia more volatile in the coming years. Growth will at first increase because of the sharp rise in consumption, but once the initial impact of withdrawals of pension assets fades, growth in the economy will weaken (see Figure 4.1). More volatile growth in the economy will distort the structure of the economy and may weaken its long-term capacity for growth, if it causes jobs to be lost, and then also skills to be lost as a consequence of unemployment. The government can use its fiscal policy to soften this blow.

Figure 4.1. GDP growth in 2021-2023 in different scenarios



Sources: Eesti Pank, Ministry of Finance

We analysed the reform using the Eesti Pank macro model. The model can identify deviations from the baseline scenario that does not contain reform of the second pillar. These deviations are added to the forecast of the Ministry of Finance, as that forecast covers a longer time period than the forecast published by Eesti Pank.

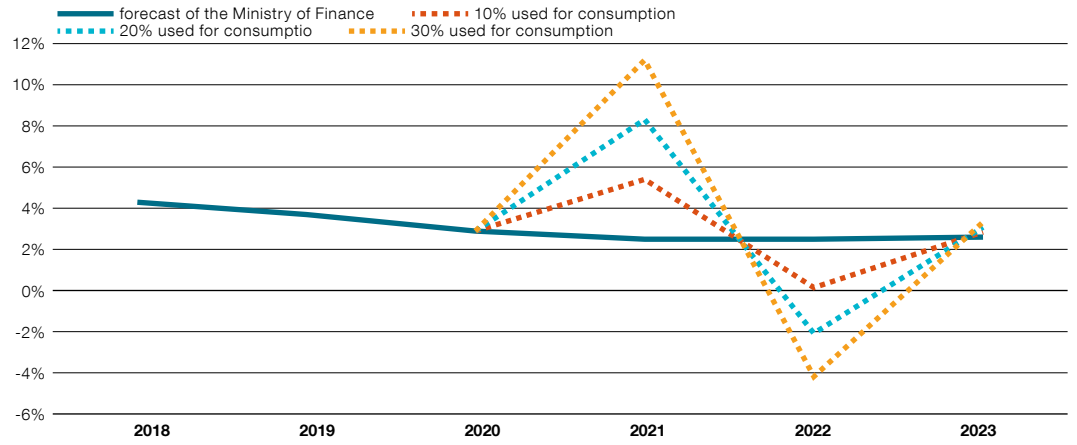
We use three scenarios to analyse the impact of the second pillar changes. The scenarios are for 10%, 20% and 30% of second pillar pension savings to be spent in 2021. We assume that pension funds will hold a total of 5 billion euros at the end of 2020.

The information published by the government coalition indicates that a large part of the money taken out from pension funds will go into people's accounts quite quickly after funded pensions have been made voluntary. The first amount paid out should be of 10,000 euros or the total amount saved up in the pension fund account. As these are large amounts, we assume that people will spend this money more slowly than they do their regular income. For this reason we spread consumption growth evenly across the year 2021.

We also considered how making the second pillar voluntary would affect the general government. We assume that the share of those ending payments into the second pillar is the same size as the share who would take money out from their pension fund account. We use this to adjust the effective tax rates in the model. We assume that the increased social tax received from those leaving the second pillar will be used to pay pensions and that the additional income tax will be invested by the general government.

The partial use of pension savings has a direct impact on the growth in private consumption. Spending the pension assets also affects consumption through other channels, since growth in consumption will lead to a temporary acceleration in growth in the economy, which will raise incomes and so boost consumption further. At the same time some of the money taken out from the second pillar will go to income tax, and this will reduce the direct impact on consumption of the withdrawals of money. The pensions that have been increased by the higher income tax take will though in turn boost consumption. Figure 4.2 shows that withdrawing money from the second pillar and consuming it accelerates growth in consumption considerably in the first year after the reform. Once the initial positive impact fades, the growth in consumption will slow.

