JÖNKÖPING UNIVERSITY
International Business School

The Influence of Default Options on the Timing of Retirement

A study of the automatic payout in the Swedish occupational pension system

Master Thesis in Economics

Title: The Influence of Default Options on the Timing of Retirement

Authors: Jonas Agné

Tutor: Johannes Hagen

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Abstract

This thesis examined a change of the automatic payout age of a Swedish occupational pension agreement. The purpose of the study was to see if the default option can nudge the retirement decision. The study was based on previous behavioral economic research, showing that default options can be strongly influential in the accumulation phase of pension wealth. Using a difference-in-difference framework, the estimation shows no significant result of the default option influencing the labor supply of older workers. The result implies that people could be more rational regarding their retirement than their savings. This result should discourage policymakers from intervening too much in people's retirement decisions, as it could lead to undesired consequences. To my knowledge, this is the first study to investigate if a default option can influence the retirement decision.

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Introduction

One concern for retirement systems around the world is demographic change. When the number of elderlies increases faster than people of working age, the capacity for society to provide pensions for retirees becomes more stretched. For the individual, the potential threat is a lower monthly pension. Life expectancy continues to increase, while the retirement age is not keeping up, which leads to more years in retirement and, consequently, more years the pension wealth needs to cover.

The most obvious solution to the demographic problem is for people to withdraw their pensions later and work longer. However, this has not been the case, at least not in Sweden. On average, Swedish people do not compensate with more years of work to the same extent as life expectancy has increased (Johansson et al., 2018; Swedish Fiscal Policy Council, 2022).

It is worrying that the retirement age does not follow the increase in life expectancy as it could result in lower pensions for many people. According to standard economic theory, people make rational decisions. It could be rational to retire and accept a lower pension for more leisure if they believe they can afford it. If this is the case, then an intervention by the policymakers to increase the retirement age would not increase the benefits for the people but instead lower them.

A more problematic reason could be that people are not making an optimal decision and risk ending up with a too low pension. Studies of human economic behavior have shown that, in many situations, people are not rational decision-makers. One of those situations can be when there is a complex decision involving the elements of risk and time. In these situations, making a well-informed rational decision requires much effort. To avoid the effort, one might prefer not to decide at all. In these cases, the default option becomes very important (Samuelson & Zeckhauser, 1988).

In the pension system, passive decision-making has been well documented. Research has shown that the default options have had a crucial role in the pension accumulation phase, increasing the participation rate by more than 40 percentage points.[1]

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[1] For example, Madrian and Shea (2001), Choi et al. (2002 & 2004) and Beshears et al. (2009) show that automatic enrolment (with the option to unenroll) increases the participation rate for workplace pension plans compared to when people are not automatically enrolled and must enrol themselves.

Unfortunately, not enough attention has been given by researchers to how behavioral factors influence the decumulation decisions and the timing of retirement. Banks and Crowford (2022) argue that a better understanding of decision-making in the decumulation phase will become increasingly important and calls for research in this area to help guide policymakers.

Behavioral economics has become an attractive science for policymakers in recent years. An attractive feature is its ability to provide ways to influence people's decisions without changing the incentives or forcing people, commonly known as a "nudge". Recent research has shown that nudges, such as providing information and framing, can influence people's pension withdrawal. Hagen et al. (2022) study the Swedish occupational pension system where they examine how modifications in the application can nudge people towards a particular withdrawal option and find that it can also result in spillover effects on the labor supply.

In this thesis, I will contribute to the literature on how behavioral factors can impact the decumulation decision of pension wealth. I will investigate the potential effect of the default option on the retirement decision. The study will be in the context of the Swedish occupational pension system, which is closely related to the Swedish public pension.

In the Swedish occupational pension system, most occupational pension plans have a default option on the payout timing. Among the four most extensive occupational pension plans, all have had the default of the payout to start when a person turns 65 years. In 2018, one of these four occupational pension agreements in Sweden, KAP-KL, changed its default option of the automatic payout. Instead of being paid out at age 65, it was paid out at age 67. By taking advantage of this change, I will study the ability of the default option to nudge people in their retirement decision.

The first hypothesis presented here is that changing the default option from age 65 to 67 would decrease the number of people withdrawing their occupational pension at age 65 and push the timing of withdrawal forward. This hypothesis is aligned with mentioned research that has shown how vital the default option can be for outcomes in the pension system. It will be analyzed by discussing a report from AMF (2018), one of Sweden's largest pensions companies. Data from the report suggest that the withdrawal decision drastically changed when the default option changed, indicating that the default option also had an essential role in the decumulation phase.

The second hypothesis and the main study of this thesis is that changing the default option of automatic payout at age 65 to 67 would positively affect the labor market participation among older workers. The effect of the default option would mainly affect the labor supply from two directions. Firstly, receiving the pension automatically is a strong signal for the individual to retire. It can be seen as a general time to retire or even a recommended time. Secondly, receiving pension can impact how people perceive the opportunity cost of working. It might not seem necessary to continue working when you receive a pension.

