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UNDERINSURED ENTREPRENEURS
CONTRIBUTION EVASION IN YEL INSURANCE

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ABSTRACT

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In this thesis, we study identified entrepreneurs' underinsurance phenomenon in a contribution evasion framework. Contribution evasion is an applied field of the broader tax evasion research where the tradition is to apply an economic approach to evasion decisions. We develop a new model inspired by Perotti´s modification of the Allingham Sandmo model where an entrepreneur is assumed to maximize her utility by minimizing her pension contributions. In the testing part, we assess whether entrepreneurs' financial and health condition impacts their pension contribution evasion rate. We also try to view contribution evasion as a gambling activity where evading risk-seeking entrepreneurs are betting not to need social insurance benefits.

Due to financial constraints, we could not get the survey data from the Statistics Finland we wanted. Without the data, we could not assess the background factors influence on the evasion rate. The theoretical contribution of this study is our developed evasion model and to position underinsurance as a contribution evasion phenomenon, which is a rare point of view in Finland. With the model and literacy, provided in this thesis it is possible to examine entrepreneurs' lifetime incentives to contribute to the pension scheme. We hope this study motivates researchers to use microeconomics methods to assess entrepreneurs' motivation to save for retirement and to develop pension schemes.

Keywords: Underinsurance, YEL, insurance, entrepreneur, pension, work income, contribution evasion

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1 INTRODUCTION

In Finland, entrepreneurs are largely responsible for their own pension and social insurance benefits. Although entrepreneurs' pension contributions (YEL contributions) are in most cases mandatory, the income (work income) that determines their size is largely dependent on entrepreneurs' self-reporting. The phenomenon where entrepreneurs contribute too small payments to the pension scheme is called *underinsurance* and efforts have been made for decades ago to prevent it in various ways.

In 2022, the Finnish government presented a proposal for a pension reform to increase the amount of entrepreneurs' pension contributions, as the contributions systematically fall short of the level that would ensure a reasonable pension and insurance benefits for entrepreneurs. There are also public financial interests in the background, as the government is committed to pay pension benefits that cannot be covered by the contributions of the entrepreneurs. In recent years, the government's paycheck from entrepreneurs' pension benefits has risen rapidly. When in the year 2000 government's share of the entrepreneur's pension scheme payments was 38,5 million euros in 2021 it was 377 million. (ETK A, n.d.)

The rationale for underinsurance can be various. In Finland, for one reason, it has been proposed that assessing the proper contribution has been too hard. Also, recipients of the contributions, pension institutions, and their practices have been presented as accountable, because efficient methods for assessing the contributions have not existed. (STM, 2019.) These explanations for underinsurance are in line with the international contribution compliance evidence. Although not as studied as tax compliance, contribution compliance (Baumann et al., 2009) has been identified to have undesirable effects on the public economy, inequality, and the labor market (Bailey & Turner, 2001). McGillivray (2000) argues that typical reasons for underpaid contributions are usually excess bureaucracy and a lack of proper auditing methods by officials. By looking at this view, the entrepreneurs' pension scheme in Finland seems to be no exception.

Understanding entrepreneurs' incentives when making decisions about their pension contributions is important, as they may have a significant influence on the reported incomes. Underinsurance cannot solely be fixed with heavy control procedures as they increase the costs of the system. In tax compliance literature, this has dilemma also been identified. Resources added for auditing procedures can be seen as cost transfers from private non-compliant citizens to the government. (Slemrod, 2007.) The intuitive question then is that in what extent can we compare entrepreneurs' pension-saving behavior with tax evasion? Braumann et al. (2009) argue that due to the lack of theoretical research on contribution evasion, the distinction between tax and contribution evasion is not clear. While contribution evasion affects to personal pension accumulation and social insurance benefits, tax evasion has not as clear influence on individuals' benefits. However, the decision to evade mandatory payments as well as the change of declarations by exogenous parameters combines the two phenomena. Bailey and Turner (2001) point out that even the terms *tax* and *contribution* are ambiguous as they are sometimes mixed by experts. While contribution compliance is usually studied in a theme of social security programs, in some countries social security may be funded with income taxes which narrows down the distinction of the concepts.

Although an entrepreneur's pension scheme in Finland is a combination of retirement and social insurance benefits, there is evidence that entrepreneurs prefer in some cases private retirement savings solutions if they feel that they would get a better return for their contributions (STM, 2019). According to the survey conducted by Suomen Yrittäjät in 2022, over 60 % of the responders felt that they would have better retirement benefits by saving by themselves. Entrepreneurs also seem to behave according to their preferences because investing is reported to be the most popular way to prepare for retirement. (Suomen Yrittäjät, 2022.) Mikko Kautto, CEO of the Finnish Centre for Pension commented on the issues of entrepreneurs' pension scheme in his blog. The common misunderstanding with the pension plan is to reflect the paid contributions just with the pension benefits of the future. (Eläketutka.fi, 2017) It is also easy to justify the minimum contributions because by investing with more risk, it is possible to gain higher returns for investments. However, comparing the pension system benefits with risky investing is not meaningful, because the pension scheme includes various insurance benefits and collectively shared risk. (Eläketutka.fi, 2018.)

In this thesis, we study the incentives to minimize pension contributions theoretically. We study financial and health factors influence on the entrepreneur's temptation to underinsurance. We also view if underinsurance is an activity, popular among risk seeking entrepreneurs. We handle underinsurance as contribution evasion where the entrepreneur maximizes their utility with the decision to evade. The government has an opposite incentive because the state has to pay pension expenses if entrepreneurs maximize their profits while working. The roots of the theoretical contributions are in Becker's article Crime and Punishment (1968), where deterrence theory was introduced. Allingham and Sandmo developed Becker's idea in their tax evasion theory where the taxpayer is seen as a gambler trying to profit with hidden taxes. (Manhire, 2014.) In this thesis, we develop a new model inspired by Perotti's modification of the Allingham Sandmo model to study the lifetime costs of the evasion.

The structure of this research is the following. In Chapter 2, we take a look at saving and pension schemes in general. In Chapter 3, we present underinsurance as a contribution evasion phenomenon. In Chapter 4, we form entrepreneurs' utility function for contribution evasion. In Chapter 5, we conduct a test to examine our theory using the data. In the result chapter, we hypothetically assess whether the data would support our hypothesis. Lastly, in the Concluding Chapter, we analyze the new pension reform and assess its effectiveness in relation to the results and literature.

As for the research questions we present:

RQ1 *What is the cost of underinsurance?*

RQ2 *Does the alternative saving affect evasion?*

RQ3 *Does poor health affect evasion?*

RQ4 *Can evasion be seen as gambling?*

An important note for the reader is that for this thesis, we could not get the actual data (Sutela & Pärnänen 2017) for our test due to financial constraints. Alternatively, we also tried to get data from two surveys conducted by Suomen Yrittäjät 2017 and 2020 but the attempt was not successful. Surveys of the Suomen Yrittäjät are handled in the empirical part of the thesis and the hypothetical data we use in Chapter 5 is based on the Sutela & Pärnänen (2017) survey.

We also want to clarify some of the terms we use in this thesis. We use the terms *wage earners* and *employees* for broad purpose to describe a group of *non-entrepreneurs*. Separation of the two groups is important when studying pensions because both groups have their own pension schemes. However, we will not delve into the pension schemes for non-entrepreneurs, as our purpose is to study only the pension scheme of entrepreneurs. For the entrepreneur's pension system, we use the terms *pension scheme*, *pension system*, *pension insurance*, and *YEL insurance*. Although the terms vary, their meaning in the thesis is assumed to be the same, entrepreneurs' pension scheme, which is better known as YEL-insurance. YEL is a Finnish abbreviation of the *Yrittäjien eläkelaki* and it means pensions that are regulated by the Self-Employed Persons' Pensions Act (1272/2006).

As for the most relevant term of *entrepreneur*, we want to highlight that there are different forms of entrepreneurship in Finland. We don't want to go into too much detail in the definition of entrepreneurship but we want to define that when we mention entrepreneurs we mean the definition that is presented in Self-Employed Persons' Pensions Act. A more detailed definition is presented in Chapter 2.3. Although farmers can be viewed as entrepreneurs, they are excluded from the thesis as their pension coverage is regulated by a different law.

2 PREPARING FOR RETIREMENT

The salary earned from work is typically used to finance lifetime consumption. In light of research related to life-cycle consumption, people prefer steadily growing incomes, which can also be interpreted from the identified constants of consumption preferences. Not all consumption needs to be financed directly from salary income. However, the wealth or savings that enable consumption have probably been accumulated at some point from someone's salary income. (Kautto, 2019.) Consumption studies conducted in Finland have shown that people's private consumption is not constant during the life cycle but changes over time. The general price level and the amount of free time may be linked to consumption and its changing priorities. In Finland, It has also been observed that private consumption decreases and public consumption increases after the age of 75. Social and health services in Finland are mainly publicly funded. The increasing consumption of social and health services may be the reason for the consumption of publicly funded services in older age. (Kautto, 2019.)

People prepare for retirement in different ways. For some, the timing of retirement may be more important than the pension income accumulated up to that point. If the pension scheme offers many different pension solutions, preparing for retirement may require time and expertise. According to the OECD's Financial Literacy Competencies survey (2016) which was conducted in 30 countries, almost half of the respondents did not reach the minimum level of financial knowledge set by the researchers. In Finland, 60-70 % of the respondents exceeded the minimum level, which was the second-best performance by country. Saving for retirement may also require transferring current consumption to the future. However, evidence has been found that people place greater emphasis on current consumption instead of future consumption opportunities. (Kautto, 2019.)

When calculating the optimal pension, it can be thought that the consumption curve for the entire life cycle would be constant. The rational explanation of saving in economic theory assumes that a person saves or spends her funds in order to maximize her utility

function in different life situations. Rational saving assumes that a person has the cognitive ability and willpower to carry out their plans. (Benartzi & Thaler, 2007.) However, empirical evidence shows that people do not seem to have always the tendency to save for their pension rationally.

The phenomenon that people emphasize current consumption more than future consumption is usually explained by the differences in individuals discounting functions. (Laibson et al., 1998). The traditional exponential discount function assumes that the discount rate is constant and decision makers' consumption profiles are (ct,…,CT). Such decision-makers utility function is therefore $U^t(ct,\dots,CT)$. The discounted utility function of the individual can be formed as:

$$U^t(c_t,\dots C_T) = \sum_{k=0}^{t-1} D(k)u(c_{t+k})$$

Where u(c_{t+k}) represents individuals utility in time period t+k and in discount function D(k) = $(\frac{1}{1+p})^k$ p represents individual time preference. (Frederick et al., 2002.) Laibson suggests that more consistent utility functions with empirical evidence would be hyperbolic since they don't assume individuals to have constant discount rates over time but rather decline (Laibson, 1997). In the quasi-hyperbolic discounting model, an additional discounting factor β is presented which represents the level of bias the individual may have regarding discounting rates in time. It resembles the standard model if β = 1 but if β < 1 the individual emphasizes the present time period more than future time periods. (Bernheim & Rangel, 2005.)

$$u(c_t) + \beta[\sum_{k=t+1}^{t} \delta^{k-t}u(c_k)]$$

Barr & Backard (2002) studied the Chilean self-employed participation rate in the pension scheme based on the entrepreneur's time and risk preferences with experimental design. They found a great variation between studied preferences depending on whether the entrepreneur participated in the scheme or not. Researchers concluded that entrepreneurs

participating in the pension scheme seem to have a higher level of patience and risk tolerance.

In the US, it has been estimated that the number of employees whose pension savings are not sufficient to maintain their standard of living has risen from 35 % to 53 % in the years 1983-2010 (Benartzi & Thaler, 2013). It has been characterized that up to half of American households will not receive an adequate pension for the next 50 years (Skinner, 2007). One explanation has been considered to be the change in the pension system towards a *defined contribution* from a *defined benefit*, in which it is difficult to estimate the amount of the future pension (Benartzi & Thaler, 2013). The change from defined benefit plans to defined contribution plans is an international phenomenon and it is happening in both the private and public sector pension schemes. In the defined benefit plan, the future pension is based on the employee's salary and length of working career. The defined contribution plan is more flexible, as it gives the employee more freedom to decide how much he saves and how the funds saved within the pension system are invested. (Benartzi & Thaler 2007.) To summarize, in defined benefit plans the future pension benefits are known and the risk of the accumulation is shared among other participants in the pension scheme. In the defined contribution scheme, pension benefits are more linked with the contributions an individual puts into the scheme, and therefore the risk is not as shared. (Gerrans & Clark, 2013.)

In the US, where individuals are largely responsible for their own retirement savings, automatic participation in pension plans, in which the employee does not have to make a separate effort to join, has been found to be a very effective engagement tool for pension savings. Automatic participation corrects the identified problem that the individual does not start the pension saving at all. Pension schemes that start automatically have made pension saving more efficient at the start, but even in them, the default savings may remain too low compared to the employee's standard of living. (Benartzi & Thaler, 2013.) In the US, selling or moving to a smaller apartment has been offered as an unofficial solution to the reduction of spending opportunities during retirement. Pensioners can also get used to a lower standard of living and cut back on their own consumption. However, the rising healthcare costs of pensioners create pressure on the reduced purchasing power. It is estimated that in the future, 1 in 10 American retirees will spend more than half of their disposable income on healthcare costs. (Skinner, 2007.)

2.1 Pension schemes as a financial solution for retirement

When working stops due to retirement, income levels may suffer greatly because earnings from work may fall to zero. Potential savings accumulated from salaries play a significant role after the working career because they can be used to balance the rest of life's consumption without working. Retirement savings can be made privately, through private pension companies, or through public pension institutions. In general, pensions can be accumulated by investing or getting insurance. (Kautto, 2019.) In public, there may be different preferences toward pension systems among both politicians and experts. Regularly, positions are presented about whether the legislation should interfere at all with livelihood after the working career. (Kautto, 2019.)

The ratio of the last wages of the working career and the pension income received at the beginning of the pension period is called a *replacement ratio*. The replacement ratio examines two different income pairs; wage and pension income (or pension wage), which may be formed differently in different countries' pension systems. However, evaluating the replacement ratio can help those working to predict future pensions and thus the standard of living for the rest of their lives. In Finland, employers pay the majority of the employee's pension contributions, so when evaluating the replacement ratio, the amount of salary is more than 100 % of the person's gross income. (Kautto 2019.) This is because pension contributions are not deducted from the salaries but they are paid on top of the employee's wages. Employees do not get the pension contribution but it is directly paid to the pension institutions.

In general, pension savings or pension contributions paid during the working career accumulate funds with which the pension is paid back. At the individual level, the return on savings or contributions is thus linked to the time spent in retirement, which is ultimately based on the pensioner's lifetime. Average life expectancy is then a key indicator when evaluating the expected value of the pension scheme's return rate. A kind of equilibrium state can be considered when the invested *opportunity cost* of the sum of pension savings or pension payments is the same as in the pension system. (Kautto 2019.) Opportunity cost can be viewed as the forgone benefits that a person will lose after not choosing or rejecting the second-best option available (Becker et al. 1974). However, at the individual level, there is a significant risk that the income of the pension scheme will

remain negative if the accrued pension remains insufficient in relation to the retirement period. The adequacy of financing is in significant parts affected by the starting and ending periods of the working career and the person's life expectancy while retired. (Kautto 2019.)