Figure 4.2. Growth in private consumption in 2021-2023 in different scenarios



Sources: Eesti Pank, Ministry of Finance

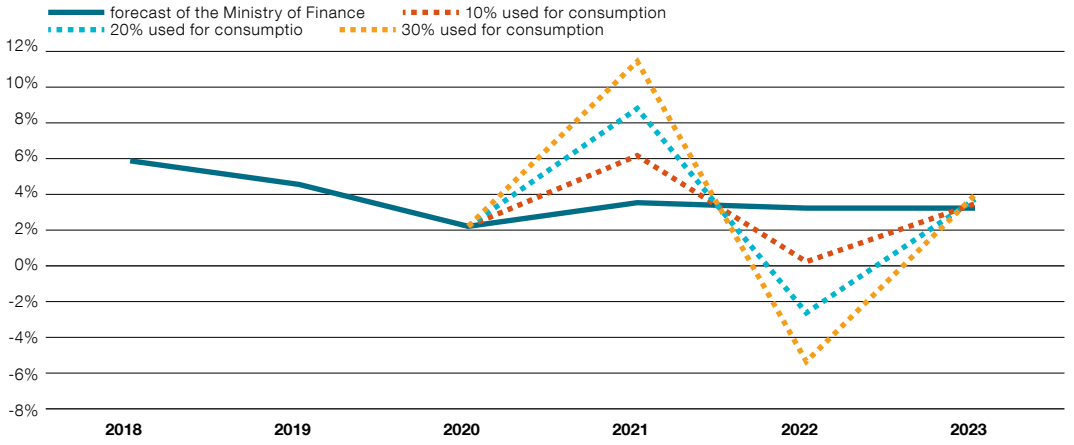
Increased disposable income will raise real estate prices. Although the second pillar assets of the average person are not enough to buy real estate with, leveraging will lead to increased demand for real estate property. In consequence property prices will also rise. The money that is liquidated from the second pillar could for example be used to cover part of the down payment for a property loan. Making the second pillar voluntary could in this way affect the real estate market through lending and through use of other savings. Real estate prices react sharply to growth in demand, as developing new properties takes a long time.

A short-term acceleration in growth in the economy will lead to growth in profits. This would then increase corporate investment over the short term and allow even faster growth in the economy for a time.

As total demand grows, so would imports (see Figure 4.3). This would be partly because of the temporary increase in investment, which is very import-intensive. As Estonia is a small and open economy and there is not always a domestic alternative for every product, quite a large part of consumption is covered by imports.

Increased economic activity would be accompanied by an increased import intensity. This means that the additional consumption would increase imports by more than the average import content of consumption. This is firstly because Estonian producers would become less competitive as a sharp increase in demand would raise the prices of domestic products by more than those of foreign products, and secondly because domestic supply is limited and increased demand would be met by increased imports.

Figure 4.3. Growth in imports in 2021-2023 in different scenarios



Sources: Eesti Pank, Ministry of Finance

Exports are affected differently by the use of pension savings than other components of GDP in our analysis. Increased economic activity would put upwards pressure on prices for domestic producers and that would make exporters less competitive, leaving export volumes smaller than in the baseline scenario. Prices are sticky downwards, and so the loss of competitiveness would continue in the years after the initial positive impact from spending the money saved in the second pillar has faded away.

When money from pension funds is not flowing into the economy anymore, growth in the economy will slow. Depending on how much of the money saved up in the pension system is added to the economy, the economy could even move into recession once that flow of money has dried up.

The figures above assumes that the planned reforms will only affect long-term economic growth through the competitiveness of exports. It should be considered though that those changes will cause considerable volatility in the economy, and this could raise the equilibrium level of unemployment and so lower the potential output in the long term. Equilibrium unemployment could be increased if the volatility in the economy causes labour to move at first into sectors that are only temporarily viable while people are actively spending their pension savings. Once the initial positive impact fades then those jobs could be lost and it will be harder for the people affected to find a new job, as it was in 2010 after the economic crisis, when the unemployment rate rose high.