To test the hypothesis, I will utilize the fact that the occupational pension agreement for employees in the municipal and regional sector, KAP-KL, changed its automatic payout age from 65 to 67 in 2018. The strategy is to study if the share of people employed by the municipal and regional sector in the age 65–66 has increased due to the removal of the automatic payout age. By using a difference-in-difference framework, with the share of government employees in the age 65–66 as a control group, I find no evidence that the change of the default option has impacted the labor supply of the municipal and regional employees in the age 65–66.

Both hypotheses in this thesis are of interest. The timing of withdrawal impacts how many years the pension should cover, while the timing of exiting the labor force impacts the size of the pension wealth. As mentioned, increasing the retirement age could be the best solution to improve the pension income while keeping the pension system's stability. The automatic payout for occupational pensions in Sweden has already been noticed as a potential nudge to retirement. Carlsson (2016) argues that "Automatic withdrawal of occupational pension at 65 years of age constitutes a strong (unintentional) nudge to retire. Eliminating this nudge could potentially raise the retirement age".[2] However, so far, it has not been tested if it does nudge people to retire earlier.

The main finding in this thesis is that the default option does not have the anticipated effect on the labor supply. The absence of an effect suggests that the retirement decision is not as easily influenced as many decisions in the accumulation phase were. It could indicate that people are more rational about their retirement decision than we expected, and it should hesitate policymakers from doing any drastic intervention to increase the retirement age, as it might not be desirable for individuals. However, information on

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[2] It has also been noted in SOU 2013:25 as an effective way for occupational agreements to contribute to the challenge in increase the retirement age.

people's withdrawal decision does suggest that default option can be influential in the decumulation phase and imply irrational behavior. The role of the default option in the retirement decision is therefore not clear. I encourage future research to extend this early study and to provide more insight on how default option can be used in the decumulation phase.

The thesis is structured in the following way. Firstly, a literature review will be presented, introducing studies connected to the subject of this thesis. Secondly, a description of the Swedish pension system will be provided, focusing on the occupational pension. Thirdly, the empirical framework will be set, explaining the estimation method and the data that will be used. After that the result will be analysed and discussed. The thesis finishes with a brief conclusion, summarising the main findings.

Literature review

If you observe people's decisions and there is a consistent pattern over time that people choose A over B, it could be a way to judge their preferences and conclude that people prefer option A instead of B. The revealed preference theory was established by Samuelson (1938) and is still true in many ways. The neoclassical economic theory is founded on the belief that people try to optimize. If the cost of making a decision is low, people would always choose the option that maximizes their utility. However, there are circumstances when this is not true. One of these circumstances is when people refrain from making an active choice and instead fall into the default option (Samuelson & Zeckhauser, 1988; Beshears et al., 2008). This is because making an active decision requires effort, which becomes an obstacle, and makes people more willing to stay passive. This is usually referred to as "status quo" bias.

In the pension system, passiveness seems to be a recurring theme. It is well documented that auto-enrollment has increased the number of people saving for a pension. Madrian and Shea (2001) have shown that when people are automatically enrolled in an occupational pension and must make an active decision to leave instead of joining, the pension plan becomes much more popular. This has opened up a discussion on whether policymakers should influence people's decisions to help them choose a better option. Thaler and Sunstein (2003) argue that if policymakers can influence people to make better decisions without forcing them, then in some cases, they should. Thaler and Sunstein refer to this as libertarian paternalism, which has later become known as a "nudge".

A nudge can have many different forms and applications. One type of nudge is the default option. It is always easier to not do something than it is to do something. However, it is more than that. The default option can be perceived to be the best option as the system designer has chosen it. It can also be interpreted as the most popular option (Brown & Krishna, 2004). For reasons like this, the default option can be considered a nudge, something that lightly pushes people to choose it.

As mentioned previously, a nudge should influence people to make better decisions. For the default option, it means that the designer should choose an option that is the most desirable for individuals and society. This is not an easy task as people have different preferences, making the last requirement of a nudge important; a nudge should never

restrict or limit a person's option and should not change the economic incentives for the options. So, a nudge should not interfere and change the outcome when the preferences are clear and a person knows the most optimal option.

To help to understand how and when nudges can be effective, Lövgren and Nordblom (2020) provide a model of how a nudge can influence decision-making. They argue that at the start of a decision process, the individual must decide whether a decision should be made based on the information and rational thinking or behavioral factors, for example, gut feeling or habit. They refer to this as making an attentive or inattentive choice. According to them, a nudge could be the most effective when a person decides to use an inattentive choice and not put in the effort to make an informed decision. Decisions that a person feels are unimportant or when the confidence of making the right decision is low are situations when choosing an inattentive choice is more likely. Saving for a pension is an important decision. However, Lövgren and Nordblom argue that because many lack confidence in their ability to make an optimal decision, many people avoid the effort and instead make an inattentive choice. That could be why the nudge of the default option has such an essential role in pension decisions.