Pension schemes can also include investment activities if it's refinanced to the financial markets. The financial market's return can significantly affect the adequacy of the pension system's funding. (Kautto 2019.) As a reference to the average returns of investing, we can look at the historical returns of the relevant stock indexes. The return on the stock market is often examined by *real return*. Real return is obtained when the purchasing power is kept constant, so the return from the stock market is subtracted from the current year's inflation. (Siegel, 2014). On the New York Stock Exchange, in the two previous 60-year periods, the real return on stock exchange shares has been an average of 6.5 % per year (Kautto, 2019.) The real return of the Helsinki Stock Exchange over a period of 56 years (1961-2016) has been correspondingly almost 7 % per year (Lindström, 2017). According to studies, the return on risk-free fixed-income investments in the US has been about 4 % lower than stocks in the long term (Kautto, 2019).

All the above-mentioned risks, including the risks related to the decrease in the value of investments, can be triggered at the same time, which gives grounds for sharing the risks among other participants in the pension system. When risks are shared among others, positive scenarios balance out negative scenarios. (Kautto 2019.)

Risk	**Scenario**
Short career	Pension accumulation remains low
Short life span when retired	Accumulated pensions will not be withdrawn
Losses in pension investments	Pension accumulation remains low

Figure 1. Possible risks that individuals may face when saving for retirement.

2.2 The Finnish pension system in general

The Finnish pension system is based on the idea of strong social security, which includes the *national-* and *guarantee pension* paid by the Kela (The Social insurance institution of Finland), as well as an occupational pension. The Finnish pension system is by nature defined benefit, refinancing, and non-profit, where the aim is to share and minimize the risks. Due to the defined benefit system, the level of future pensions is already determined in advance where applicable, and the pension payer is not fully responsible for her own pension accumulation. Profits and losses from refinancing are shared among other pension savers. Refinancing pensions is an important part of the Finnish pension system, which means that pensions can also be paid with the profits of the refinanced pensions. The level of refinancing in the Finnish pension system is exceptionally high compared to internationally. One reason for the refinancing is the aging of the population, which causes pressure on the financing of future pensions when the number of working people decreases in relation to pension recipients. In Finland, employer parties are also involved in the pension system as owners and financiers. Since the pension system is statutory, key decisions about it are made democratically in the parliament. Compared internationally, the Finnish pension system does not have a strong tradition of using supplementary pension systems, as there are no upper limits for occupational pensions. (Tela, n.d.)

Refinancing of pensions has been done in Finland for a long time. However, in the European Union, solutions corresponding to refinancing have come much later and pension systems have operated largely without “buffers” that could have been accumulated from profits in investing. Due to the lack of buffers, in an international comparison, Finland's pension assets are relatively large. Internationally, however, there may be supplementary pension schemes where refinancing may be done. Therefore it is difficult to make an international comparison with Finland because supplementary pension schemes are more common internationally than statutory ones. (ETK C, n.d.) Supplementary pension schemes are intended to accumulate additional pensions on top of the mandatory pension schemes. The supplementary pension schemes are usually not sufficient to guarantee basic security for old age, but they strengthen the pension accumulation of the mandatory pension system, which would remain insufficient without the supplementary pension system. (Hinz et a., 2013.)

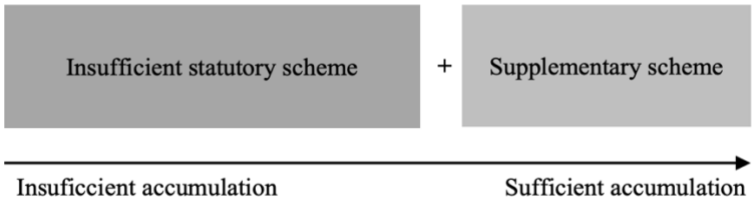

Figure 2. Visualization of the relationship between the mandatory and supplementary pension scheme.

From the figure below, we can see the asset size difference between the mandatory and supplementary pension schemes in relation to the respective country's GDP´s. Norway's significant pension assets can be explained by their oil industry incomes. Finland and Luxembourg have relatively the most significant mandatory pension schemes in relation to supplementary pension schemes. As we can see from the figure, several countries do not have a mandatory pension system at all. (ETK C, n.d.)

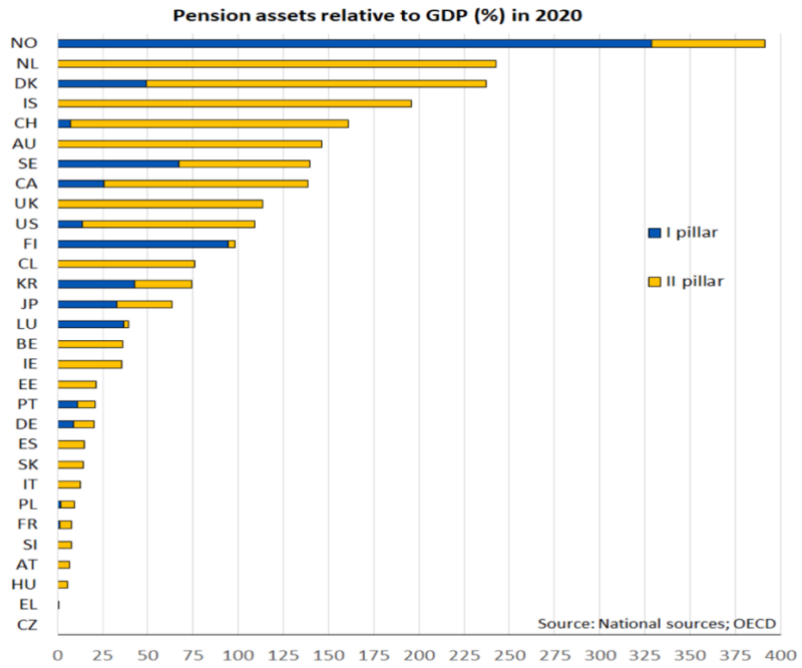

Figure 3. Pillar 1 stands for the statutory pension system assets and Pillar 2 the assets of the supplementary pension systems (ETK C, n.d.).

Another way to compare pension systems is to look at their total contributions by country. The figure below visualizes the sources of the yearly pension contributions and the size of contributions as a whole. From the figure, we can see that most of the yearly pension contributions in Finland comes from the employers. Denmark's large tax contributions are due to the fact that pensions are collected mostly with tax funds. (ETK C, n.d.)

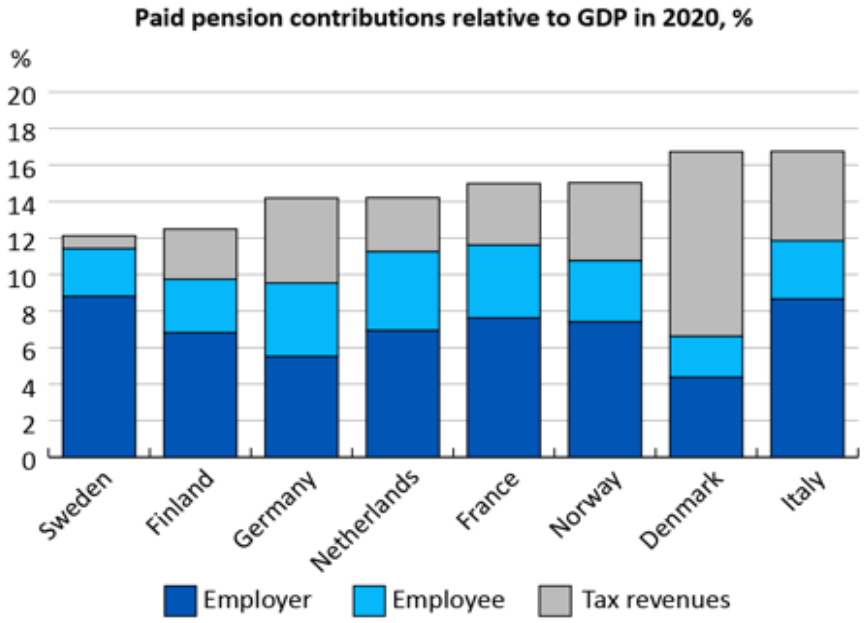

Figure 4. The sum of yearly paid pension contributions and their relationship with the GDP (ETK C, n.d.)

Finland's pension system fares relatively well in an international comparison when looking at the adequacy of pensions and the sustainability of funding. Although Finland's aging population causes pressure on the pension system, the refinancing of pensions has brought room to face challenges. The profits from refinanced pensions have also made it possible to maintain relatively low pension payments. Although refinancing has brought security to the Finnish pension system, extending working careers may be inevitable in the future in terms of the funding sustainability of the pension system. (ETK C, n.d.)

Mercer CFA Institute Global Pension is an annual international comparison study of pension schemes. When comparing pension schemes, attention is paid to the adequacy of pensions, the sustainability of the schemes, and the reliability of the administration. In

2022, Finland ranked fifth in the comparison, e.g. thanks to the reliability and transparency of the administration. Based on the comparison, the Finnish pension system needs to be developed e.g. by improving the minimum pension security, the saving rate of households, and raising the refinancing rate. In the comparison, all the Nordic countries did well and ranked in the top 10. (ETK, 2021.)

2.3 Entrepreneurs pension (YEL-insurance)

Entrepreneurs' pension schemes typically differ from employees' pension schemes because their personal income may be quite different. When employees are entitled to relatively stable salaries, self-employed incomes can vary over time. The pension systems of the self-employed differ greatly from country to country but the general notation for the Finnish entrepreneur's pension scheme is that is mandatory and the benefits are earnings-related. (OECD, 2009.) The nature of the scheme is pay-as-you-go, (PAYG) which means that funds are not collected, but pension benefits are directly paid from the contributions of the working entrepreneurs (ETK B, n.d.).

A person covered by YEL insurance is an entrepreneur or a family member of an entrepreneur who works in her own company without being employed by the company (Hyrkkänen, 2009). In a *limited company*, the entrepreneur status is obtained if the employee is in a leading position and owns more than 30 % of the share capital or voting shares alone or with family members. In a *limited partnership*, a responsible partner is an entrepreneur covered by YEL insurance. (Hyrkkänen, 2009.) YEL insurance in Finland is regulated by law, as employees' pension insurance. While the pension insurance contributions of employees are based on the level of earned income, the pension contributions of entrepreneurs are determined based on *work income*. The work income is a theoretical concept and it is based on the compensation that the entrepreneur should give to the person who would hypothetically replace the entrepreneur itself. The responsibility for defining the work income is largely the responsibility of the entrepreneur. The entrepreneur's pension formation is based on the sum of YEL-contributions that are the function of work incomes. (Hyrkkänen, 2009.)

The entrepreneur's work income is not affected by the company's profit or the entrepreneur's taxable income. Work income is registered based on the declaration made

by the entrepreneur to the pension institution, which is corrected by the income coefficient. (Hyrkkänen, 2009.) In 2023, YEL contributions are 24.1 % of work incomes for entrepreneurs under 53 years old and 25.6 % for entrepreneurs aged 53 to 62. For entrepreneurs older than 63 years, YEL contributions are 24.1 % of their work income. (Ilmarinen 1, n.d.) Entrepreneurs' pension is accrued from 18-67 years of age. To summarize, the main principles of pension accumulation for entrepreneurs and wage earners are the same. For entrepreneurs, the YEL pension is determined based on the average index-adjusted work incomes of the entire working career. For employees, the pension is formed based on the average actual earnings of the entire working career. The state of political will has been that the pension systems of entrepreneurs and wage earners have been developed to be uniform so that both groups would have the same pension security for old age. (Hyrkkänen, 2009.)

The payment of YEL contributions includes some legislative flexibility. The entrepreneur can pay additional payments and thereby increase the pension accumulation for the year in question. The entrepreneur can flex 10-20 percent down or 10-100 % up in payments. (Hyrkkänen, 2009.) Using flexibilities can however affect pension accumulation. If the entrepreneur has flexed down in contributions, the pension accumulation decreases, and if the entrepreneur has made extra payments, the accumulation increases. Without flexibilities, the YEL pension accumulation is 1,5 % of work incomes. The accumulation formula can represent the followingly, work income x 1,5 % /12 months = future pension per month. When an entrepreneur turns 53, the accumulation rises to 1,7 %. However, the higher accumulation rate is only temporary and it will be removed in the year 2025. After that, the accumulation rate is constant 1,5 % for everyone. (Rissanen et al., 2017.)

In addition to pension benefits, YEL-insured entrepreneurs are entitled to social security benefits such as sickness allowance, parental allowance, disability pension, vocational rehabilitation benefits, survivors pension in the event of death, compensation for loss of income paid under accident, and unemployment allowance. Entrepreneurs' pension contributions influence the level of the previously mentioned benefits. (Ilmarinen 2, n.d.) For some social insurance benefits, there is a lower limit on the contributions in order to be entitled to receive them. For example, earnings-related unemployment allowance, paid by Entrepreneur Fund requires that yearly work income cannot be under 14 088 € when applying for the allowance. (Yrittäjäkassa, n.d.) Although it should be noted that being a

member of the Entrepreneur Fund is not mandatory but the benefits it guarantees are linked with the level of mandatory pension contributions. A similar logic is in other voluntary additional insurances as well. For example, entrepreneurs' accident insurance benefits are linked with the entrepreneur's pension contributions as well. (If Vahinkovakuutus, n.d.)

Employees are entitled to social security insurance benefits somewhat automatically within their TyEL-insurance. Unlike entrepreneurs, they can’t choose their level of coverage and benefits. Although entrepreneurs' social security benefits decrease the economic and personal risks, it requires that the entrepreneur has ongoing YEL insurance and a reasonable level of reported work incomes. (Salonen 2015.)

3 UNDERINSURANCE AS CONTRIBUTION EVASION

Contribution compliance is a problem for public finance as it may cause revenues needed to pay benefits to fall short. The problem is especially critical in developing countries where the share of the informal working sector is high (Bailey & Turner, 2001) but the problem has also been recognized in Europe (EU, 2018) and in the US. (Baumann et al., 2009). Bailey & Turner define contribution evasion as when employees or employers do not pay at all or underpay required social security contributions. A closely related phenomenon to contribution evasion is contribution avoidance. In contribution avoidance, firms alter their behavior legally to minimize their mandatory payments. Avoidance can be done for example by employing fewer employees or not offering social security benefits to their workers. (Bailey & Turner, 2001.) Contribution evasion can cause inequality between contributors and contribution evaders because it can distort the income distributions of workers or raise the contribution rate between social security programs. In developing countries, evasion can motivate workers to move toward the informal sector which may reduce the overall economic growth. (Bailey & Turner, 2001.)

It has been argued that contribution evasion is made possible by the institution receiving the payments because it is not auditing and monitoring the level of contributions enough (McGillivray, 2000). In a theme of pension contribution evasion McGillivray has listed the principal types of evasion as; an underreporting number of employees covered by the pension plan, underreporting the earnings, delaying the contributions or not contributing at all. For major reasons, McGillivray (2000) states; reducing labor costs, and administrative complexity. Besides labor costs, there may be some correlation with the cost of capital as well. Phan and Hedge (2013) found evidence in the US that corporates changing pension plans from defined benefits to defined contribution releases liquidity and relieve the pressure of borrowing for pension contributions. Rauh (2006) study found that in the US pension contributions reduce firms' internal cash flow and may decrease

expenditure on mergers and R&D. Harju and Matikka (2019) studied the effects of the Finnish entrepreneurs' pension reform in 2011. They found out that when firms' minority owners moved from the employees' pension scheme to the entrepreneurs' pension scheme where they could decide how much to contribute, their pension contributions decreased. By looking at the age of the firms, researchers concluded that young firms seemed to use saved pension contributions to growth inputs and older firms for alternative investments like stocks.