The government can use its fiscal policy to reduce the volatility in the economy. Saving the additional tax revenue received from the reform of the second pillar would help to reduce the initial acceleration in growth that would come from the money taken out from pension funds being spent. This would mean that growth would later slow less sharply. If the planned reform is enacted, it would help to reduce the volatility in the economy if the time in which money may be withdrawn from pension funds was extended.

5. HOW THE PENSION REFORM WILL AFFECT FINANCIAL STABILITY

Expanding the options for investment

People who own shares in pension funds have been given ever greater opportunities to receive better returns. The investment limits for pension funds are set clearly in the Investment Funds Act, but the first major changes giving fund managers more freedom were made as early as 2008. After that, further major changes were made in 2011, 2015, 2017 and 2019, and individual smaller changes were made in other years too. The biggest change was that funds were allowed to have a 75% equity weighting from 2008, and a 100% equity weighting was permitted for funds from 2019. The investment limits for pension funds have gradually been reduced for other instruments as well, so from 2015 they were allowed to make transactions with precious metals and related securities, and they were allowed to invest more in unlisted securities. It has also become increasingly possible for them to invest in covered bonds, funds, real estate or foreign currencies, allowing them to disperse their risks more. Management fees have also gradually been reduced.

The investments of pension funds

Funds invest their assets following asset allocation principles where they aim to get the best possible balance between risk and return, based on the risk appetite of the investor and the length of the investment. Pension funds invest for the long term, but they have to be able to make regular ongoing payouts too. The assets of pension funds are distributed geographically and across asset classes. Figure 5.1 shows the assets divided into three classes by liquidity, where very liquid assets are deposits and money market instruments, liquid assets are non-resident equity or bonds, shares listed in Tallinn Stock Exchange and shares in non-resident investment funds, and low liquidity assets are other assets including real property in Estonia, fund units and similar. Liquidity is taken to mean that there are sufficient transactions in the market with a given asset so that the investment can be cashed in within a reasonable time without losing any value.

Liquid assets dominate among the foreign assets, while low liquidity assets do so among the domestic investments. Estonian pension funds have mainly invested in foreign assets, which account for 3.6 billion euros, or 83% of the aggregate portfolio6. The main reason for this strong focus on foreign assets is their greater liquidity. In the recent past there was a substantial leap in the share of more liquid assets and deposits after the financial crisis, though in recent years pension money has moved from deposits and funds to assets earning larger returns. The stock of foreign deposits is 20 million euros.

Investments in Estonia total 761 million euros, or 17% of the aggregate portfolio of pension funds. Unlike in foreign assets, it is assets with low liquidity that dominate in the Estonian portfolio, accounting for 499 million euros or 66% of it, while the remaining 34%, or 262 million euros, is in deposits and other liquid assets.

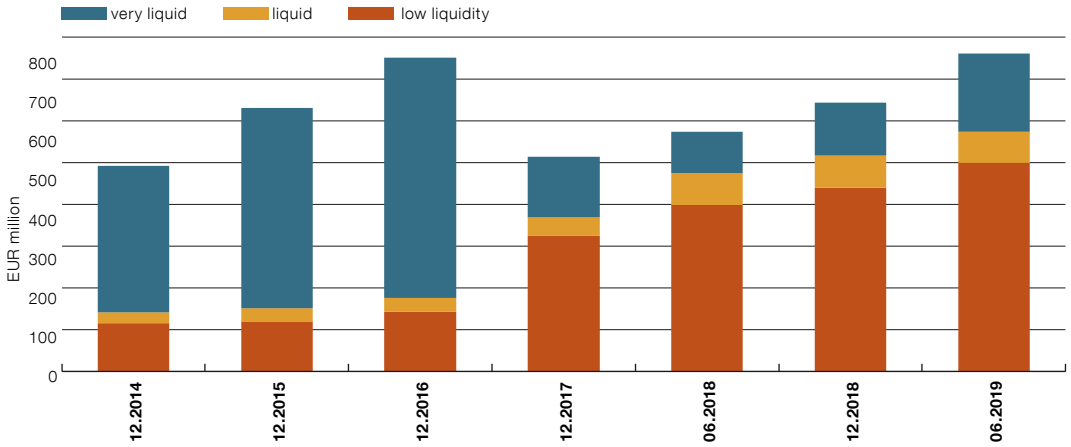
The domestic investments of pension funds have grown strongly in recent years. From June 2018 to June 2019, the pension assets invested in Estonia grew by 32.5%, of which 100 million euros was invested and 87 million euros was kept in deposits. This process may have been accelerated by the regulation of the Ministry of Finance that came into force in February 2018, under which the management fees of pension funds were linked to their investments to discourage pension funds from investing in other investment funds and to encourage them to own directly their investments through active fund management, including investments in Estonia[7].