Regarding default options within the pension system, most research has been focused on saving decisions. Following the lead of Madrian and Shea (2001), Choi et al. (2004) used the same dataset but for more years. They show that the effect of automatically enrolling people into pension saving schemes could increase the participation rate from around 40 to 85 percent or more.

It has also been studied in the context of the Swedish pension system. Cronqvist and Thaler (2004 & 2018) studied choices people make in the funded part of the public pension called the Premium pension plan. They argue that the default option is unreasonably popular when considering the option's risk profile and the risk most people should like to take. Another interesting finding is that the option is very persistent over time. It is not that people are missing to choose an option in the beginning, and when given some time, they come around and change from the default.

The default option's importance in the withdrawal decision is not equally well investigated. It has been studied in connection with the question about "how" to withdraw. There is a puzzle that has confused economists, which is referred to as the annuitization puzzle (Bernartzi et al., 2011). What confuses economists is that unreasonably few people

choose to withdraw their pension as an annuity instead of a fixed term, even though, for most people, annuities should be the more attractive option.

Bütler and Teppa (2007) have looked at how people choose to withdraw their pensions in the Swiss pension system. They noticed that the default option could significantly increase the fraction of people choosing annuities instead of a lump sum. A similar observation has been made in the Swedish occupational pension system, where the change of default option changed the rate of annuities from a few percent to around 67 percent (Hagen, 2017).

Agnew et al. (2008) conducted an experimental study where they viewed individuals' choices when playing a retirement game. In this setup, the default option did not play a significant part. A potential reason for this, as the authors mention, could be that the participants had to decide on the spot how to withdraw their pension. Procrastination and laziness could, therefore, not play the same role as they can within a real-life decision.

There looks to be a gap in research on how nudges, and particularly the default option, can influence decisions, such as when to start to withdraw or when to stop working. A research survey by Liebman and Luttmer (2012) indicates that people generally have a good understanding of the positive effect of working longer and postponing the pension withdrawal on the pension benefits. However, they do find results suggesting that the framing of the information can have significant effects on the retirement decision.

Brown et al. (2016) tested in an experimental study how the framing of the options affects the timing of the withdrawal. They find results that strongly indicate that framing of the information regarding the withdrawal decision influences the timing of the withdrawal.

Hagen et al. (2022) use an extensive data set from two Swedish pension companies to investigate a change in the choice architecture of the withdrawal decision and potential spillover effects on the labor supply. They found that increasing the salience of a specific payout option significantly impacted people's payout decisions and could impact the labor supply. The nudged withdrawal option increased by around 30 percent. In their case, the default option was not the research objective; the default option was not even changed. However, it does tell us that people can be influenced in their withdrawal decision, as previously shown for the saving decision. Notably for this thesis, they do show that nudges can influence retirement decisions.

In a recent study, Seibold (2021) shows that retirement reference ages remarkably impact individuals' retirement timing in the German pension scheme. With a heterogenic population, the optimal retirement decision should vary. Large spikes around certain ages can, therefore, not only be explained by financial incentives. This indicates that the timing of retirement might not always be a rational decision and could, to a large extent, rely on behavioral factors.

The literature review above does support the view that inattentive choices could frequently occur in the deaccumulation phase. However, the research is still in an early stage regarding how behavioral factors influence the decision on when to retire. To my knowledge, no research has so far looked at how the default option can impact the retirement decision.

Institutional setting

3.1 The Swedish pension system

The purpose of a retirement system is to generate income for people after retirement. By giving up a part of the income, and possible consumption, during the years of work, one hopes to gain insurance. An insurance of enough income to continue living a comfortable life also after retirement.

In January 1999, the reformed Swedish pension system was introduced and was fully implemented in 2003. One reason for the reform was to make the pension system fairer (Proposition 1993/94:250). Going from a system based on defined benefit (DB), where the pensions were based on how high your salary was, to base it on defined contribution (DC), how much money you have contributed to the system. However, the system was mainly reformed to become more financially stable, meaning a system that could better withstand and follow the economic and demographic change.

The demographic challenge is that we have an aging population. The proportion of people contributing to and withdrawing from the pension system is shifting. More people might need the support, while less can contribute. The reformed system was built to follow this change from a cost perspective. If the amount paid into the system becomes more than what is withdrawn, a break would be activated and lower the pensions paid out until the pension system is in balance again. From the benefit perspective, they relied on people's ability to decide. They did put a lot of faith in that people would choose to work longer and retire later to increase their pension.

The Swedish retirement system is mainly a two-pillar system containing public and occupational pensions. The public pension is the central part, and the one most people rely on. It is based on a person's taxable income throughout his life, where 18.5 percent is deducted from the yearly income to the public pension system. The public pension contains two parts. The first part of the public pension, and the most substantial part (16 percent of the 18.5 percent), is a pay-as-you-go system (PAYG), which means that a person's contribution is directly paid out to the pensioners. The contribution is then booked on the individual's account with the expectation that the next generations will pay it. It is not funded, meaning there is no actual money saved on the individual's account regarding this part. It instead relies on transfers between generations to back it up.