In some cases, pension schemes may have some incentive traps that can lead to strategic contribution evasion. Because there is a closer link between benefits and contributions in defined contribution retirement schemes, they should have lesser incentives for evasion. However, there is evidence that empirics do not reflect this assumption. (McGillivray, 2000.) Bejakovic (2016) studied pension contribution evasion in Croatia. He concluded that the root cause of evasion is that individuals see a weak connection between contributions paid with the future benefits due to the inefficacy of the pension system. The inefficiency also may have caused the trust in the pension system to fall.
Government minimum pensions may also create moral hazard encouraging entrepreneurs to evade making higher contributions. There is some evidence that in Chile, the minimum pension may have lowered the pension contributions because the participants of the system may have felt that contributions won't generate significantly higher benefits than the minimum pension does anyway. Also, the low level of trust in the system may get individuals to evade. Generally, it has been spotted that contribution evasion is more common with self-employed, young, low-paid, and part-time workers (McGillivray, 2000).

Contribution evasion can be a serious problem in countries where the population is aging leading to a diminishing labor force and an increasing number of retirees. It will especially influence on defined benefit (PAYG) systems where working people pay directly the pension benefits of the retirees. If the pension system cannot provide adequate pension benefits, the system may need government financing. (OECD, 2003.) This may lead to a moral hazard if individuals trust that the government will intervene with funding. Bejakovic has illustrated a list of the factors identified in the literature that may increase evasive behavior.

Factors tending towards a rise on evasion
High contributions
Weak relationship between contribution and the amounts of the pensions
Social environment of the decision maker
Mental calculations
Level of income
Feeling that the supply of public goods is too large
Understanding contributions as tax and not as savings
Public questioning of pension adequacy

Figure 5. A list of factors that may influence the decision to evade (Bejakovic, 2016).

3.1 Empirical evidence of contribution evasion in Finland

If the work income has been defined as too small, the entrepreneur will leave with an insufficient pension. In addition, sickness allowances, maternity, paternity, and parental allowances as well as unemployment benefit payments are tied to work income as well. If from the entrepreneur's point of view, the work incomes has remained too low for the entire working career, it cannot be increased retroactively. Since 1992, efforts have been made to increase the income reported by entrepreneurs by giving a discount on YEL payments for the first years of the company. (Hyrkkänen, 2009.) However, despite the efforts entrepreneurs' pension accumulation has always remained lower than wage earners.

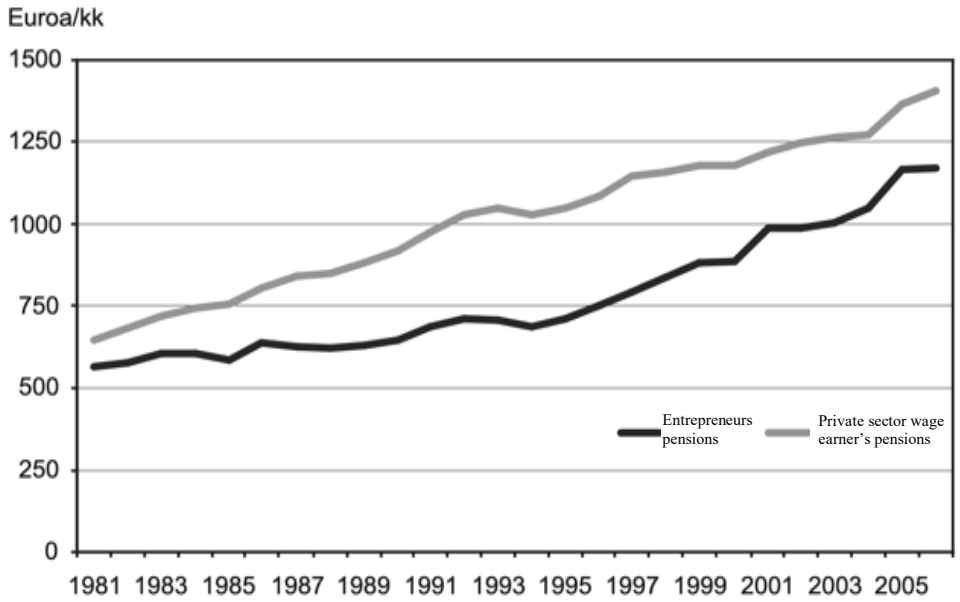

Figure 6. The average development of the pension accumulation of wage earners and self-employed men (Hyrkkänen, 2009).

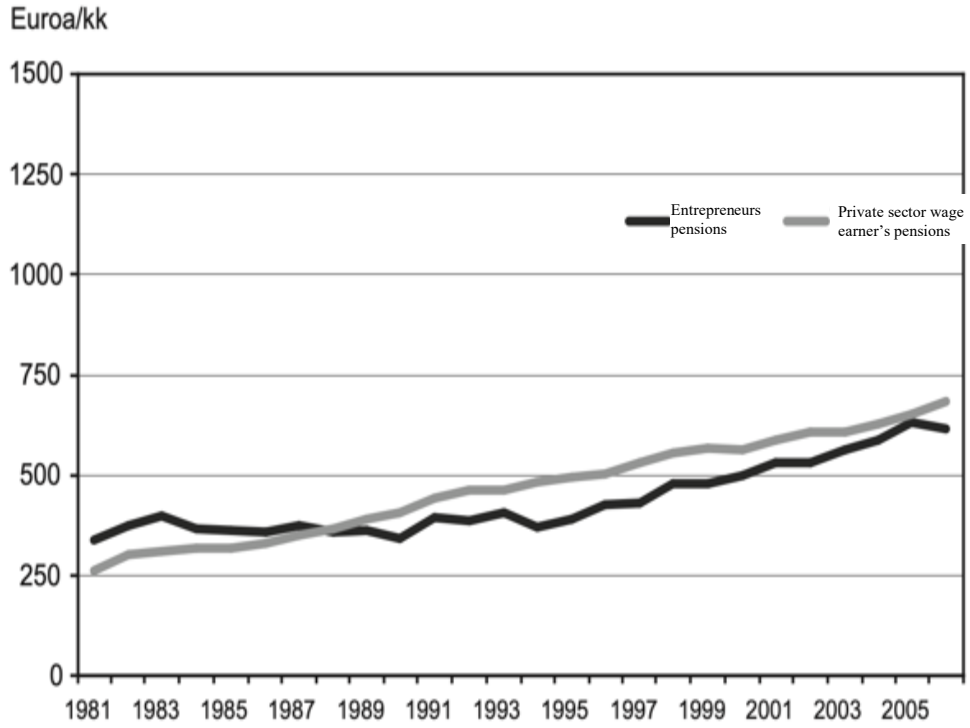

Figure 7. The average development of the pension accumulation of wage earners and self-employed women (Hyrkkänen, 2009).

Nivalainen and Tenhunen (2020) have published a comprehensive study on the extent of underinsurance and its underlying factors in Finland. The researchers define underinsurance as a situation where the entrepreneur's work income is at least 10 percent or 2,400 euros lower than the entrepreneur's actual income. According to the study, the factors that seem to increase the probability of underinsurance are company form, scarcity of livelihood, amount of work, and actual income level. When comparing the ratio of work income and entrepreneurs' actual income, researchers found that the most factors related to underinsurance were among entrepreneurs under the age of 50 who operate in *agriculture*, *real estate*, *business services*, and *other industries* who felt their workload was too great. Even entrepreneurs with high incomes and no accumulated pension as an employee had low ratios of work income to actual income. In 2017, the work income of entrepreneurs was on average 25,600 euros, and about half of the entrepreneurs had work income of no more than 20,600 euros. About 25 % of entrepreneurs had a work income of less than 12,600 euros and about 40 % of entrepreneurs had work income less than 16,000 euros. Nivalainen and Tenhunen estimate that with work income of 16,000 euros, the entrepreneur's pension will not necessarily exceed the state's guarantee pension. By looking at the whole, the average actual income of entrepreneurs exceeds the average work income. The average income of entrepreneurs was 33,000 euros in 2017. For half of the entrepreneurs, the work income was less than 80 % of their actual income, and for 25 % of the entrepreneurs, the work income is less than 50 % of the actual income. (Nivalainen & Tenhunen, 2020.)

It is worth noting that the reasons for underinsurance that emerge from surveys do not necessarily correspond to the reality of whether the entrepreneur is underinsured or not. Nivalainen and Tenhunen found that just under 60 percent of people's own experience of the level of their pension payments corresponded to reality based on the actual income data. About 30 % of the entrepreneurs felt that they paid enough pension payments, but based on the income data, they were still underinsured. 2/3 of the entrepreneurs reported financial constraints as the most common reason for underinsurance. The second most common reason was the view that a sufficient pension could not be accumulated. Distrust of the pension system was especially common among young people, as well as with high-income entrepreneurs. (Nivalainen & Tenhunen, 2020.)

The graph provided by Finnish Centre for Pensions shows that the lowest level of verified work incomes has increased since 2015 (ETK, 2022).

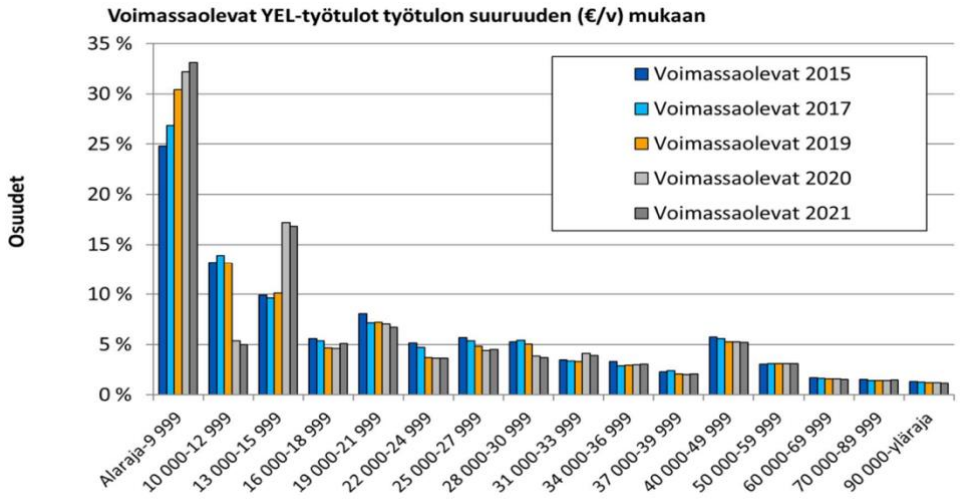

Figure 8. Yearly distribution of the verified work incomes (ETK, 2022).

Also, the sum of average work incomes has decreased from the year 2012.

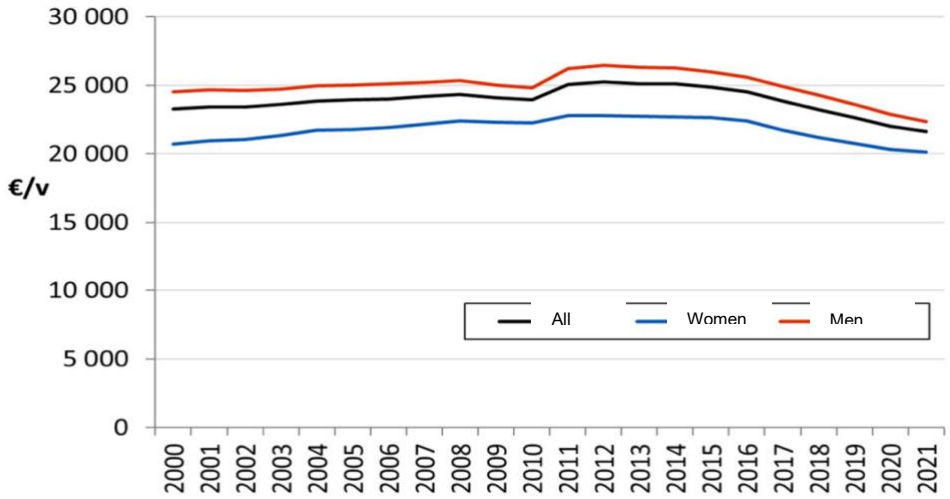

Figure 9. Average verified work income (ETK, 2022).

As the state has committed to pay the difference between pension contributions and pension benefits, the state's share of the pension benefits has increased significantly after the year 2012.

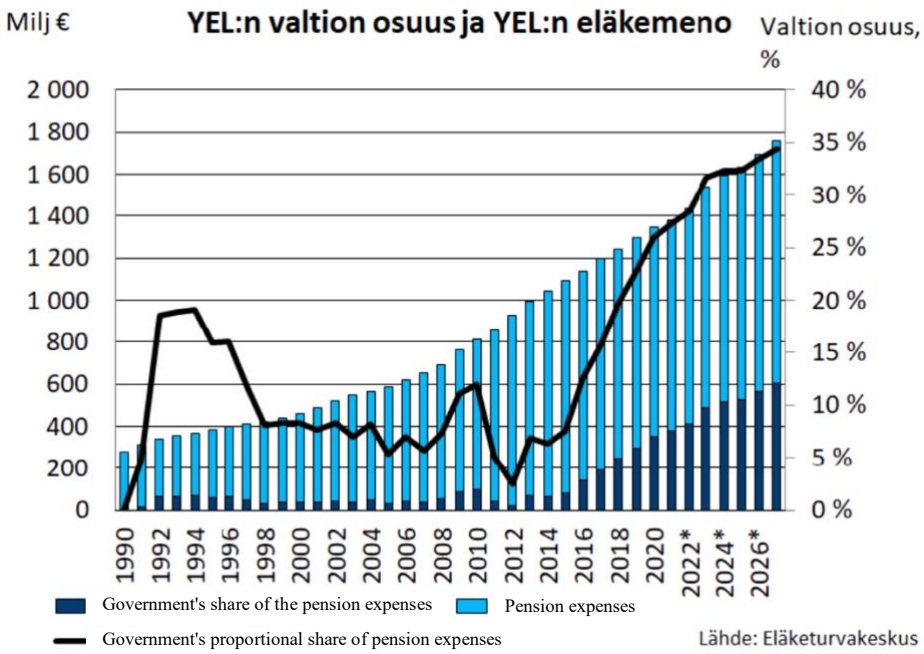

Figure 10. Governments share of the entrepreneur's pension expenses (ETK A, n.d.).

In 2017, the Ministry of Social Affairs and Health established a working group to evaluate the reform of the pension scheme for entrepreneurs to make it easier and more flexible. The working group sought to find out the problems related to underinsurance and the determination of work income and present solutions to them. The working group compiled a report on its results, which was published on March 13, 2019. According to the report, the pension institutions have pointed out that defining work income is difficult and there is no precise measurement methods to assess them. Entrepreneurs themselves also have evaluation problems to define a suitable work income, and the popular reported work incomes have become round figures that understate the entrepreneur's work contributions. (STM, 2019.)

According to the report a common practice has been that pension institutions confirm the work income reported by the entrepreneur, and a more detailed assessment is only made

in special situations. The past legislation emphasized the definition of the work income in the initial stage of the company, which was only modified if the circumstances related to the determination of work income change substantially. Determining work income has been identified to be particularly challenging at the start-up stage of a company because there is not necessarily any information about the scope of business operations at that time. The working group estimated that only 8 percent of entrepreneurs update their work income information, based on which it is possible to estimate that some entrepreneurs do not update work income information even if the circumstances change. (STM, 2019.)

Other reasons for underinsurance may be the large fluctuations in actual income, due to which work income is defined to the level that it is sufficient even in worse times. Work income can be considered too low because it increases the entrepreneur's actual income by decreasing costs. An entrepreneur may want to save her own pension if she feels that she will get a better return on her savings. Self-saved retirement funds can also be inherited by the entrepreneur's family, unlike YEL payments paid to the pension system. Selling the company may also be seen as an opportunity to save for retirement. In addition, a lack of information about the pension coverage offered by YEL payments is presented as a possible reason for underinsurance. (STM, 2019.)