6 Of the foreign assets, 99% are invested in shares, bonds or fund units.

7 https://blogi.fin.ee/2018/01/pensionifondide-tasudest/

The pension funds investing in Estonia have mainly invested in bonds, with 334 million euros, followed by units in investment funds at 153 million euros, and shares at 75 million euros (see Figure 5.1).

Figure 5.1. The distribution of the investments in Estonia of pension funds by liquidity



Source: Eesti Pank

Pension funds have also invested to a smaller extent in financing the Estonian private equity and venture capital sector. This important market for Estonia has developed very fast in the past five years and domestic pension funds are estimated to have provided 8-10% of the aggregate funding portfolio of private equity and venture capital. On top of their role in providing funds, pension funds play an important role as a local institutional investor in encouraging foreign investors into the market for private equity and venture capital.

Real estate and banking are the economic sectors that play a very large role in the assets of pension funds. As investment volumes have increased, so the range of companies invested in has widened. At the start of the decade funding went mainly to infrastructure companies, but by now investment also goes into companies in finance, real estate, transport and more. The real estate sector also dominates among investment funds with 149 million euros. Most of the shares listed on the Tallinn Stock Exchange can be found in the equity portfolio, and to the lesser extent of 15 million euros there is also the equity of real estate companies. In total pension funds have invested more than two thirds of their Estonian assets in three main economic sectors, with real estate receiving 238 million euros, banking receiving 140 million euros, and energy 35 million euros. The long investment horizons of pension funds allow them to fund long-term projects if their liquidity and risk level are appropriate.

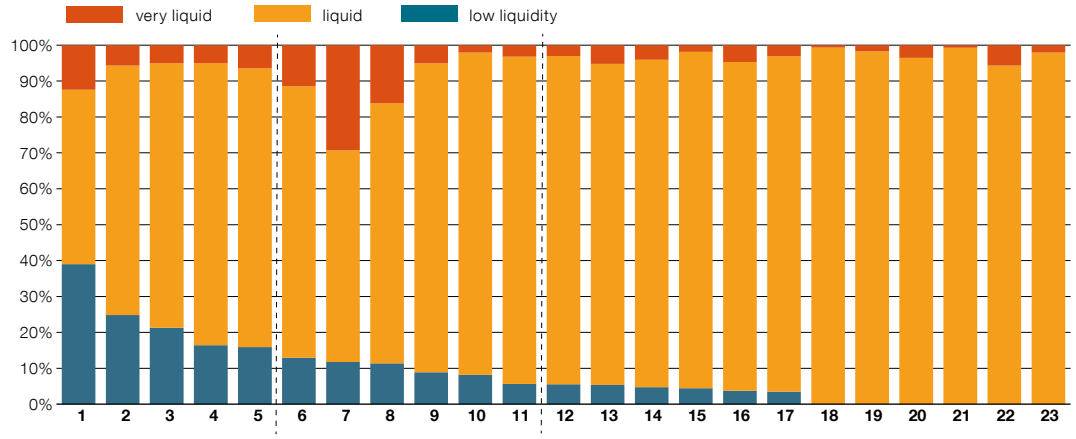
The possible impact of the pension reform on investment