The expected amount that a person will receive during retirement is mainly based on how much has been contributed, where the number of years a person has worked is essential, and the general life expectancy. This is then adjusted, so the person receives a higher monthly pension at the beginning of retirement. The monthly pension then decreases with a specific rate. As the life expectancy at age 65 has increased, the number of years a person will have to distribute the pension wealth over has increased too. An effective way to increase the expected monthly pension would be to work longer and retire later, as it increases the contribution and simultaneously decreases the expected number of years the pension needs to provide for.

The second pillar is the occupational pension, a supplement to the public pension. Around 96 to 97 percent of employees in Sweden get provisions for an occupational pension (ISF, 2018). It is not only common to have an occupational pension, but it has also become a more significant part of the total pension for many. It is now around 28 percent of the total pension and will likely keep increasing (Swedish Pension Agency, 2021).

In Sweden, there are mainly four substantial occupational pension schemes that are all based on agreements between labor unions and employer associations. Two are for workers in the private sector and are divided up into blue- respectively white-collar workers. The other two are for people either employed by the municipality and the region or people employed by the state. A person can have more than one occupational pension if he has had multiple employments with other occupational agreements.

The amount contributed to these schemes is between 4,5 to 6 percent of the salary depending on which scheme the employer belongs to. For people with salaries above the threshold for contribution to the public pension, the contribution rate for the occupational pension can be higher; this rate is typically around 30 percent of the salary and makes the occupational pension more vital for high-income earners.

3.2 The occupations pension for the municipality and regional workers

The occupational pension scheme in focus in this thesis is KAP-KL, which belongs to employees of the municipal and regional sectors. KAP-KL was introduced in 2006 and replaced an earlier occupational pension agreement. Since 2014 KAP-KL only includes municipality and regional workers born before 1985. Those born after 1985 belong to the

AKAP-KL agreement, which was introduced in 2014. KAP-KL will be the only agreement of interest here, as people born in 1985 and after have not started withdrawing their pension.

KAP-KL has two parts, one is a defined benefit (DB), and the other one is a defined contribution (DC). Not everyone in KAP-KL is entitled to the DB KAP-KL; only those with a salary above 7,5 income bases are.[3] The income for this part is then calculated as a rate of the salary one has in the final years of employment. The employer is responsible for the DB KAP-KL, and it gets paid out at retirement.

In contrast to the DB KAP-KL, everyone in KAP-KL is entitled to the DC KAP-KL. It can be earned from age 21, and the contribution rate is 4,5 % of the salary. The DC KAP-KL is a funded system where the pension wealth is invested and taken care of by a pension company. From the age of 55, it is possible to apply to withdraw the pension income from the DC KAP-KL part. The withdrawal options are either to withdraw it in a fixed term, ranging from 5 to 20 years, or as an annuity. If the occupational pension has not been withdrawn before age 67, it will automatically be paid out as an annuity. This "automatic payout age" changed in 2018 from 65 to 67, meaning that if you wished to withdraw the pension at age 65, you had to apply.

3.3   The retirement age

The Swedish pension system does not have an official retirement age. In the public pension, you can start to take it out at the age of 62, and you can collect pension wealth for as long as you work. Most occupational pensions can be withdrawn from the age of 55, except for government works occupational pension, which can be taken out from 61. Most people have and are still taking out their public pension at age 65. However, the withdrawal age has spread out. From the start of the reformed pension system, it has gone from around 80 % to around 50 % that start to withdraw the public pension at the age of 65 (Swedish Pension Agency, 2021). A similar pattern for the withdrawal age can be seen for the occupational pension. More and more people are taking it out before or after 65, but most people still take it out at 65. In 2018 it was around 66% that took out their occupational pension at the age of 65 (AMF, 2018).

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[3] In 2018 people with a monthly salary of 39 063 SEK or more was entitled to DB KAP-KL pension income.

The Swedish Pension Agency estimates that the combination of working one more year and at the same time withdrawing the public pension one year later would increase the public pension income at retirement by 7 to 8 percent (Swedish Pension Agency, 2021). For the occupational pension, it is usually not as beneficial to continue working as it does not provide additional pension wealth, but later withdrawal does have a positive effect on the retirement income.

Similar to the findings of Seibold (2022), there are significant spikes at age 65 also in Sweden. Even do the retirement age in Sweden is not as fixed to the age of 65 as it used to be, it is still used as a reference age in many ways. For most occupational pension agreements, the retirement age was set to 65, which is why the automatic payout has been set to that age.

Empirical framework

The definition of timing of retirement is not clearly defined. It is common among economists to either refer to it when a person starts to claim pension benefits or the time a person exits the labor market. In many situations, there is a transition time combined with withdrawing some pension and working fewer hours. In this thesis, I will simplify by not extinguishing between fully retired and partly retired. However, I will investigate the influence of the default option on both the timing of withdrawal and the timing of exiting the labor market.