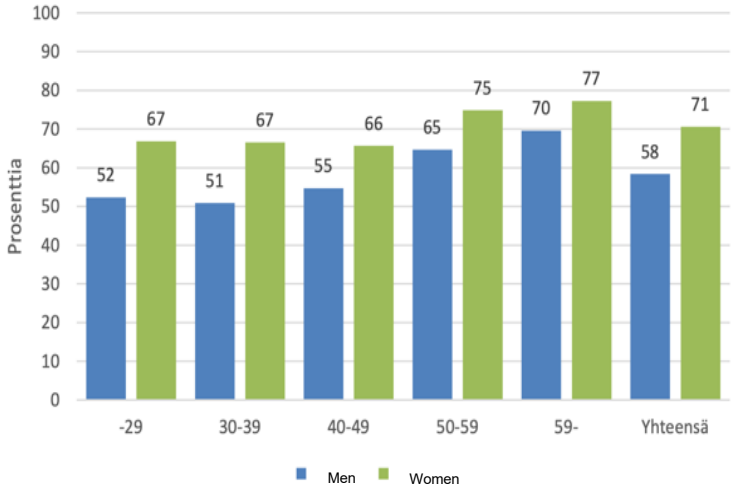

Figure 11. The ratio of sole traders' average work income and average actual income by gender (STM, 2019).

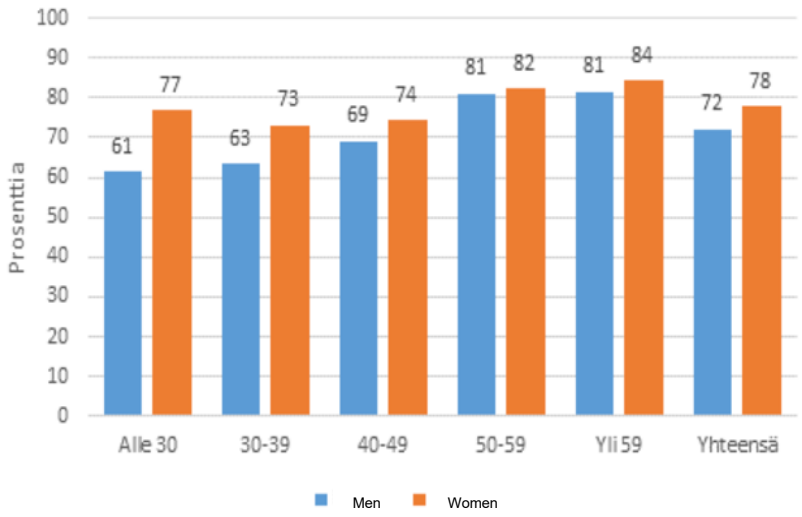

Figure 12. The ratio of entrepreneurs' average work income and average actual income by gender. (STM, 2019).

In the government's proposal about the entrepreneur's pension reform, an unpublished memorandum prepared by the Finnish Centre for Pensions on 19.4.2021 was used, which examined the development of work incomes over the years. According to the government's proposal, underinsurance has clearly become more common, especially since 2014. In addition, the Finnish Centre for Pensions memorandum states that it is increasingly likely to see increasing underinsurance among young people. According to the government's proposal entrepreneur's median work income was 19,000 euros while the median salary of wage earners was 39,000 in 2019. (HE 102/2022 vp.)

3.2 Evidence about attitudes towards YEL-insurance

We now present two surveys conducted by Suomen Yrittäjät to learn more about the preferences of entrepreneurs towards the pension scheme. The first presented survey was conducted in 2017. The survey was sent randomly to 7981 Suomen Yrittäjät network member firms. 1072 firms responded to the survey. In the survey, different claims were asked about the participants. Responders had 5 different answer options; fully disagree, partly disagree, neither agree or disagree, partly agree, fully agree. In this chapter, we have combined fully and partly answer options to ease readability.

To the claim that *entrepreneurs' pension contributions are unreasonable compared to employees' pension contributions*, 73,7 % of the responders agreed. 82 % of the responders agreed to the claim that *pension contribution is unreasonable compared to pension benefits*. 62 % of the responders agreed to the claim that *I trust the entrepreneur's pension system*. When asked *whether I could get better pension benefits by saving by myself,* nearly 75 % agreed. The claim about *I will not get the pension benefits that match my contribution* nearly 76 % agreed. (Suomen Yrittäjät, 2017.)

In 2022 Suomen Yrittäjät made another survey for their members about the entrepreneur's pension system. 1032 responders answered the survey. Claim about whether the *entrepreneur's pension contributions are unreasonable compared to the employee's contributions*, 61 % agreed. Over 70 % agreed to the claim that *pension payments are unreasonably high related to the benefits it guarantees*. Over 60 % agreed with the claim that *I would accumulate a better pension if I could invest them by myself*. 75 % of responders agreed to the claim that *I will not get the pension benefits that match my contribution*. Almost half of the responders disagreed with the claim *I trust the pension system.* 22,6 % of the respondents did not agree, disagree, or couldn't say. (Suomen Yrittäjä, 2022.)

Based on the surveys, it seems that entrepreneurs feel that pension contributions are too high and they do not accumulate pension benefits enough. Entrepreneurs feel that they could get better pension benefits by saving by themselves. Entrepreneurs also don't seem to trust the system in general. Answers suggest that entrepreneurs are especially critical of the pension system as a saving scheme. The survey had also a claim about the social insurance benefits*: if I could save the money by myself, I would have better security benefits during my working career*. 46,5 % of the responders agreed to the claim. The survey had the work income distribution of the responders. Visually it can be seen that the bigger the reported work income of the responders, the less likely they would agree that they would get better social insurance benefits by themselves.

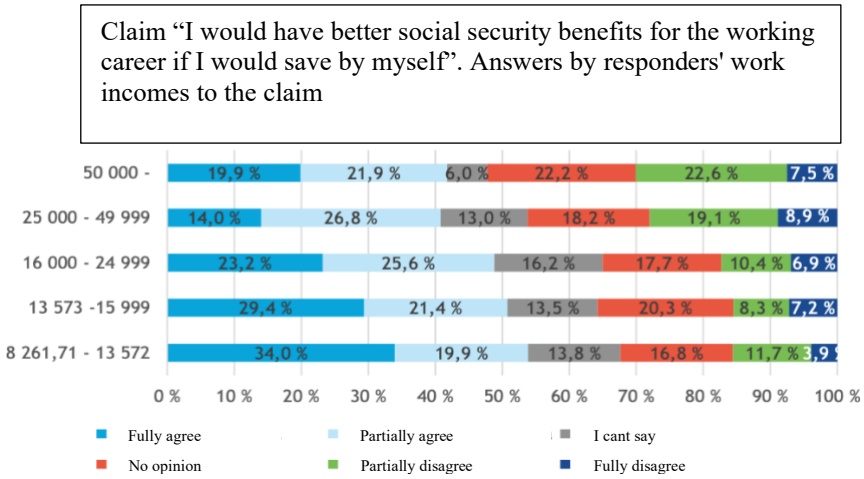

Figure 13. Answers to claim: I would have better social security benefits for the working career if I would save by myself (Suomen Yrittäjät, 2022).

A similar claim about whether *I could get better pension benefits by saving by myself*, clearly more than half agree in every reported work income level.

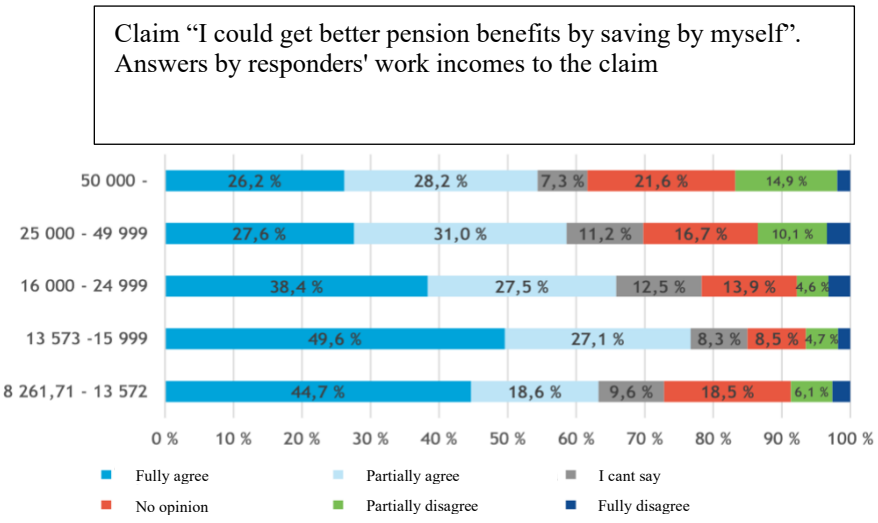

Figure 14. Answers to the claim: I would have better pension benefits for the working career if I would save by myself. (Suomen Yrittäjät, 2022).

Attitudes that stand out in surveys have also been identified in other contexts. A major Finnish pension insurance company Elo's former Pension Director commented in an interview that many entrepreneurs seem to think that pension contributions are just mandatory payments for pension benefit accumulation (Pantzar, 2017). The former

Deputy Managing Director of Finance Finland Esko Kivisaari starts his column about entrepreneurs' attitudes towards their pension plan with a citation from the economist Olivia S. Mitchell “Is your fire insurance good investment? – fire insurance is not investment, it is insurance”. Later Kivisaari argues that entrepreneurs systematically forget that their pension system is insurance first and investment second. Comparing the future pension benefits with investing is therefore not accurate. (Finanssiala ry, 2021.)

Assessing and comparing the return of entrepreneurs' pension contributions may be hard because of the social insurance benefits it provides. There is no insurance plan available on the market which would have similar coverage for the risk of unemployment, sickness, and death. (Ilmarinen, 2021.) The Development Manager of the Finnish Centre of Pensions Eeva Poutiainen calculated in her blog the hypothetical cost of a similar private plan than YEL acquired from the market. In the calculations, Poutiainen used a 2 % guaranteed rate of return, 7 % management fee, and 10 % risk marginal for lifetime and investment risks. Poutiainen argues that the insurance would be on average more expensive to acquire from markets. However, the result is sensitive to the lifetime of the insured and the expected rate of return. (ETK, 2018.)

According to a self-employed survey conducted in 2014, it was found that entrepreneurs may not know about social insurance benefits very well. In the survey over half of the responders reported having limited knowledge about the social insurance benefits. The same phenomena can be seen regarding voluntary insurance benefits that are influenced by YEL contributions. In the survey over half of the respondents did not know the level of their possible unemployment benefits and 15 % of the responders did not know whether they were even entitled to unemployment benefits. (Salonen, 2015.) Nivalainen and Tenhunen argues that education about the benefits should be especially targeted for low-skilled and young entrepreneurs. Nivalainen and Tenhunen also found that entrepreneurs who feel that they have enough knowledge about the pension system have a smaller probability of underinsurance than the ones who need more information. (Nivalainen & Tenhunen, 2020.)

3.3 Policy reform as a solution for underinsurance

The government's proposal HE 102/2022vp aimed to improve the entrepreneur's pension law in order to make the work income better reflect the actual work inputs of the entrepreneurs. The definition of work income will not be changed, but in the law, it will be specified that pension institutions are obligated to check and monitor the reported work income more closely than before. The policy reform corresponded to Sanna Marin's coalition agreement, which included a goal of finding ways to improve the entrepreneur's pension and social security. The government's proposal was approved in Parliament on December 9, 2022. (Eduskunta, 2022.)

As in previous legislation, pension institutions will confirm the work income reported by the entrepreneur with an appealable decision. The pension institution's responsibility is to confirm the work income to a level that corresponds to the economic value of the entrepreneur's work input. The pension institutions should not make the decision based solely on the entrepreneur's assessment, but confirmation requires an individual examination from the pension institution's side as well. (HE 102/2022 vp.)
In the government's proposal, a goal was presented, according to which equality between entrepreneurs and wage earners would improve, e.g. with regard to the level of social security, if the work income better corresponds to the entrepreneur's work input. In addition, the reduction of the threshold for hiring an employee is brought out when the costs of the entrepreneur and the employee would better match each other. In the proposal, the median salary of a full-time wage earner doing a similar job, which in 2019 was 39,000 euros per year, is presented as the basis for evaluating work income. Correspondingly, the median work income of entrepreneurs was presented as 19,000 euros in 2019. (HE 102/2022 vp.)

With the new pension reform, pension institutions will start to use a *work income calculator* which calculates the work income recommendation using the following formula, work income recommendation = industry median salary x (1+ log10 (entrepreneur's turnover/ median turnover of the industry). If the entrepreneur's turnover corresponds to the median turnover of her own industry, then the work income recommendation is based on the median salary of full-time employees. If the entrepreneur's turnover is higher than the median turnover of the industry, then the

recommended work income is higher than the median salary of full-time employees in the industry. The work income calculator also includes a range of 30 percent, which forms the lower limit of the work income recommendation (work income recommendation -30 %) and the upper limit (work income recommendation +30 %). (Telp, 2022.) With the work income calculator and more frequent work income inspection schedule, the government tries to target work incomes to the level of wage earners.

To summarize, the government's proposal aims to increase the level of entrepreneurs' work incomes and therefore their pension contributions. The new legislation gives better tools for pension institutions to assess entrepreneurs' reported work incomes so that proposals that are seen as too low could be rejected and presented to be raised. The government is presented employees' median salary as a target for the employee's work incomes.

In the government proposal, an unpublished impact assessment was presented which was prepared by the Finnish Centre for Pensions on April 7, 2022. According to assessment, the distribution of current work income is presented as follows.

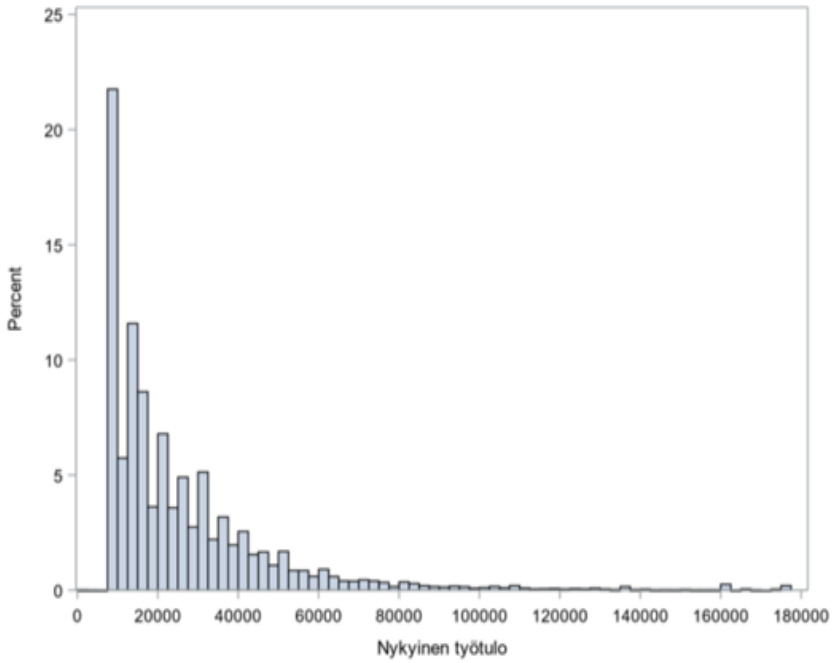

Figure 15. The distribution of current work incomes.