The proposed reform of the second pension pillar would force pension funds to change their current asset allocation. The principles of the pension reform announced by the Estonian government in 20198 would allow owners of pension accounts to make extraordinary early withdrawals from the pension funds. Deposits are 207 million euros of assets and to make payouts of more than this amount, fund managers would have to exit their long-term investments. It should be technically possible over a reasonable period to liquidate the most liquid part of the assets, which are foreign assets and shares listed in Estonia, though this would probably put upwards pressure on management fees. Exiting the investments made in low liquidity Estonian assets would require a long time and it is possible there would be losses of value, because it would not be easy to sell the largest asset class, which is the real estate portfolio.

8 See https://www.valitsus.ee/et/uudised/valitsus-kinnitas-ii-pensionisamba-reformi-pohimotted

The speed and success of the sale of assets depend on the investment strategy of the given fund and its asset location (see Figure 5.2). It should be easy for the 12 pension funds in the right hand figure to make payouts, as at least half of their portfolios contain deposits and very liquid foreign assets, mainly shares. Six of the other 11 funds, would have to start planning to sell their less liquid assets over time, but they would probably be able to make current payouts by gradually selling their liquid assets. The pension funds that will have the greatest difficulty are those that have invested more than a sixth of their portfolio in assets with low liquidity (the five funds on the left of the figure). The aggregate assets of those funds are 1.5 billion euros, or 34.5% of the aggregate assets of all funds, of which assets with low liquidity account for 300 million euros, so fund managers would have to make large and rapid efforts to exit the less liquid assets. A lot would depend on the ability of fund managers to plan, and also on the state of the market at any given moment, as selling a real estate portfolio during a dip in the market could cause a lot of value to be lost.

Figure 5.2. Pension fund assets by liquidity class as at 30 June 2019



Source: Eesti Pank

The departure of a lot of clients would force pension funds to change their asset allocation and payouts would have to be spread out to avoid a run on the fund. To be able to cover the extraordinary payouts, most funds would have to increase their share of liquid assets quickly. In the shorter term these reorganisations would lead to one-off service fees, and in the longer term they would reduce returns. If a lot of people want to exit the pension system at the same time and a substantial share of liquid foreign assets were to go on sale, the role of the mandatory part of the current pension system would come into question. The fund holders remaining in the pension system would have to bear the risks of Estonian real estate that cannot be distributed because of the small size of the market, and if they were to exit asset prices would be put under pressure.

Making the second pension voluntary raises questions that need to be considered before the changes are introduced if financial stability is to be maintained. Firstly, efforts must be made to protect the interests of fund investors if withdrawals of money from the second pillar pension funds forces pension funds to sell assets at lower prices than planned, and the result of this is that those who remain in the fund suffer losses as well as those who have left. Secondly, some solution must be found to the negative impact that would arise if relatively fewer low liquidity investments were made in future, meaning the expected returns would be lower. Thirdly, some means or ways must be found of continuing to fund Estonian private equity and venture capital if pension funds no longer wish to invest in those instruments because of their low liquidity.

Those saving in mandatory second pillar pension funds are protected against illegal and loss-making investments by fund managers. The Guarantee Fund Act defines how much of the losses of pension

fund shareholders should be compensated if the pension fund manager has broken the law or the conditions of the pension fund or the terms of its prospectus. It is usually the pension fund itself that must compensate these losses, but if this is not done or is not possible, then the pension protection fund of the Guarantee Fund must step in. If separate investment accounts were opened for participants in the second pension pillar during the reform of the pillar9, the pension protection of the Guarantee Fund would not be extended to transactions in that investment account. this would mean people wanting to start investing independently for their pension through an investment account would have to consider that they would not be compensated by the state for incorrect and loss-making transactions.