This thesis, therefore, consists of two hypotheses. The first one is that the default option of the automatic payout influences people's timing of the occupational pension withdrawal. If the default option was used to nudge people to retire at age 65, then changing the default option from age 65 to 67 should decrease the number of people withdrawing their pension at age 65 and increase the number of people withdrawing it later.

The second hypothesis is that the default option of the automatic payout can influence people to stop working earlier than if they did not receive the automatic payout. The automatic payout can influence the decision by signaling that it is time to retire or by increasing the perceived opportunity cost of working. Similar to the first hypothesis, a change of the default option from age 65 to 67 should positively affect retirement. In this case, the change should increase the number of people working after age 65 compared to if the default option was not changed.

Because of the data limitations, the first hypothesis will be analyzed and discussed with the help of data from a report released by AMF, which is one of the largest pension companies managing occupational wealth. This analysis and discussion will take place in the next chapter.

The second hypothesis, which is the main focus of this thesis, will be tested by conducting a difference-in-difference analysis. This chapter will focus on the difference-in-difference method and the data I will use for this study.

4.1 Method and identification strategy

The difference-in-difference method is a commonly used approach in economic research. The reason for its popularity is that it is a well-suited strategy to capture the

causal effects of a change in the economic environment or government policy. The most straightforward difference-in-difference approach includes two groups and two time periods. One group is affected by the change in the economic environment or the government policy and is called the treated group (T). The second group should work as a control group (C). As to how the treated group would have developed if it had not been treated, it is therefore essential that this group is not affected by the change.

The two time periods should be divided so that one time period represents the time before (B) the treatment occurs, and the second time represents the time after (A) the treatment has occurred.

The estimation will compare the change between the treatment and control groups between the two time periods. The change between the two time periods, before and after, for the treated group should capture the effect of the change in the economic environment or the government policy. However, other external effects might influence the treatment group's development between the two time periods. The change for the untreated group, the control group, should therefore capture all external effects and not the effect of the change. Subtracting the change for the control group out of the change of the treated group should adjust for the external effects and result in only the effect of the change of interest. Equation 1 represents the difference-in-difference method and how it captures the difference-in-difference effect (DD).

$$DD = (T_B - T_A) - (C_B - C_A) \tag{1}$$

In this thesis difference-in-difference setup, the municipal and regional employees will be considered the treated group as they have the KAP-KL agreement and are thereby affected by the change of automatic payout age. The control group will be the government employees. Government employees have a separate occupational pension agreement, PA16, where the automatic payout age was 65 and did not change until October 2020. This makes it possible to use the government employees as a control group until 2019, but not further, as the control group was treated too in 2020.

A limitation to the identification strategy that is important to note is that individuals can have multiple occupation pension plans in Sweden. Which occupational pension plan a person belongs to depends on the person's employer. If an individual has had more than one employer and those employers have been connected to different occupational

agreements, it would result in the individual having multiple occupational pension agreements. It is, therefore, possible that an individual has both a KAP-KL agreement and a PA16 agreement, which opens the possibility that there is no difference between a treated individual and an untreated individual. This is, of course, a big potential problem, but not a crucial one.

The problem might be that some people in the treated group, the group that should not receive an automatic payout at age 65, still receive an automatic payout from another occupational pension plan. This would mean that the potential nudge to retire at age 65 could still have been there for them. The "signaling effect" of receiving the occupational pension would have been there, but the perceived opportunity cost of working should still have been impacted. However, it could be that some individuals only worked their last working years in the municipal and regional sector but most of the years in the government sector. For those people, changing the automatic payout age for KAP-KL could only have had a negligible impact on their perceived opportunity cost of working.

More problematically, this could be the same for individuals in the untreated group too. No one in the untreated group can be classified as fully treated as they all have at least one part of the occupational pension within the PA16 agreement, where the automatic payout age was still 65 in 2018. The problem might be that there is no difference between the individuals in the treated group and those in the control group. The assumption is, though, that for most people, their largest occupational pension is the one connected to the sector they worked in their final years of working life.

4.2   Data and variables of interest

I will use aggregated data from Statistic Sweden, including the total number of employees in the municipality and regional sectors from 2014 to 2019. To be accounted as an employee, the individual would need to have received a salary during the year. The data set is divided into subgroups based on their age and profession. The profession groups follow the four numbered Swedish standard occupational classification (SSYK 2012). I then manually transformed the subgroups into two numbered occupational classifications and merged the two data sets. This data set of the municipal and regional employees will act as the treated group in the difference-in-difference analysis. The control group of government employees is contained similarly, except that it is not

merged with a second sector group. Figure 1 illustrates the average number of employees in the profession-groups in age 65–66. See Table A1 in the Appendix for an overview of the different profession-groups.