Based on the figure, it can be seen that more than 20 percent of work incomes are close to the minimum lower limit and 25 % of work incomes are less than 11,000 euros. 75 % of work incomes are less than 33,000 euros.

In the first scenario of the impact assessment, work incomes increase by 20 % for those whose work incomes are 50–80 % of the median salary in their industry and 30 % for those whose work incomes are <50 % of the median salary in their industry. In the 1st scenario, the sum of work incomes would increase by a total of 6 %.

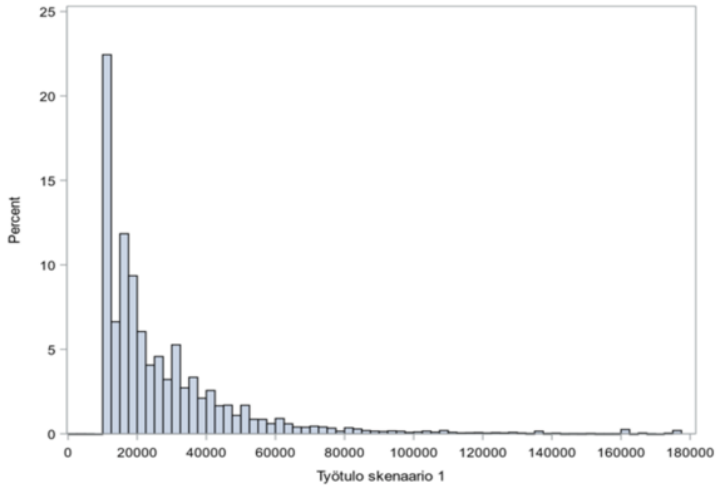

Figure 16. The first scenario where the sum of work incomes would increase by a total of 6 %.

The second scenario is estimated to be an average of the first and third scenarios, where the sum of work incomes will increase by 15 %.

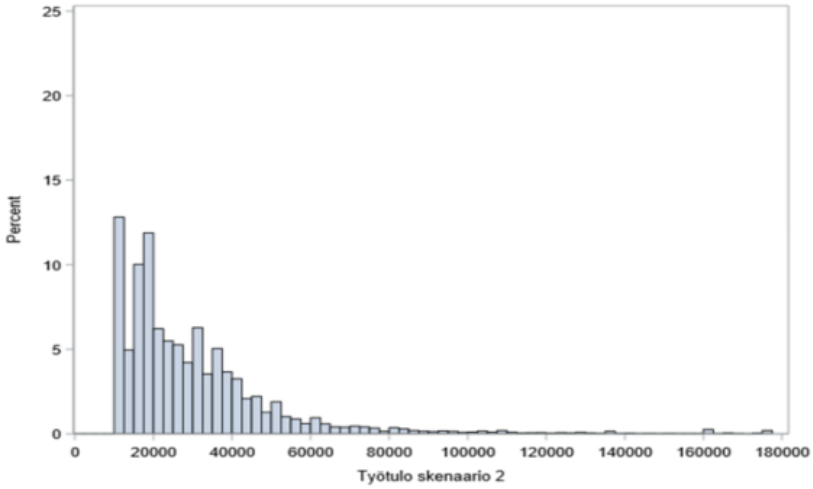

Figure 17. A second scenario where work incomes increase by a total of 15 %.

In the 3rd scenario, the work income of entrepreneurs which are <80 % of the median salary of their industry rises to match the median salary of the industry. In this scenario, the sum of work incomes has increased by 26 % from the initial situation.

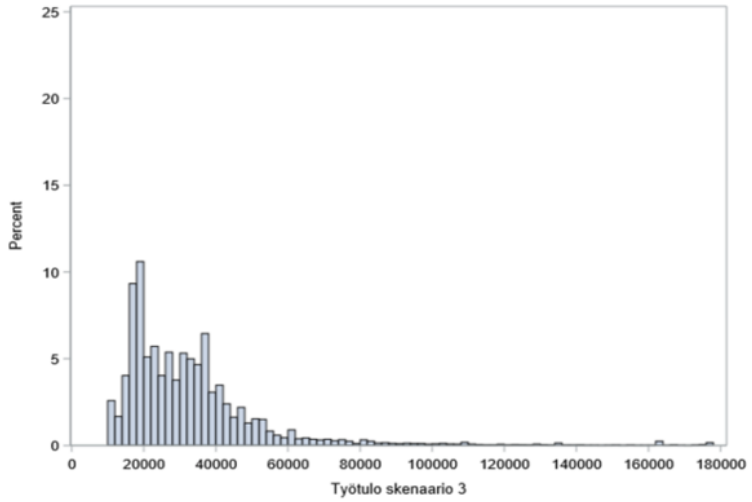

Figure 18. A third scenario where the sum of work incomes increases by a total of 26 %.

The pension reform did not include the raising of the lower limit of mandatory yearly work income contributions lobbied by Suomen Yrittäjät. Suomen Yrittäjät has spoken publicly about the issues of the lower limit.

"If one insures itself with the lower limit, the pension will stay below the guarantee pension, which everyone would get anyway, and the insurance benefits correspond to legislative basic security at best. The entrepreneurs, therefore, pay pension contributions for nothing. Janne Markkula, The Labor Market Director of Suomen Yrittäjät (Suomen Yrittäjät, 2018).

3.4 Possible incentive traps

Finland has a national pension and guarantee pension for individuals who have not accumulated enough pension for themselves. Almost half of the pensioners get some kind of national pension. (ETK D, n.d.) In 2023, the full national pension is 732,67 € for a

single-person household and 654,13 € for two-person households. The full amount of the national pension can be acquired if an individual has not accumulated more than 61,95 € per month pension for themselves. The share of the national pension decreases up to the point where an individual has an accumulation of 1512,38 € per month for a single household and 1355,3 € per month for a two-person household. (Kela, n.d.) The guarantee pension secures every Finnish living individual the minimum pension which is 922,42 € per month. In order to get the guarantee pension, every accumulated pension combined cannot limit the 914,96 €. If the national pension and possible other pensions will not exceed 914,96 € per month, the difference is paid by the guarantee pension. Approximately 7 % of pensioners get a guarantee pension. (ETK D, n.d.) The overall pension can then be formed as the sum of the national pension and guarantee pension. (ETK E, n.d.)

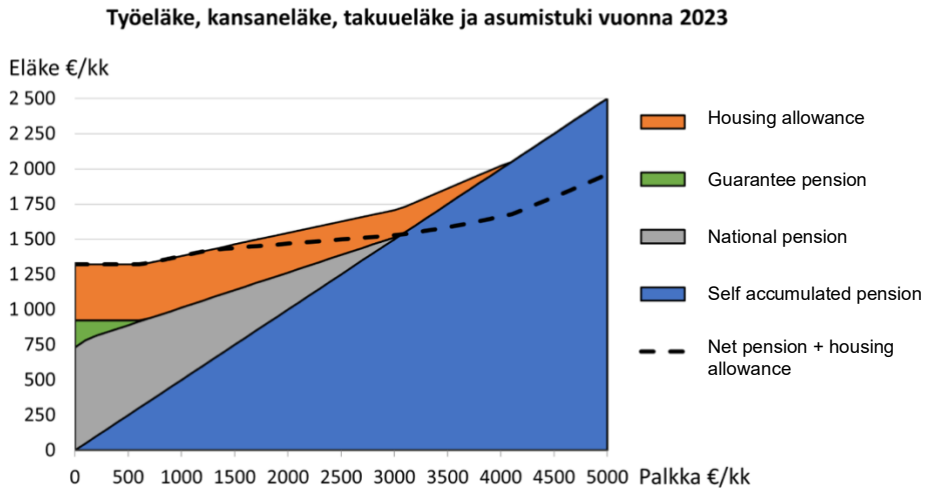

Figure 19. National and guarantee pension as a part of total pension accumulation (ETK F, n.d.)

If an entrepreneur's work income is less than 16 000 €, the entrepreneur is not entitled to a bigger pension benefit than the state minimum pension offers (Suomen Yrittäjät, 2017). Nivalainen and Tenhunen (2020) argue that a significant proportion of entrepreneurs have so low pension contributions that they won't accumulate more pension to themselves than the guarantee pension. This observation had already been made before but it was assumed that these entrepreneurs are not full-time entrepreneurs. (Nivalainen & Tenhunen, 2020.)

4 EVASION MODEL

While tax compliance has rich academic literature, contribution compliance in social insurance programs has not got the researcher's attention excluding some empirical and descriptive studies (Baumann et al., 2009). A well-known tax evasion theory was published by Allingham and Sandmo (AS model) in 1972. Allingham and Sandmo used Becker's approach of the economics of criminal activity aimed to deepen the analysis between taxation and risk-taking. The AS model assumes that the taxpayer gambles with the tax agency and maximizes utility by underreporting her income because the tax is calculated from it. (Allingham & Sandmo, 1972.) If the individual's expected return on underreported taxes is positive, the taxpayer chooses to evade (Manhire, 2014). In the model, evasion is risky because getting caught means fines with some probability from authorities (Perotti, 2012). Sandmo later characterizes that the model resembles a simple financial portfolio model with safe and risky assets. The amount of income reported to the tax agency can be viewed as a safe asset and the unreported amount as a risky asset. If the unreported amount is not discovered, its return is better than safe assets. If the unreported is discovered, risky assets return is negative due to the penalty. The AS model can be presented as a linear equation where W is denoted as wage, t as the statutory tax rate, and e as the amount not reported. (Sandmo, 2012.)

$$Y = W - t(W - e) = (1 - t)W + te$$

If the unreported tax is discovered by the authorities, income after tax and penalty rate ϑ can be presented as follows:

$$Z = (1-t)W + te - \vartheta e = (1-t)W - (\vartheta - t)e$$

Although the model is simple, it reveals the incentives individuals may have when weighing how much they should contribute to the authorities with the risk of getting caught.

Perotti has developed a contribution evasion model from the tax evasion framework. In the model, an individual lives in two time periods, working life and retirement. Income earned in period 1 is a wage which is exogenous W. Individual has the consumption levels for both time periods C_1, C_2. A fraction of evasion is denoted with μ. The amount reported to the authority is τW which entrepreneurs can try to evade with the rate of μ. The hiding cost is κ, which can be used to give an assumption to the authorities that the contribution is at a proper level. Income is therefore increasing function with the fraction of underinsuring. (Perotti, 2012.)

$$Y\ (\mu)\ =\ W\ [1 - \tau +\ \tau\mu(1 -\ \kappa)]$$

We use the basic form of Perotti's model but develop it to suit better for the phenomenon we are studying. As Perotti's model takes into consideration the influence of DB and DC schemes, and liquidity constraints, our model is built to examine the Finnish entrepreneur's choice to evade, and its influence on their pension accumulation. To put simply, we use Perotti's model to represent the first time period but develop our own for the second time period. We also form a combined model with a discounting factor to show the entrepreneur's lifetime costs of evasion.

We first look at the entrepreneur's decision in time period C_1 where we have removed the hiding cost κ for simplicity. We also refine the meaning of τW to stand for the work income. The function represents the entrepreneurs' net wage after the decision to evade pension contributions. In the function, we don't take into account any taxes as it is not relevant to the studied phenomenon although a similar model could be used to examine tax evasion decisions as well. With the model, we aim to answer the first research question, *what is the cost of underinsurance?* The function of net wage is therefore:

$$Y\ =\ W\ [1 - \tau + \tau\mu]$$

The entrepreneur's utility function of period 1 can be then written as:

$$U_{C_1} =\ max\ W\ [1 - \tau + \tau\mu]$$

Of which first-order conditions can be derived followingly:

$$\frac{\delta U_{C_1}}{\delta \tau} = -W + W\mu = 0 \Leftrightarrow \mu = 1$$

We assume W to be a positive integer and μ positive taking values between 0 and 1. As the outcome of the partial derivative of the utility function with respect to τ is found to be $\mu = 1$, it can be interpreted so that the entrepreneur wants to maximize evasion.

$$\frac{\delta U_{C_1}}{\delta \mu} = W\tau$$

Because W and τ are positives, the partial derivative is positive. When the evasion rate increases the period 1 utility of the entrepreneur increases.

$$\frac{\delta U_{C_1}}{\delta W} = 1 - \tau + \tau\mu$$

$$1 - \tau + \tau\mu > 0$$
$$\tau - \tau\mu < 1$$

The increase of W can be assumed to have a positive effect on the consumption-maximizing entrepreneur. Therefore $\tau - \tau\mu$ has to be smaller than 1.

Next, we can assess the accumulated pension P in time period 2 and how underinsurance affects it. We assume that the P is a function of W, so the pension is influenced by the working wage by some fraction α, $P = W\alpha$. The utility function for the time period 2 is:

$$U_{C_2} = P(W)\tau(1 - \mu)$$

Which first-order conditions can be derived followingly:

$$\frac{\delta U_{C_2}}{\delta \tau} = P(W)(1-\mu)$$

We assume P(W) and $(1-\mu)$ to be positive. When τ increases the utility of the entrepreneur increases.

$$\frac{\delta U_{C_2}}{\delta \mu} = -\mathrm{P(W)}\tau$$

Because P(W) and τ are positives $-\mathrm{P(W)}\tau$ is negative. This implies that the increase in evasion rate has a negative effect on utility in time period 2.

$$\frac{\delta U_{C_2}}{\delta P} = \tau(1-\mu)$$

Because $\tau \; and \; (1-\mu)$ are positives, the result is positive. The magnitude of the increase in pension is a function of a fraction of paid contributions multiplied by the fraction of unevaded income.

We can then combine the two utility functions to one model and add a discounting factor to C_2.

$$U(C_1, C_2) = W[1-\tau+\tau\mu] + \frac{1}{(1+r)} P(W)\tau(1-\mu)$$

We then assess the optimal allocation by derividing first-order conditions

$$\frac{\delta U_{C_1,C_2}}{\delta W} = \; 1-\tau+\tau\mu \; + \frac{1}{(1+r)}\tau(1-\mu)\alpha$$

The increase of W has a positive impact on the entrepreneur's utility in both time periods.

$$\frac{\delta U_{C_1,C_2}}{\delta \tau} = -W + W\mu + \frac{1}{(1+r)} P(W)(1-\mu)$$

If $W\mu + \frac{1}{(1+r)}P(W)(1-\mu)$ is smaller than W, its seems that increase in τ decreases the combined utility.

$$\frac{\delta U_{C_1,C_2}}{\delta \mu} = W\tau - \frac{1}{(1+r)}P(W)\tau$$

Assuming $W\tau$ is larger than $\frac{1}{(1+r)}P(W)\tau$ it seems that increasing the evasion rate the entrepreneurs combined utility increases.

$$\frac{\delta U_{C_1,C_2}}{\delta r} = -\frac{P(W)\tau(1-\mu)}{(1+r)^2}$$

The increase in discount rate decreases the combined utility.

$$\frac{\delta U_{C_1,C_2}}{\delta P} = \frac{1}{(1+r)}\tau(1-\mu)$$

An increase in pension has a positive effect on the combined utility.

It is worth noting that maximization of the P(W) has an inverse objective to the utility function at time period C_1, when the pension is accrued. A rational entrepreneur with a constant discounting factor cannot therefore maximize utility in C_1 without minimizing utility in C_2. Maximizing C_1 could be assumed to imply differences in entrepreneurs discounting factors where they value the present consumption more than future consumption.