9 See https://www.valitsus.ee/et/uudised/teise-pensionisamba-raha-iseseisvaks-investeerimiseks-luuakse-pensioni-investeerimiskonto.

SUMMARY

The debate that has been launched in Estonian society about the options for pension savings is to be welcomed, as it is hoped that it will make people think more about pensions and how to secure their old age. We agree that the legal framework for savings pensions needs to be updated so that the savings that people have built up can give them the largest possible additional income in retirement. Investment restrictions on pension funds have been eased already in recent years and service fees have been reduced, but now the framework regulating withdrawals from funded pensions needs to be updated.

The pension changes proposed by the government are very fundamental as they would make the funded pension that has until now been mandatory voluntary. This would mean there would no longer be a mandatory funded pension, or second pension pillar, in Estonia. This change would have an immediate impact on the Estonian economy in the coming years, and it would also have a long-term impact on the state budget and the expected size of pensions in future.

The OECD emphasises that the first and second pillars complement each other, but do not replace each other. The different pension pillars help to reduce different types of risk and achieve different goals, such as poverty reduction, redistribution, sustainability of the pension system, or smoothing of consumption. This is why the OECD recommends using three pillars in the pension system, with a first pay-as-you-go (PAYG) pillar, and second and third pillars that pay pensions out of savings previously built up.

The OECD finds that the second pension pillar makes the first pillar more sustainable. It finds that the second pension pillar encourages work and saving for retirement, and it encourages older people to remain in work. The second pillar may also help the development of capital markets, which supports growth in the economy.

The more that the currently planned changes reduce the pension savings that have been built up in the second pillar, the greater the pressure will be in future to increase the pensions paid through the first pillar and to raise taxes. Despite the rise in the retirement age agreed at the end of 2018, the ratio of people working to those in retirement will continue to fall over the coming decades. The critical point will arrive in 2060, when there will be 1.6 people working for every pensioner, down from 2.2 workers at present. The deteriorating ratio of workers to pensioners will raise the pressure to spend more on pensions and to increase the tax burden.

As the different pension pillars reduce different risks, they together give greater confidence that old-age pensions will be large enough. Like the OECD recommendations, our calculations indicate that the first and second pillars complement one another, as they reduce risks of different types. The pension paid out from the first pillar does not depend directly on international financial markets for example, while the pensions paid from the second and third pillars depend directly on them. As the second pillar pension does not depend so much on events in Estonia however, the funded pension is important if the Estonian population declines by more than expected, the Estonian economy grows by less than forecast, or the currently agreed rise in the retirement age is not fully rolled out over the decades.

The longer that people have been saving in the second pillar, the more that withdrawing their savings and spending them will affect their future pension.

An investor acting alone can do little to increase their pension savings. The savings habits of individuals in Estonia typically show a lack of diversity in financial assets. The majority of financial assets

are held in deposits and only a small role is played by financial assets that are riskier but have a better return over the long term, such as shares and investment funds. One reason for this financial behaviour is that people are not willing to take risks in investing. Data from the Estonian Household Finance and Consumption Survey show that three quarters of people are not willing to take any financial risk with their savings. If no financial risk is taken, pension assets can only grow weakly.

People are notably more passive about building up optional pension assets than about using the automatic second pension pillar. Comparing the assets and liabilities of those who have and have not voluntarily joined the second pension pillar indicates that the second pillar accounts for a major share of the net assets, which is assets minus liabilities, of those who have chosen to join the pillar. Because of the second pillar, those who have chosen to join have more in net assets than those who have not joined the pillar. Our analysis indicates that those who have not joined the second pillar have not independently invested the additional 2% of income that this frees up.

Withdrawals of money from pension funds will make growth in the economy more volatile. Growth will at first increase because of the sharp rise in consumption, and real estate prices and imports will also increase. Once the initial impact of withdrawals of pension assets fades though, growth in the economy will weaken.