Figure 1   Average number of employees in different profession-groups aged 65–66.
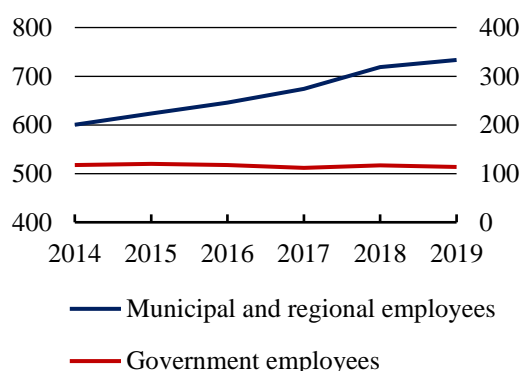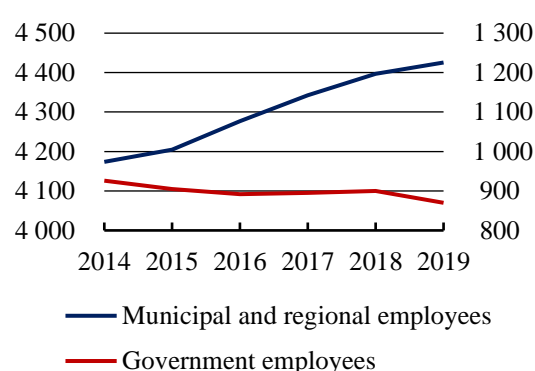
Figure 2   Average number of employees in different profession-groups aged 60–66.

Source: Statistics Sweden and own calculations.

An essential assumption in a difference-in-difference analysis is that the trends before the treatment are parallel. However, as shown in Figure 1, this is not true. The municipal and regional sector has had a positive trend, while the trend for the government sector has been flat. The purpose of the control group is to represent the treatment group's change in a scenario where the treated group would not undergo treatment. With the number of employees as a variable, the difference-in-difference analysis would indicate a positive effect on the number of municipal and regional employees after the change in payout age. However, the positive effect could be due to the difference in trends. It would therefore not be appropriate to use the number of government employees as a control group. To adjust for the difference in the trends of the number of employees in age 65–66 between the sectors, I will take into account the more general trend in the number of employees of people in old ages. In Figure 2, the trend for the number of employees between the ages of 60–66 can be seen.

It is not only a difference in the trends for the age groups 65–66 but a similar difference for a broader age group 60–66. It implies a general difference in the trends between the municipal and regional sectors and the government sector. By dividing the number of employees in each profession group aged 65–66 with the same profession group but for the ages of 60–66, I will adjust for the general sector trend. The division results in the share of employees aged 65–66 out of the total number of employees aged 60–66 for each profession group. This will be the final variable of interest in this thesis and can be seen in Figure 3.

Figure 3   The average share of employees aged 65–66 out of employees aged 60–66 for the different profession-groups.
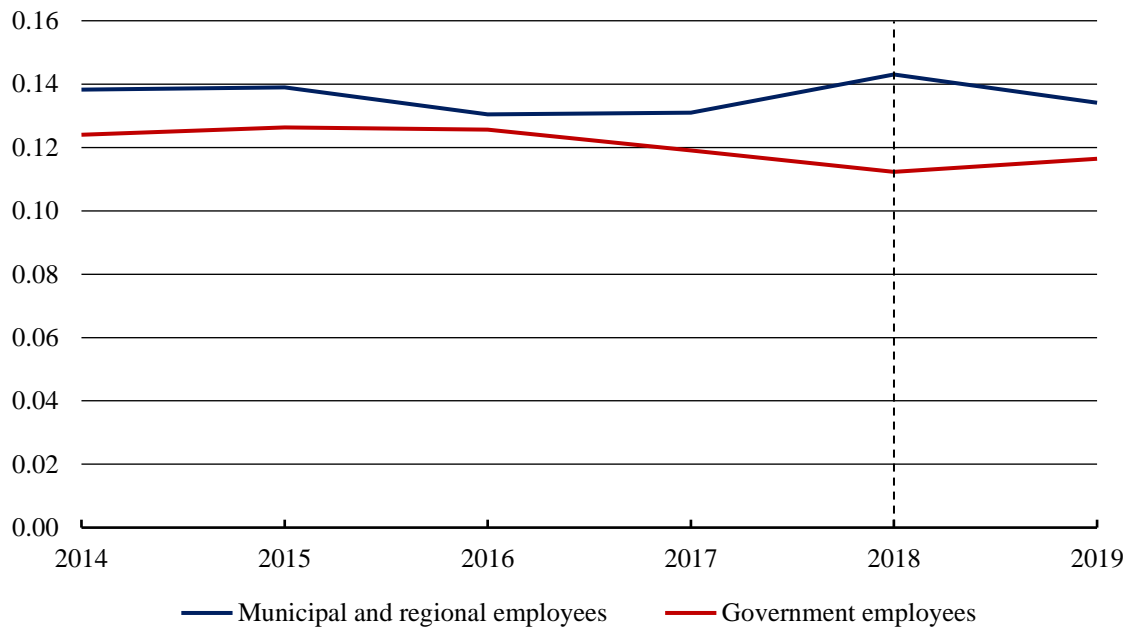
Source: Statistics Sweden and own calculations.