A possible explanation for weighting the time periods differently could be related to budget constraints where the entrepreneur needs more resources now than in the future. If an entrepreneur feels that her health does not allow a long career she may value more future resources as she predicts that period 2 will be longer than in average. It is also important to remember that social security benefits are tied with the YEL contributions, so poor health could also signal the future needs of social security benefits. Entrepreneur

with poor health could then want to minimize C_1, in order to get better insurance coverage for her health. On the other hand, if the entrepreneur has disbelief towards the pension system or her surviving to period 2, it may be less appealing to shift consumption to the future through the pension scheme. One explanation can also be that P is not function of W ($P \neq W\alpha$), which would mean that P has been accrued from other sources for example from alternative forms of saving or selling the company.

5 TESTING THE HYPOTHESIS

As mentioned in the introduction we could not get the data from the survey conducted by Sutela & Pärnänen in 2017 from Statistics Finland. After inquiries, we ordered the data but as the data delivery and contracting process proceeded unexpected financial challenges occurred. Because of the nature of the data, we should have used a secure computer in a closed environment which tenfold the original price estimate which was received from Statistics Finland. The additional costs were based on the special computer which should have been rented from Statistics Finland. The data delivery schedule was also postponed after which we made the decision not to continue the process with Statistics Finland.

Because we did not have the actual data, we conducted our test with hypothetical data from the actual survey. The reason to use hypothetical data is to mimic the actual testing. If we would get the actual data in the future, we could easily replace the hypothetical data with the right one and thus test our hypothesis. The survey was carried out in connection with the 2017 *labor force survey*, to which an entrepreneur-themed ad hoc module was added. The ad hoc module consisted of questions defined by Eurostat, but 45 national questions were attached to it. The data had been collected between January 1, 2017, and January 12, 2018, by telephone. The target group of the survey included wage earners, entrepreneurs, and family members of entrepreneurs. The sample included 3496 entrepreneurs or entrepreneurial family members, of which 2916 answered the questions of the ad hoc module. The response rate for the ad hoc module was 83.4 %. (Sutela & Pärnänen, 2017.)

In this Chapter, we try to answer our research questions 2-4.

RQ2 *Does the alternative saving affect evasion?*

RQ3 *Does poor health affect evasion?*

RQ4 *Can evasion be seen as gambling*?

By testing, we are trying to investigate whether entrepreneurs are more likely to be underinsured if they intend to fund their retirement other than through the YEL insurance. As discussed in the previous chapter, if P is not a function of W it could make the entrepreneur better off for maximizing C_1. For the 3rd research question, we try to estimate the level of entrepreneurs' valuation of social security benefits by their health condition. We assume that with problems with help and coping, entrepreneurs would see more value in YEL insurance. For our research question, we assume that entrepreneurs value social security benefits more if they believe needing them in the future. Also as mentioned in the Model Chapter, disbelief towards the length of period 1 could make maximizing C_1 less appealing as the second time period would be longer. Entrepreneurs could then try to maximize C_2 and social insurance benefits. As for the 4th research question, we try to examine whether entrepreneurs who have implied liking risk-taking are more likely to be uninsured. The need for social insurance benefits, could be seen as gambling where the entrepreneur is betting on not needing them

5.1 Data configuration

We modified the hypothetical data to the applicable form for the statistics program R Studios. Based on the actual survey question, we chose 13 variables to analyze. The dataset then consisted of one dependent variable D1 and 12 independent variables I1, I2, I3,…I12. We started configuring the data by creating an Excel spreadsheet, in which we put all the variables we were interested. We then used the random generator function in Excel to fill in hypothetical observations for the dataset. It is worth noting that because we randomly generated numbers, they may not represent the actual answer options in the original survey form. The most common answer options in the survey were 1 (yes), 2 (no), 8 (I don't want to say), and 9 (I can't say). The random generator function in Excel only offered one range of numbers to fill in. We used a range of 1–4. Therefore our hypothetical observation values range from 1–4 and they do not represent the original answer option for the variables I1, I2, I3, I4, I5, I6, I9, and I10. For these variables, hypothetical values 3 and 4 represent the actual answer options 8 and 9.

Before coding the variables, we assessed the possible multicollinearity. We did this before coding because every variable is in categorical form as a default. In coding, we will also remove some answering options by setting them as NA. This could possibly make correlation estimation harder as some answer options will disappear. We started the assessment by conceptual grouping where we divided our chosen independent variables into two groups, financial and health-related. We did this because assessing the correlation between conceptually different survey questions would not be meaningful.

Financial related	Health related
I1, I2, I3, I4, I5, I7	I8, I9, I11, I12

We estimate that variables related to finance I1 (*I can't afford to pay a higher insurance premium?*) and I2 *(I would not receive a sufficient pension anyway*) and from health-related variables, I11 (*I often have trouble coping with my work*) and I12 (*For my health, I can work until retirement*) could potentially have some correlation between them. Also variable I4 (*I am going to work alongside my pension*) and I12 For my health, I can work until retirement) may have a correlation. We formed a cross-tabulation to get a visual representation of the relationships between independent variables and a chi-square test to observe frequencies between them.

```
> selected_vars <- c("I1", "I2", "I4", "I11", "I12")
>
> # Loop through the selected variables for cross-tabulation and chi-square tests
> for (var in selected_vars) {
+   contingency_table <- table(Data_for_R1$D1, Data_for_R1[[var]])
+   chi_square_result <- chisq.test(contingency_table)
+   cat("\nVariable:", var, "\n")
+   print(contingency_table)
+   print(chi_square_result)
+ }
```

Depending on the results we would get, we could repeat running cross-tabulation and chi-square tests after coding the variables. If we would get statistically significant p-values between some variables, we could test their independence after coding when some answering options or categories have been set as NA. By this, we could assess whether their dependence is relevant to our model. If P values wouldn't be significant, we

wouldn’t redo the assessment as we would have some kind of confidence about variables independence.

After assessing the multicollinearity of the data to R-Studio we then converted the dependent variable D1 to binary form which suits better for logistic regression. We also wanted to mark values that are not applicable to testing.

```
df$D1 <- ifelse(df$D1 == 1, 0, ifelse(df$D1 == 2, 1, NA))
```

We then made binary conversions for the independent variables I1, I2, I3…I6. We set values 1 to 0 and values 2 to 1. Values 3 and 4 were marked as NA

```
vars <- c("I1", "I2", "I3", "I4", "I5", "I6")
> df[vars] <- lapply(df[vars], function(x) ifelse(x == 1, 0, ifelse(x == 2, 1, NA)))
```

Variable I7 was transformed to binary. Values 1 and 2 were set as 0 and values 3 and 4 were set as 1.

```
df$I7 <- ifelse(df$I7 %in% c(1, 2), 0, ifelse(df$I7 %in% c(3, 4), 1, NA))
```

Variable I8 was set to binary as well. Values 6-10 were set as 0 and values 1-5 were set as 1

```
df$I8 <- ifelse(df$I8 %in% 6:10, 0, ifelse(df$I8 %in% 1:5, 1, NA))
```

For I9 we made a binary conversion where values 1 were set to 0 and values 2 were set as 1. Values 3 and 4 we marked as NA

```
df$I9 <- ifelse(df$I9 == 1, 0, ifelse(df$I9 == 2, 1, NA))
```

Variable I10 was converted to binary in a way that values 1 and 2 were set as 0 and values 3 and 4 were set as 1.

```
> df$I10 <- ifelse(df$I10 %in% c(1, 2), 0, ifelse(df$I10 %in% c(3, 4), 1, df$I10))
```

We use I11 and I12 as categorical variables where values 5 will be set as NA.

```
df$I11 <- ifelse(df$I11 == 5, NA, df$I11)
```

```
df$I12 <- ifelse(df$I12 == 5, NA, df$I12)
```

5.2 Regression model

We then run a hypothetical logistic regression for the following variables:

Do you think you are paying yourself enough pension insurance?	Dependent variable	D1	Binary	1 = 0/ 2 = 1/ 3, 4 = NA
Do the following factors affect the fact that you do not pay yourself sufficient pension insurance: (Intro to I1-I5) I can't afford to pay a higher insurance premium?	Independent variable	I1	Binary	1= 0/ 2= 1 / 8, 9 =NA
I would not receive a sufficient pension anyway	Independent variable	I2	Binary	1= 0/ 2= 1 / 8, 9 =NA
I have private pension insurance?	Independent variable	I3	Binary	1= 0/ 2= 1 / 8, 9 =NA
I plan to sell my business when I retire and get financial security from it for retirement?	Independent variable	I4	Binary	1= 0/ 2= 1 / 8, 9 =NA
I am going to work alongside my pension.	Independent variable	I5	Binary	1= 0/ 2= 1 / 8, 9 =NA
Would you like more information about how the entrepreneur's pension insurance premium affects the amount of different social security benefits?	Independent variable	I6	Binary	1= 0/ 2= 1 / 8, 9 =NA
Do you think your financial situation as an entrepreneur is currently:	Independent variable	I7	Binary	1, 2 = 0 / 3, 4 = 1
Let's assume that your ability to work gets a value of 10 points at best and zero	Independent variable	I8	Binary	6-10 = 0 / 1-5= 1

when you are unable to work at all. What score would you give your ability to work nowadays?				
Have you arranged occupational health care for yourself?	Independent variable	I9	Binary	1=0 / 2=1 / 8, 9 =NA
Have the following factors influenced the fact that you wanted or want to grow your business in the future? Your willingness to take risks?	Independent variable	I10	Binary	1=0 / 2=1 / 8, 9 =NA
I often have trouble coping with my work:	Independent variable	I11	Categorical	5 = NA
For my health, I can work until retirement:	Independent variable	I12	Categorical	5 = NA

Table 1. Variables used in testing

We run the regression in two phases. We first run the test for the binary variables I1-I10

model <- glm(D1 ~ I1 + I2 + I3 + I4 + I5 + I6 + I7 + I8 + I9 + I10, data = df, family = "binomial")

After the test for binary variables, we run a test for the categorical variables.

model <- glm(D1 ~ I11 + I12, data = df, family = "binomial")

After both tests, we need to run a *summary(model)* in order to see the results.

6 EXPECTED RESULTS

Because we did not have the actual data, we couldn't analyze all the relevant parameters in logistic regression. In this result prediction chapter, we focus on the coefficient estimates and p-values. Assessing the fitment of the model and the distribution of observations would be pure speculation. However, we want to highlight important notions about degrees of freedom. Degrees of freedom show the independent variable observations that are used in a model. In R, missing or NA values will be removed from the data when the test is run. In the data we assume there to be a lot of values that we set as NA. Therefore we assume that degrees of freedom would be relatively low compared to the number of observations. But because our sample N is high (2916), we believe that degrees of freedom would be sufficient, even though half of the values observations would be removed. Because R removes entire rows that include any NA values, we speculate that we could maintain higher degrees of freedom by importing narrowed dataset (D1 & I1/ D1 & I2/ D1 & I3, etc...) to R Studio and run the model with only 1 independent variable at a time, performing univariate analysis. When we run the model with all binary independent variables every row of hypothetical observations was removed during the test. This happened because the probability of having NA values with randomly generated numbers was so high. However, since we do not know the number of NA answer options, the univariate model remains one option to consider.

We can assess the hypothetical results for the I1-I5 using the original research of Sutela and Pärnänen 2018 although its testing methodology is not very precisely described. We expect to see a positive coefficient log odds ratio with statistically significant P-values for the I1. In Sutela and Pärnänen's research, this answer option is described to be most common explanation to the event happening of the previously mentioned 5 variables.

I can't afford to pay a higher insurance premium?	Independent variable	I1	Binary	1= 0/ 2= 1 / 8, 9 =NA

For I2, we would expect that answering yes to this question would correlate with the event occurring in the dependent variable (taking value 1). According to Sutela and Pärnänen's research, this answer option is described to be the third most common reason for not paying enough pension contributions. The way we have coded variable I2 is that value 0 represents yes answers and value 1, no answers. With this assumption, coefficients should be negative. With a negative coefficient, the result would suggest that the event occurring is correlated with the view that participants would not get enough pension.

Do the following factors affect the fact that you do not pay yourself sufficient pension insurance:, I would not receive a sufficient pension	Independent variable	I2	Binary	1= 0/ 2= 1 / 8, 9 =NA

For I3, we would expect that with a value of 0 independent variables would correlate with an event occurring. Sutela and Pärnänen present this as the fourth most common factor for not paying enough pension contributions. The coefficient should then show as negative. One unit increase in the independent variable would decrease the probability of an event occurring.

I have private pension insurance?	Independent variable	I3	Binary	1= 0/ 2= 1 / 8, 9 =NA

Sutela and Pärnänen present I4 as the fifth most common reason to underinsurance, Therefore one unit increase in the independent variable (answer switch to no) I4 should be correlated with the lowered probability of the event occurring.

I plan to sell my business when I retire and get financial security	Independent variable	I4	Binary	1= 0/ 2= 1 / 8, 9 =NA

from it for retirement?				

I5 is presented as the second most common reason to underinsurance. We then would expect to see negative coefficient values indicating a lower probability with the event happening.

I am going to work alongside my pension.	Independent variable	I5	Binary	1= 0/ 2= 1 / 8, 9 =NA

Based on the empirical evidence presented previously in this thesis, entrepreneurs may not have enough information about the pension benefits that social insurance provides. Therefore we assume that I6 would correlate with an event occurring with the value 1. This logical assumption is based on the fact that entrepreneurs may have less incentive to pay for the benefits they don't know they are entitled to. Also Nivalainen and Tenhunen (2020) suggest that entrepreneurs who have more information about the social insurance benefits underinsurance more rarely. We then would expect to see negative coefficient values.

Would you like more information about how the entrepreneur's pension insurance premium affects the amount of different social security benefits?	Independent variable	I6	Binary	1= 0/ 2= 1 / 8, 9 =NA

Independent variable I7 was transformed to binary in a way that answers indicating good financial security (values 1 & 2) were set as 0 and values indicating poor financial security (3 & 4) were set as 1. Based on the assumption of I1 variable's influence to the D1, we assume that poor financial conditions will have an influence on the event occurring. This is intuitive as with less budget, there may be less to room to pay for the YEL insurance. Therefore we expect to see negative coefficient values.

Do you think your financial situation as an entrepreneur is currently:	Independent variable	I7	Binary	1, 2 = 0 / 3, 4 = 1

For I8 we assume that a good ability to work would reduce the incentive to pay pension contributions because entrepreneurs may feel that they can work longer and therefore accumulate enough pension even with lower contributions. Good ability to work may also indicate good health, which may make entrepreneurs to underestimate the need for social insurance benefits. We, expect to see a weak correlation that may not be statistically significant. The way the variable is coded, the coefficient should take positive values because value 0 in I8 represents a good ability to work.

Let's assume that your ability to work gets a value of 10 points at best and zero when you are unable to work at all. What score would you give your ability to work nowadays?	Independent variable	I8	Binary	5-10 = 0 / 0-5= 1

For I9 we assume that value 0 will have some positive correlation with an event occurring. This is because entrepreneurs cannot sign up for occupational health services if they don't pay pension contributions enough. Another assumption of ours is that if entrepreneurs are interested in their health, they would probably be interested in the social insurance benefits that the YEL insurance provides.

Have you arranged occupational health care for yourself?	Independent variable	I9	Binary	1=0 / 2=1 / 8, 9 =NA

Evidence presented previously about the Chilean self-employed participation rate in the pension scheme suggested that participating entrepreneurs had greater risk tolerance than entrepreneurs who did not. Therefore we assume that for I10, we would see a positive correlation with value 0 to the event occurring. Therefore we expect to see negative coefficient values. This result would also help us to answer the fourth research question, Can evasion be seen as gambling?