The cost of volatility in the economy is social problems and slower long-term growth. A rapid and temporary rise in incomes will boost growth at companies focused on the domestic market, but will make life harder for exporting companies that may become less competitive as costs rise. If the volatility causes the unemployment rate to rise, the professional skills of workers may deteriorate, leaving them less productive in future.

The steady reduction in investment restrictions on pension funds has given them better options for investing funds in Estonia as well. Funds have used these options and from June 2018 to June 2019 the amount of pension assets invested in Estonia increased by 32.5%. A total of 761 million euros had been invested in Estonia, or 17% of the aggregate portfolio of pension funds. Pension funds have invested 3.6 billion euros, or 83% of their aggregate portfolio, in assets abroad.

Pension funds have been active in recent years in venture capital and private equity and have played a large role in bringing additional capital to Estonia. The largest part of the investment in Estonia is of 334 million euros in bonds, followed by 153 million euros in shares in investment funds, and 75 million euros in equity. The majority of the investments of pension funds in Estonia have gone into real estate and banking. This raises the question of how the resulting gap in funding for Estonian companies will be filled.

Investments in Estonia are in general not very liquid, and so it takes time to withdraw from an investment, meaning assets may be sold at a low price if large amounts are withdrawn at once. The planned changes to the second pillar would make pension funds sell their assets over a relatively short time frame, and this could result in making a loss on their transactions. This would then cause losses for shareholders. The risk of money being withdrawn from the funds will remain high in future, and so they will probably prefer to invest in more liquid instruments, and less in assets directly linked to Estonia.

Selling illiquid assets takes more time, and the funds will probably have to sell their assets at a discount under these circumstances. The 23 pension funds that operate in Estonia have invested differently, as 12 funds have made highly liquid investments and should find it easy to cover withdrawals, while the other 11 may find it harder to exit their investments as they have invested to a greater extent in less liquid assets. The five pension funds with the largest amount of low-liquidity assets

have invested a total of 1.5 billion euros, of which 300 million euros is in assets with little liquidity. On top of the assets in Estonia with low liquidity, selling off securities in international financial markets to exit investments rapidly may give lower income than expected or even cause losses, as the pension funds have calculated that their investments are made for the long term.

When changes are made to the pension system, there are questions that need to be answered. How can the interests of fund investors be protected when withdrawing money from the second pension pillar will probably cause some funds to sell assets with low liquidity, which may reduce the value of the assets of both those leaving the fund and those remaining in it? How can the negative impact on fund investors be eased if it is probable that relatively fewer illiquid investments will be made in future and so expected returns will be lower?

Recommendations

1. Before making fundamental changes to the pension system, it is important to explain clearly what the results expected from the proposed new system are and to get the widest possible agreement on them. The comprehensive picture should make clear the relative size of the pension that the state will provide in the future, the amount that people are expected to contribute themselves, and the cost of the pension system.

2. We do not recommend making it optional to save for pensions, as the consequence could be that old-age pensions will be smaller in future. This step would also increase the pressure to raise taxes in the future.

3. If it is still really desired to make the second pension pillar more optional, we recommend the following:

    - if people start to spend their pension savings immediately, it will make growth in the economy more volatile. To balance this, it would be wise for the government to avoid spending additional tax revenues, and to lengthen the minimum period for withdrawing pension savings;

    - it would be worth considering ways of encouraging people to save for their retirement through a funded pension;

    - ways should be sought to protect shareholders who have put their money into the second pillar pension funds that have invested most in the Estonian economy and have the least liquid assets.