In Figure 3, the vertical line represents the timing of the treatment. This is because the KAP-KL agreement has a different automatic payout age after 2017. It now looks as if the trend lines before the treatment are parallel, providing visual evidence that the parallel trend assumption is satisfied. Comparing the share of employees aged 65–66 and not the absolute number of employees is, therefore, a more appropriate variable for the difference-in-difference analysis.

Looking at Figure 3, what is interesting is that after 2017 in the year 2018, when the treatment has occurred, there is a small jump for the treated group while the control group stays flat or slightly negative. This indicates that there might have been an effect on the share of employees aged 65–66 within the municipality and regional sector from increasing the automatic payout age. However, it is far from a huge jump, only around 1 to 2 percentage points, and it does look to have come back down in 2019.

4.3   Descriptive Statistics

The entire data set contains 360 observations for the years 2014–2019. Each year there are 32 observations for the municipal and regional employees represented by different profession-group. Four less profession-groups were used in the sample for the government employees, resulting in 28 observations each year.

Table 1   Descriptive Statistics of the total data set.

VARIABLE	Mean	St. Dev.	Min	Max
The number of employees in different profession-groups between the ages of 65–66	409	1,124	0	7,780
The number of employees in different profession-groups between the ages of 60–66.	2,714	7,101	40	48,210
The share of employees in age 65–66 out of employees in age 60–66	0.129	0.050	0.0000	0.250
Number of profession groups for municipal and regional employees	32			
Number of profession-groups for government employees	28			
Total number of observations	360			

Source: Statistics Sweden and own calculations.

Table 1 contains descriptive statistics of this thesis's primary variable, the share of employees aged 65–66 out of employees aged 60–66. The average share of employees aged 65–66 out of employees within 60–66 is 12.9 percent.

Table 2   Descriptive statistics for the municipality and regional employees and government employees between 2014–2019.

Variable	Treatment (M&R)		Control (G)	
	Pre	Post	Pre	Post
The share of employees aged 65–66 out of employees aged 60–66	0.135	0.139	0.124	0.114
The share of employees aged 65–66 out of employees aged 60–66 one year before and after treatment (year 2017 and 2018)	0.131	0.143	0.119	0.112
Number of observations	128	64	112	56
Number of observations one year before and after treatment (year 2017 and 2018)	32	32	28	28

Source: Statistics Sweden and own calculations.

Table 2 shows descriptive statistics for the treatment and control groups before and after the timing of treatment. The treatment group and control group share many of the profession groups, 26 out of the 32 profession groups for the municipal and regional employees also exist in the data set of profession groups for the government employees. Only two profession-groups for government employees do not exist for the municipality and regional employees.

Using aggregate data makes it difficult to identify characteristics like gender, income level, pension wealth, and educational level. Not only would it be interesting to see how these characteristics could impact the potential effect, but it also makes it more challenging to validate the assumption that the treatment group and control group do not differ from each other in any significant way. Looking at other aggregate data from Statistic Sweden shows that the average monthly salary among government employees is higher, especially compared to employees of the municipalities. A higher salary and potentially a more considerable accumulated pension wealth could impact the retirement decision. Figure 3 shows that the share of government employees aged 65–66 is lower than for the municipal and regional sectors. However, there is no reason to believe this

should vary over time. This effect should, therefore, be smooth before and after the year of treatment and not impact the outcome of the difference-in-difference.

Another potential difference between the treatment and control groups could be that the work among the municipal and regional employees is sometimes more physically demanding than for the government workers. Factors such as health problems and shorter life expectancy have been seen to influence the withdrawal decision and are likely to be a significant explanation for labor force participation (Hagen, 2015 & 2017). For example, the number of workers in the healthcare profession differs a lot between the two groups. On average, there were 6 650 healthcare workers aged 65–66 between the years 2014–2019 employed by the municipality or the region, but in the government sector, there were only around 20 workers on average. It would not be a surprise if the yearly change in the number of healthcare employees for the municipal and regional sectors would be more significant than for the government sector, which would impact the average number of employees for the municipal and regional sectors more than for the government sector. Using the share of employees in age 65–66 and not the absolute number does solve a lot of this problem as a percentage change would be expected to be more similar in size for both groups, and the change of one profession group does not impact the total result as much.

There could be a possibility that gender plays a role into what extent a nudge can influence a person's decision. According to aggregate data from Statistic Sweden, it is more common for women to work in the municipal and regional sectors than men. For the government sector it is more evenly. In the study by Hagen et al. (2022), they find women to be more responsive to a nudge in the withdrawal decision than men. If more women were working in municipal and regional sectors, it could enhance the potential effect of changing the default option compared to if men and women were equally represented.