Have the following factors influenced the fact that you wanted or want to grow your business in the future? Your willingness to take risks?	Independent variable	I10	Binary	1=0 / 2=1 / 8, 9 =NA

I11 is a categorical variable. We predict it would likely to correlate with the event occurring with lower values. Low values for I11 indicate that entrepreneur has trouble coping with their work. We could assume that if the work is heavy, the entrepreneur would have the incentive to prepare for life after the working career by saving enough pension. We therefore would expect to see negative coefficient estimates.

I often have trouble coping with my work:	Independent variable	I11	Categorical	5 = NA

For I12 we expect that the intention and possibility of having a long working career (low value for independent variable) would correlate with the event occurring. We then would expect to see negative coefficient estimates.

For my health, I can work until retirement:	Independent variable	I12	Categorical	5 = NA

7 CONCLUSIONS

The theoretical contribution of this thesis has been to view underinsurance as a contribution evasion which is applied from the broader tax evasion literature. As discussed in more detail in Chapter 3, underinsurance has been handled as a contribution evasion phenomenon but in Finland, this view is rare if not unique. We believe that Beckers's deterrence theory and its applications to contribution evasion provides an interesting perspective on how individuals make decisions by maximizing utilities. We suggest that to better understand entrepreneurs' motivations regarding pension contributions more detailed microeconomic models are needed to understand entrepreneurs choices. The new pension reform that was approved in 2022 focuses on developing pension institutions' capabilities to assess and audit the level of reported work incomes. We argue that the pension reform does not influence the root cause of the problem: entrepreneurs do not want to contribute enough to the system. This setup may lead to new forms of evasion strategies because entrepreneurs are forced to raise contributions. To mention one, we suggest an idea that the hiding cost κ which we removed from our evasion model, could play a more significant role in the future when entrepreneurs are assessing the proposition of the work incomes to the pension companies. Hiding cost κ could be used to raise the proposed work income proposal just above the lower limit of the work income calculator's work income recommendation so it fulfills pension institutions' criteria for the proper pension contribution.

$$U_{C_1} = W\,[1 - \tau + \tau\mu(1 - \kappa)]$$

If we derive the first-order condition from hiding the cost, we see that entrepreneurs utilities decrease in a magnitude of $W\tau\mu$, when hiding κ is introduced or increased.

$$\frac{\delta U_{C_1}}{\delta \kappa} = -W\tau\mu$$

This is intuitive as hiding cost increases the overall contribution to the pension scheme which makes the government better off. It is then possible to say that from the government's perspective, the policy is effective, even with the potential large-scale use of hiding strategy by entrepreneurs. It could be argued that with the entrepreneur's pension reform, entrepreneurs are forced into saving more by raising their YEL contributions. As discussed in Chapter 2, in the US with the transition to the DC pension schemes, some people simply do not save enough to maintain an achieved standard of living. Thaler and Sunstein (2003) describe forced policies as paternalistic if they aim to improve the choices of affected parties. Therefore individuals who would suffer informational or cognitive restrictions would benefit from forced paternalistic policies. In our case however, it is difficult to estimate whether the new pension reform is purely paternalistic, with the aim to improve entrepreneurs' insurance coverage, because the government has an incentive to raise pension contributions due to its obligation to cover pension system deficits.

Although we have not tested our hypothesis with real data, we estimate that alternative pension saving, health-related issues, and risk preferences may have an effect on the evasion rate of pension contributions. In Finland, evidence of entrepreneurs' views on the pension scheme is well-studied. The evidence and analysis however is typically focused on the pension saving aspect and not so much on the social insurance benefits. As the entrepreneur's pension scheme is insurance as its nature, we argue that it would be essential to understand entrepreneurs' views and preferences for social insurance benefits as well. In the empirical part of the thesis, we have pointed out some weak signals about the variation of the preferences between pension and social insurance benefits. For example in the survey of Suomen Yrittäjät (2022) over 60 % agreed with the claim that entrepreneurs would accumulate a better pension if they could invest their payments by themselves. However, in the claim about whether investing YEL contributions by itself would guarantee better social benefits for example when getting a child or becoming incapacitated, only 46,5 % agreed. These results show some kind of variation of preferences between pension and social insurance benefits which should be studied more for the development of the pension system.

To assess the gambling point of view, it would be intuitive that if social insurance benefits are the only value-adding element of the YEL insurance, entrepreneurs who underestimate the need of them, would underinsurance. To get any signals to back this

hypothesis, we would have needed to see some increased probability of not paying sufficient pension contributions with the risk-seeking entrepreneurs with good health condition. The differences in views can also be due to the lack of information, which Tenhunen and Nivalainen (2020) bring out in their analysis. They suggest that entrepreneurs who experience that they have enough information about the social insurance benefits underinsurance more rarely.

To summarize our conclusion we present an idea for the following research's hypothesis. We suggest that entrepreneurs may look at YEL insurance as a combination of pension saving and social insurance. If the entrepreneur feels that she is not getting added value from another benefit it may have an impact on her evasion rate. YEL insurance now seems to be valued only as a pension saving scheme which people view as insufficient.

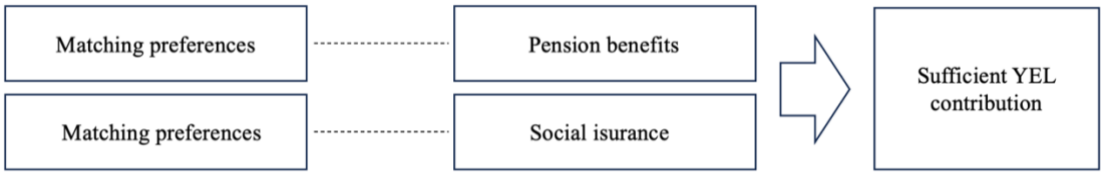

Figure 20. Potential hypothesis for the following research.

Because we did not have the actual data, we could not estimate any background factors influence on evasion rates but we do know from previous studies that entrepreneurs may be evading because the pension accumulation seems insufficient for the entrepreneurs. As for the following study, it would be interesting to study more how entrepreneurs value social insurance benefits. In this thesis, we tried to examine the phenomenon by assuming that poor health conditions and risk preferences would make entrepreneurs value social insurance benefits more and therefore pay higher contributions, but these results remain to be seen.

In this study, we have tried to advance pension research with a microeconomic aspect. We have focused on the underinsurance phenomena and provided a utility model for it from the contribution evasion research. Our data and testing itself bring no contribution to the research (excluding test for risk-seeking entrepreneurs) as Sutela and Pärnänen

(2018) and Nivalainen and Tenhunen (2020) have already studied the same data in more detail. However, we have tried to raise some meaningful variables and tried to assess their influence together with our developed microeconomic model.

7.1 Limitations of the study

The obvious limitation of the study is the lack of actual data and testing. To study social insurance benefits, the researcher needs health-related data to test her hypothesis. Health-related data is usually sensitive by its nature which may cause special responsibilities for the data processor. We learned this the hard way during this study.

Other limitations concern the complexity of the pension system. The calculation of the actual pension contribution is quite hard as it is a function of the theoretical concept of work income. We have tried to simplify the process for the reader but we understand that the two concepts may be hard to follow from time to time. We argue that the ambiguity of the concepts may also cause problems for entrepreneurs as well. Tenhunen and Nivalainen (2020) point out that entrepreneurs actually don't always know exactly about the level of their pension contributions which may indicate the difficulty to understand the process of determination of the pension payments.

In the thesis, the government's obligation to pay the difference between pension contributions and pension benefits is heavily simplified. Although in a big picture the argument is true, the basis of the calculation of the government's share is much more complex. As a reference, we can point out that Finnish Centre for Pensions has published a 172-page handbook (Mäkinen, 2018) which presents the basis of cost allocation in the pension system.

As for the last point of limitation, we want to raise the issue with the concept of underinsurance. In our research, we have mainly focused on the subjective opinion about underinsurance. This can be seen from our chosen dependent variable which is based on the survey question *Do you think you are paying yourself enough YEL contributions*? Nivalainen and Tenhunen (2020) point out that some entrepreneurs who feel that they underinsurance may not be doing so in reality. The variation between subjective feel about underinsurance and actual underinsurance requires actual income data. As we previously presented the common definition of underinsurance, is a situation where the

entrepreneur's work income is at least 10 percent or 2,400 euros lower than the entrepreneur's actual income. Therefore although we would have gotten the actual survey data, we wouldn’t have the income data that would verify whether the subjective opinion about underinsurance would be true. However, even without knowing the actual income, the subjective opinion about underinsurance is important as the opinion may reveal whether minimizing work incomes is a conscious choice.

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8.1 Appendix

Original Ad hoc variable list of Labour Force Survey conducted by Pärnänen and Sutela 2017. Derived variables, data order variables, weighting coefficients, background and classification variables, variables related to labour market status, variables related to working hours and employment relationships as well as EU variables have been removed.	
Kuinka monta vuotta yhteensä olet tehnyt ansiotyötä palkansaajana, yrittäjänä tai yrittäjäperheenjäsenenä elämäsi aikana (lasketaan siitä, kun on täyttänyt 15 vuotta)?	Pudotusvalikko: ei lainkaan (97) alle vuoden (0) --> vuosien määrä 1 v. -60 v.
Kuinka monta vuotta näistä olet toiminut päätoimisena yrittäjänä tai yrittäjäperheenjäsenenä?	Pudotusvalikko: ei lainkaan (97) alle vuoden (0) --> vuosien määrä 1-50
Mitkä seikat vaikuttivat siihen, että aloit aikoinaan työskennellä yrittäjänä nykyisessä työssäsi:	
1. Et löytänyt työtä palkansaajana?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
2. Silloinen työnantajasi ehdotti, että ryhtyisit yrittäjäksi?	1=kyllä 2=ei

	8=en halua vastata 9=en osaa sanoa
3. Yrittäjänä toimiminen on tavallista alallasi?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
4. Eteen tuli sopiva tilaisuus?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
5. Jatkoit perheyritystä?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
6. Et halunnut tai suunnitellut yrittäjäksi ryhtymistä, mutta syystä tai toisesta niin vain kävi	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
7. Halusit itse ryhtyä yrittäjäksi joustavien työaikojen vuoksi?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
8. Halusit muusta syystä ryhtyä yrittäjäksi?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Mikä näistä (tieto kaiutetaan) oli tärkein syy yrittäjäksi ryhtymiseesi?	Tärkein tekijä
Olitko ennen päätoimiseksi yrittäjäksi/yrittäjäperheenjäseneksi ryhtymistäsi:	1=työttömänä 2=palkansaajana ilman työttömyysuhkaa 3=palkansaajana työttömyysuhan alla 4=opiskelit päätoimisesti 5=vai teitkö jotain muuta (hoidit lapsia kotona, pitkäaikaisesti sairaana tms.)?
Oletko viimeksi kuluneiden 12 kk aikana tehnyt yrittäjätyösi ohella välillä myös palkansaaja- tai apurahatyötä?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Kumpi seuraavista kuvaa tilannettasi paremmin:	1=teen pääosin yrittäjätyötä, mutta sivutoimisesti myös palkansaajatyötä VAI 2=yhdistelen vaihtelevasti yrittäjätyötä, palkkatyötä ja/tai apurahatyötä?
Oletko viimeksi kuluneiden 12 kk aikana tehnyt palkansaajatyösi ohella välillä työtä myös yrittäjänä, freelancerina tai apurahansaajana?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Kumpi seuraavista kuvaa tilannettasi paremmin:	1=teen pääosin palkansaajatyötä, mutta sivutoimisesti myös yrittäjätyötä 2=yhdistelen vaihtelevasti palkansaajatyötä, yrittäjätyötä ja/tai apurahatyötä?
Sanoit aiemmin, ettei sinulla ole palkattua työvoimaa. Vaikuttavatko seuraavat seikat siihen:	
Haluat ensisijaisesti työllistää vain itsesi	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Töitä ei ole riittävästi	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa

Sopivia työntekijöitä on vaikea löytää	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Hallinnollinen työ on liian monimutkaista	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Työtekijän sivukulut ovat liian korkeat	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Tässä työssä ei ole mahdollista palkata työntekijöitä	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Työskentelet mieluummin alihankkijoiden tai liikekumppaneiden kanssa	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Asiakkaasi haluavat, että juuri sinä teet työn	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Joku muu syy?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Mikä näistä (tieto kaiutetaan) on tärkein tekijä?	Tärkein tekijä
Onko sinulla yhtiö- tai osakekumppaneita?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Montako yhtiö- tai osakekumppania sinulla on?	Kumppaneiden lukumäärä
Työskenteletkö muuten yhteistyössä toisten yrittäjien kanssa niin, että esimerkiksi välitätte toisillenne toimeksiantoja, jaatte työtä, tai kehitätte yhteisiä hankkeita?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Oletko suunnitellut työntekijän tai työntekijöiden palkkaamista seuraavan 12 kuukauden aikana?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Oletko ajatellut palkkaavasi:	1=vakinaisia työntekijöitä 2=määräaikaisia tai tilapäisiä työntekijöitä 3=vai sekä vakinaisia että tilapäisiä työntekijöitä?
Käytätkö alihankkijoita?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Oletko suunnitellut alihankkijoiden käyttämistä seuraavien 12 kuukauden aikana?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Aiotko käyttää alihankkijoita myös seuraavien 12 kuukauden aikana?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Aloititko yritystoimintasi yksinyrittäjänä, ilman palkattua työvoimaa?	1=kyllä 2=ei

	8=en halua vastata 9=en osaa sanoa
Ovatko seuraavat seikat vaikuttaneet siihen, että olet halunnut tai haluat tulevaisuudessa kasvattaa yritystoimintaasi?	
1. Kilpailukykyinen tuote tai hyvä osaaminen?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
2. Paljon kysyntää tuotteella tai palvelulla?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
3. Uusia markkinoita näköpiirissä?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
4. Työtä oli jatkuvasti liikaa yhdelle?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
5. Valmiutesi riskinottoon?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
6. Halukkuus laajentaa tai kasvattaa toimintaa?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Toimiiko yrityksesi pääasiassa kotimaan markkinoilla vai ulkomaanmarkkinoilla:	1=kotimaan markkinoilla 2=ulkomaan markkinoilla 3=vai sekä että?
Oletko ajatellut laajentaa toimintaa ulkomaisille markkinoille lähivuosina:	1=kyllä todennäköisesti 2=kyllä mahdollisesti 3=et?
Mitkä seikat vaikuttavat siihen, että käytät alihankkijoita tai olet suunnitellut käyttäväsi sen sijaan että olisit palkannut työntekijöitä?	
1. Saan alihankintana osaamista, jota minulle ei muuten ole	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
2. Vältän tiettyjen investointien tekemisen	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
3. Hoidan tilausruuhkaa alihankkijoiden avulla	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
4. Työtä jatkuvasti liikaa yhdelle?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
6. Halukkuus laajentaa tai kasvattaa toimintaa alihankkinnan kautta?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Mikä seuraavista väitteistä kuvaa parhaiten tilannettasi?	1=minulla on vahva halu kasvattaa yritystäni 2=minulla on jossain määrin halua kasvattaa yritystäni

	3=en juurikaan ole kiinnostunut kasvattamaan yritystäni 4=en ole lainkaan kiinnostunut kasvattamaan yritystäni
Oletko saanut rahoitusta yritystoiminnan käynnistämiseen tai laajentamiseen:	1=kyllä, tarpeeksi tai lähes tarpeeksi 2=kyllä, mutta et tarpeeksi 3=et ole tarvinnut rahoitusta 4=et ole saanut rahoitusta, vaikka olisit sitä tarvinnut?
Luettelen seuraavaksi joitakin hankaluuksia, joita voi liittyä yrittäjätyöhön. Oletko kohdannut seuraavia hankaluuksi yrittäjätyössäsi viimeksi kuluneiden 12 kuukauden aikana:	
0. Et pysty riittävästi vaikuttamaan työsi tai tuotteitesi hinnoitteluun	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
1. Et ole saanut tarpeeksi rahoitusta yrityksellesi	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
2. Asiakkaiden maksujen myöhästyminen tai maksamatta jättäminen	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
3. Kohtuuton byrokratia	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
4. Tulottomat jaksot sairauden aikana	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
5. Ajoittainen toimeentulon niukkuus	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
6. Jaksot, jolloin sinulla ei ole ollut lainkaan asiakkaita, toimeksiantoja tai töitä	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
7. Joku muu kuin edellä mainittu hankaluus	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
8. Mikä?	Avovastaus
Mikä näistä oli suurin hankaluus (tieto kaiutetaan)?	Kaksi näistä AHKY16a-AHKY16h, joihin "kyllä"-vastaus. Jos ei yhtään "kyllä"-vastausta AHKY17=eos. Jos yksi "kyllä" , merkitse se suoraan AHKY17-vastaukseksi
Hankitko tai teetkö töitä työosuuskunnan kautta?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Kuinka monelle asiakkaalle tai toimeksiantajalle olet työskennellyt tai myynyt tuotteitasi viimeksi kuluneiden 12 kuukauden aikana:	1=en yhdellekään 2=yhdelle 3=2–9 asiakkaalle 4=kymmenelle tai useammalle?
Kuinka monelle asiakkaalle tai toimeksiantajalle yrityksesi on myynyt tuotteita tai palveluita viimeksi kuluneiden 12 kuukauden aikana:	1=ei yhdellekään 2=yhdelle 3=2–9 asiakkaalle 4=kymmenelle tai useammalle?