APPENDIX 1. RESULTS OF THE PROBIT MODEL USED AS THE BASE FOR THE MATCHING ANALYSIS

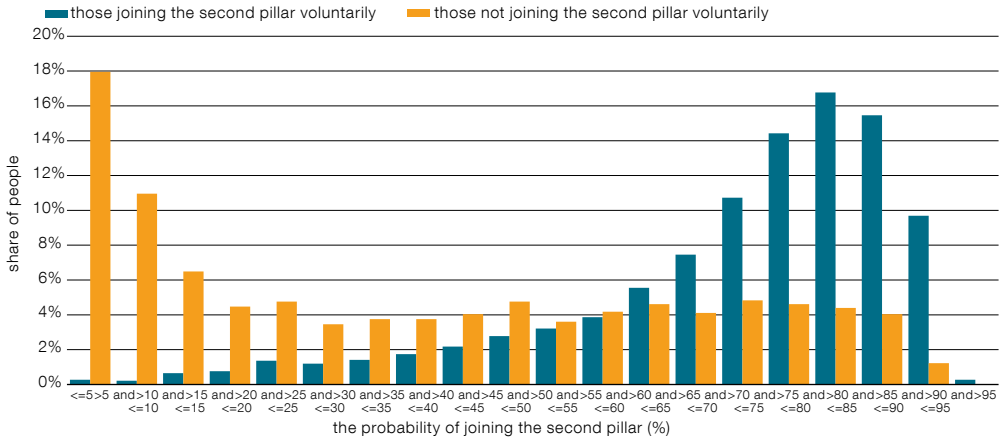
Table A1. Probability of being in the second pillar, marginal effects of the probit model

	Dependent variable: probability of joining the second pillar
Male (reference: female)	-0.038
	(0.036)
Self employed (reference: waged employee)	-0.107*
	(0.061)
Unemployed (reference: wage earner)	-0.034
	(0.078)
Other inactive (reference: wage earner)	-0.127*
	(0.066)
Retired (reference: wage earner)	-0.143**
	(0.057)
Years of work experience	0.006***
	(0.002)
Annual income in thousand euros	0.006**
	(0.003)
Income squared	-0.010**
	(0.004)
Secondary education (reference: primary education)	0.060
	(0.059)
Higher education (reference: primary education)	0.138**
	(0.068)
Subject: education (reference: general education)	0.089
	(0.081)
Subject: humanities (reference: general education)	0.201**
	(0.080)
Subject: social sciences (reference: general education)	0.099
	(0.125)
Subject: real sciences (reference: general education)	0.128**
	(0.053)
Subject: engineering (reference: general education)	0.071
	(0.129)
Subject: agriculture (reference: general education)	0.056
	(0.108)
Subject: healthcare (reference: general education)	0.054
	(0.044)
Subject: services (reference: general education)	0.083
	(0.075)
Age	0.068***
	(0.019)
Age squared / 100	-0.094***
	(0.018)
Immigrant (reference: born in Estonia)	-0.081*
	(0.046)
One child (reference: no children)	0.036
	(0.040)
Two children (reference: no children)	0.010
	(0.050)
Three or more children (reference: no children)	0.122*
	(0.070)
Child aged under three (reference: other)	-0.011
	(0.061)
Widowed (reference: not married)	0.044
	(0.064)
Divorced (reference: not married)	0.047
	(0.083)
Married (reference: not married)	0.000
	(0.050)

In a relationship (reference: not married)	-0.041
	(0.056)
Harjumaa (reference: central Estonia)	-0.084
	(0.063)
Western Estonia (reference: central Estonia)	-0.054
	(0.066)
Southern Estonia (reference: central Estonia)	-0.100*
	(0.059)
Ida-Virumaa (reference: central Estonia)	-0.058
	(0.070)
Other town (reference: Tallinn)	-0.041
	(0.056)
Village (reference: Tallinn)	-0.067
	(0.048)
Number of observations	3224
Adjusted R2	0.329

Notes. *, **, *** indicate statistical significance at the 10%, 5% and 1% levels.

Figure A1. The probability of joining the second pillar found from the model used in the matching analysis



Note: matching analysis is used where for each person joining voluntarily, a person with the same probability of not joining is put in the control group. The control group has a maximum gap of five percentage points in probability.

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