Saitko vähintään 75 prosenttia yrittäjätuloistasi yhdeltä asiakkaalta viimeksi kuluneiden 12 kuukauden aikana?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Saiko yrityksesi vähintään 75 prosenttia tuloista yhdeltä asiakkaalta viimeksi kuluneiden 12 kuukauden aikana?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Kuinka helppoa olisi saada toinen toimeksiantaja tämän tilalle?	1=erittäin helppoa 2=melko helppoa 3=melko vaikeaa 4=erittäin vaikeaa
Millaiset mahdollisuudet uskoisit itselläsi olevan työpaikan hankkimiseen palkansaajana tässä ammatissa:	1=hyvät 2=kohtalaiset 3=huonot?
Oletko tai olisitko tarvinnut viimeisen 12 kk aikana jotain sosiaalietuutta kuten työttömyyspäivärahaa, sairauspäivärahaa, toimeentulotukea, asumistukea:	1=et ole tarvinnut 2=olet tarvinnut ja saanut 3=olisit tarvinnut, mutta et hakenut 4=olisit tarvinnut, mutta et ole saanut?
Maksatko mielestäsi itsellesi riittävää eläketurvaa:	1=kyllä 2=ei, et maksa riittävästi 3=et maksa eläketurvaa lainkaan 4=ei sovi, nostat palkkaa yrityksestäsi?
Vaikuttavatko seuraavat seikat siihen, että et maksa itsellesi riittävää eläketurvaa:	
1. Minulla ei ole varaa maksaa suurempaa vakuutusmaksua ?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
2. Tuloni ovat kasvaneet yritystoiminnan alkuajoista, mutta olen unohtanut päivittää tiedon?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
3. En saisi kuitenkaan riittävää eläkettä?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
4. Minulla on yksityinen eläkevakuutus?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
5. Teen yrittäjyyden ohella palkkatyötä, josta kertyy eläkettä?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
6. Aion myydä yritykseni eläkkeelle siirtyessäni ja saada siitä taloudellista turvaa eläkeajalle?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
7. Aion työskennellä eläkkeen rinnalla?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Tarvitsisitko lisätietoa siitä, miten yrittäjien eläkevakuutusmaksu vaikuttaa eri sosiaaliturvaetuuksien määrään?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Mihin erityisesti:	

Vanhuuseläke	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Työkyvyttömyyseläke	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Kuntoutusetuudet	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Sairauspäivärahat	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Työttömyyspäivärahat	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Vanhempainetuudet	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Joku muu, mikä?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Muu syy:	Avovastaus
Ei mikään näistä	1=kyllä
AHKY21a-AHKY21h vastaukset	
Onko Sinulla ollut viimeksi kuluneiden 12 kuukauden aikana pääsääntöisesti:	1=liian vähän töitä 2=sopivasti töitä 3=vai liikaa töitä 4=vai onko sitä vaikea sanoa, koska työtilanne vaihtelee paljon?
Onko yritykselläsi ollut viimeksi kuluneiden 12 kuukauden aikana pääsääntöisesti:	1=liian vähän töitä 2=sopivasti töitä 3=vai liikaa töitä 4=vai onko sitä vaikea sanoa, koska työtilanne vaihtelee paljon?
Onko taloudellinen tilanteesi yrittäjänä mielestäsi tällä hetkellä:	1=täysin vakaa ja turvattu 2=jokseenkin vakaa ja turvattu 3=hieman epävarma 4=vai hyvin epävarma?
Voitko pääsääntöisesti hinnoitella tarjoamasi tuotteet tai palvelut itse?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Miksi et voi hinnoitella niitä itse?	1=hinnat määrää joku toinen yritys tai toimija 2=hinnat määrää pääasiassa asiakas 3=hinnat määritellään lailla 4=hinnat neuvotellaan yhdessä asiakkaan kanssa
Kuinka tyytyväinen olet nykyiseen työhösi:	1=erittäin tyytyväinen 2=melko tyytyväinen 3=en kovin tyytyväinen 4=en lainkaan tyytyväinen?
Voitko vaikuttaa työtehtäviesi sisältöön?	1=kyllä 2=ei

	8=en halua vastata 9=en osaa sanoa
Voitko vaikuttaa siihen, missä järjestyksessä teet työsi?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Päätätkö itse työsi alkamis- ja päättymisajoista?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Päättääkö työsi alkamis- ja päättymisajoista:	1=asiakas tai toimeksiantaja 2=vai joku muu tai jokin muu seikka kuten sää?
Oletetaan, että työkykysi saa parhaimmillaan arvon 10 pistettä ja nollan silloin, kun et pysty lainkaan työhön. Minkä pistemäärään antaisit työkyvyllesi nykyisin?	0-10
Oletko järjestänyt itsellesi työterveyshuollon?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Oletko hankkinut työterveyshuollon palvelut:	1=itsellesi yrittäjänä, mutta et työntekijöillesi 2=itsellesi yrittäjänä sekä yrityksesi työntekijöille (osana yrityksen solmimaa työterveyshuollon sopimusta) 3=yrityksesi työntekijöille, mutta et itsellesi 4=et ole hankkinut työterveyshuollon palveluita?
Sisältyykö näihin työterveyshuoltopalveluihin myös sairaanhoito?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Missä määrin seuraavat väittämät kuvaavat omaa työtäsi	
Minulla on usein vaikeuksia jaksaa työssäni:	1=pitää täysin paikkansa 2=pitää jokseenkin paikkansa 3=ei juurikaan pidä paikkaansa 4=ei pidä lainkaan paikkaansa? 5=ei sovi
Joudun usein venyttämään työpäivääni, että saan työt tehtyä:	1=pitää täysin paikkansa 2=pitää jokseenkin paikkansa 3=ei juurikaan pidä paikkaansa 4=ei pidä lainkaan paikkaansa? 5=ei sovi
Olen innostunut työstäni:	1=pitää täysin paikkansa 2=pitää jokseenkin paikkansa 3=ei juurikaan pidä paikkaansa 4=ei pidä lainkaan paikkaansa? 5=ei sovi
Tunnen laiminlyöväni kotiasioita ansiotyön vuoksi:	1=pitää täysin paikkansa 2=pitää jokseenkin paikkansa 3=ei juurikaan pidä paikkaansa 4=ei pidä lainkaan paikkaansa? 5=ei sovi
Varmistaakseni, että saan töitä, joudun hinnoittelemaan palveluni tai tuotteeni hinnan liian alhaiseksi	1=pitää täysin paikkansa 2=pitää jokseenkin paikkansa 3=ei juurikaan pidä paikkaansa 4=ei pidä lainkaan paikkaansa? 5=ei sovi
Varmistaakseni, että yritykseni saa toimeksiantoja, joudun pitämään tuotteiden tai palvelujen hinnan liian alhaisena?	1=pitää täysin paikkansa 2=pitää jokseenkin paikkansa 3=ei juurikaan pidä paikkaansa 4=ei pidä lainkaan paikkaansa? 5=ei sovi

Oletko voinut pitää lomaa vähintään kaksi viikkoa yhtäjaksoisesti viimeksi kuluneiden 12 kuukauden aikana?	1=kyllä 2=ei 8=en halua vastata 9=en osaa sanoa
Työskentelisitkö mieluummin:	1=palkansaajana 2=vai yrittäjänä?
Työskentelisitkö mieluummin:	1=itsenäisenä yrittäjänä 2=vai yrittäjäperheenjäsenenä?
Oletko viimeksi kuluneiden 12 kuukauden aikana harkinnut mahdollisuutta hankkia tuloja yrittäjänä:	1.=kyllä 2=en 3=olen jo hankkina tuloja yrittäjänä?
Mikä on pääasiallinen syy, että et ole tästä huolimatta toiminut yrittäjänä?	1=toimivan liikeidean puuttuminen 2=heikko sosiaaliturva 3=taloudellinen epävarmuus 4=vaikeudet saada rahoitusta 5=jokin muu syy
Mikä on pääasiallinen syy siihen, ettet haluaisi työskennellä päätoimisena yrittäjänä:	1=et ole edes ajatellut asiaa 2=taloudellinen epävarmuus 3=vaikeudet saada rahoitusta yritystoimintaan 4=liikaa stressiä, vastuuta tai riskejä 5=huonompi sosiaaliturva kuin palkansaajilla 6=muu syy?
Mikä on pääasiallinen syy siihen, ettet ole alkanut itsenäiseksi yrittäjäksi toiveestasi huolimatta:	1=taloudellinen epävarmuus 2=vaikeudet saada rahoitusta yritystoimintaan 3=liikaa stressiä, vastuuta tai riskejä 4=huonompi sosiaaliturva kuin palkansaajilla 5=muu syy?
Missä määrin seuraavat vanhusseläkkeelle siirtymiseen liittyvät asiat pitävät paikkansa Teidän kohdallanne.	
Haluan jatkaa työssäni vanhuuseläkkeelle asti:	1=pitää täysin paikkansa 2=pitää jokseenkin paikkansa 3=ei juurikaan pidä paikkaansa 4=ei pidä lainkaan paikkaansa? 5=ei sovi?
Terveyteni puolesta pystyn työskentelemään vanhuuseläkkeelle asti:	1=pitää täysin paikkansa 2=pitää jokseenkin paikkansa 3=ei juurikaan pidä paikkaansa 4=ei pidä lainkaan paikkaansa? 5=ei sovi?
Uskon, että itselläni on töitä eläkeikään asti:	1=pitää täysin paikkansa 2=pitää jokseenkin paikkansa 3=ei juurikaan pidä paikkaansa 4=ei pidä lainkaan paikkaansa? 5=ei sovi?
Arveletko jatkavasi (tai jatkatko) työskentelyä vanhuuseläkeiän jälkeen:	1=kyllä, koska pidän työstäni 2=kyllä, koska minulle ei ole taloudellisesti mahdollista jäädä eläkkeelle 3=kyllä, jos töitä vain on riittävästi 4=en, koska terveyteni ei salli 5=en halua jatkaa?
Työskentelisitkö mieluummin:	1=palkansaajana 2=vai yrittäjänä?
Voisiko yrityksesi tuotetta tai palvelua myydä tai jakaa digitaalisesti	1=kyllä, teemme/teen jo sitä 2=kyllä, mutta emme/en tee sitä 3=emme/en ole miettinyt asiaa 4=ei voi?
Kysyn vielä perhetilanteestasi. Oletko: naimisissa, avoliitossa tai rekisteröidyssä parisuhteessa,	1=naimisissa, avoliitossa tai rekisteröidyssä parisuhteessa 2=asumuserossa

asumuserossa, eronnut, leski vai naimaton?	3=eronnut 4=leski 5=naimaton
Asuuko taloudessasi lapsia pysyvästi tai osan aikaa ?	1=pysyvästi 2=osan aikaa 3=sekä että 4=ei asu
Kuinka monta heitä on?	Lukumäärä
Minkä ikäinen lapsi on?	Lapsen ikä
Minkä ikäinen on nuorin lapsista?	Nuorimman lapsen ikä
Minkä ikäinen on toiseksi nuorin lapsi?	Toiseksi nuorimman lapsen ikä
Minkä ikäinen on kolmanneksi nuorin lapsi?	Kolmanneksi nuorimman lapsen ikä
Minkä ikäinen on neljänneksi nuorin lapsi?	Neljänneksi nuorimman lapsen ikä
Minkä ikäinen on viidenneksi nuorin lapsi?	Viidenneksi nuorimman lapsen ikä
Minkä ikäinen on kuudenneksi nuorin lapsi?	Kuudenneksi nuorimman lapsen ikä
Minkä ikäinen on seuraavaksi nuorin lapsi?	Seitsemänneksi nuorimman lapsen ikä
Minkä ikäinen on seuraavaksi nuorin lapsi?	Kahdeksanneksi nuorimman lapsen ikä
Minkä ikäinen on seuraavaksi nuorin lapsi?	Yhdeksänneksi nuorimman lapsen ikä
Minkä ikäinen on seuraavaksi nuorin lapsi?	10. nuorimman lapsen ikä
Minkä ikäinen on seuraavaksi nuorin lapsi?	11. nuorimman lapsen ikä
Minkä ikäinen on seuraavaksi nuorin lapsi?	12. nuorimman lapsen ikä
Onko puolisonne työssä vai tekeekö hän jotain muuta?	1=työssä 2=tekee jotain muuta
Entä onko hän:	1=palkansaaja vakinaisessa työsuhteessa 2=palkansaaja määräaikaisessa työsuhteessa 3=työnantajayrittäjä 4=maatalousyrittäjä 5=yksinyrittäjä (muu kuin maatalous), ammatinharjoittaja, freelancer tai apurahansaaja?
Mitä puolisosi pääasissa tekee?	1=työtön, lomautettu ilman palkkaa 2=isyys- tai äitiyslomalla, vanhempainlomalla tai hoitovapaalla 3=opiskelija 4=työkyvytön/ työkyvyttömyyseläkkeellä/ pitkäaikaisesti sairaana 5=muulla eläkkeellä 6=hoitaa omaa kotitaloutta 7=tekee jotain muuta?
Toimitko päätoimisena yrittäjänä lapsesi syntymän aikoihin?	1=kyllä 2=ei 3=ei sovi
Toimitko päätoimisena yrittäjänä nuorimman lapsesi syntymän aikoihin?	1=kyllä 2=ei 3=ei sovi
Piditkö tämän lapsen syntymän yhteydessä perhevapaata työstä ?	1=kyllä 2=ei 3=ei sovi
Kuinka kauan olit perhevapaalla yhteensä lapsesi syntymän yhteydessä?"	Merkitse täydet vuodet Merkitse täydet kuukaudet 00=alle kuukausi
Perhevapaalla olo, vuosien määrä	

Perhevapaalla olo, kuukausien määrä	
Pystyitkö olemaan perhevapaalla niin kauan kuin halusit?	1=kyllä 2=en