4.4   Econometric modeling

I will use a standard difference-in-difference regression model to estimate the treatment effect. The dependent variable will be the share of employees aged 65–66 out of employees aged 60–66, denoted *Y*. For employees in profession group *p* employed by sector *s* in year *t*, the regression equation will look like this:

$$Y_{p,t,s} = \alpha + \beta(M\&R_s * Post_t) + \gamma M\&R_t + \delta Post_t + \varepsilon_{p,t,s} \qquad (2)$$

Where *M&R* represents a dummy variable that takes the value one if the employees in the profession group are employed by the municipality or the region and 0 otherwise, the γ coefficient will capture the general difference between the municipal and regional sector and the government sector. The second explanatory variable, *Post,* is also a dummy variable, and it takes the value of one for the years after treatment (2018–2019) and 0 for the years before (2014–2017). The δ coefficient will here capture the time difference between the two time periods. Finally, it is the β coefficient which is the difference-in-difference coefficient and the parameter of most interest in this regression model. The β coefficient will capture the average effect of being treated.

Result and discussion

5.1 Timing of retirement

The result of the average treatment effect estimated with the difference-in-difference regression is presented in Table 3.

Table 3   Result of the difference-in-difference estimation.

Variable	Mean	St. Dev.	p-value
Average treatment effect	0.013	0.011	0.232
Average treatment effect one year before and after treatment	0.019	0.018	0.306

Source: Statistics Sweden and own calculations.

Surprisingly, the result does not confirm the hypothesis. The estimated average treatment effect is insignificant, meaning that no significant change has been found in the average labor supply for the treated group. According to the difference-in-difference estimation, changing the automatic default option did not increase the labor supply of workers aged 65–66 in the municipal and regional sectors.

The number 0.013 in table 3 can be interpreted as a positive effect of 1.3 percentage points in the average share of employees aged 65–66 out of employees aged 60–66 for different profession groups from changing the default option. However, as mentioned, this result is not significant. The p-value is above the significant threshold level of 0.05, meaning no effect was observed.

Similarly, when restricting the observations to only one year before and after the treatment to estimate the initial effect, the result is insignificant, and the insignificant estimation is only slightly higher.

The difference-in-difference estimation demonstrates that the labor supply of older workers was not easily influenced by a change in the automatic payout age. This suggests that the automatic payout option might not have been a nudge to retire as was believed. It also points to people being more rational about their retirement decision than their saving decision.

It is impossible from this study to draw any conclusion on why the automatic payout did not nudge people as expected. The hypothesis was that the automatic payout would work as a signal for retirement and/or affect people's perceived opportunity cost of

working. As this is the first study of how the default option can work as a nudge for retirement decisions, the only assumption that can be made here is that the automatic payout was not signaling people to retire.

Regarding the perceived opportunity cost, Hagen et al. (2022) did find evidence that higher pension income could influence the labor supply. In their study, people chose a fixed-term withdrawal option instead of annuities, which increased their pension income in the short term. In this thesis, the pension income would have decreased because people did not receive the automatic payout. No additional income should have affected their perceived opportunity cost of working and resulted in more people continuing working after 65. However, the difference in results compared to Hagen et al. could be due to different effects on the income level. Going from annuity to a 5-year fixed term withdrawal could have impacted the income level more than going from an annuity withdrawal to no withdrawal. A higher income should then have resulted in a more significant effect on the perceived opportunity cost for the individuals in the study by Hagen et al.

As mentioned before, there could be a problem with some individuals having more than one occupational pension, which might have resulted in no difference between some individuals in the treated and untreated groups. Consequently, this can have decreased the estimation of the potential average treatment effect.

5.2   Timing of withdrawal

As mentioned before, there are two hypotheses in this thesis. The central hypothesis that has been discussed, if changing the default option would increase the retirement age, could depend on if people in the first step act irrationally regarding the timing of their pension withdrawal. Starting to withdraw the occupational pension does impact the monthly income and could affect the perceived opportunity cost of working. Previous research has shown that people frequently behave irrationally in similar decisions regarding their pensions. It is, therefore, possible that they also do so in the withdrawal decision.

The first hypothesis is that the default option of automatic payout does influence people's decisions in the timing of the occupational pension withdrawal. Table 4 shows the distribution of people choosing a fixed-term withdrawal option instead of annuities.

The data is collected from a report by AMF, one of Sweden's most prominent pension companies (AMF, 2018).

Table 4   The distribution of fixed-term withdrawals for the four most noteworthy occupational pension agreements in Sweden at the pension company AMF.

	Share of people choosing a fixed-term option over annuities			
Year	SAF-LO	ITP/ITPK	KAP-KL/AKAP-KL	PA16
2012	32 %	72 %	43 %	3 %
2013	36 %	60 %	45 %	5 %
2014	41 %	58 %	44 %	7 %
2015	43 %	57 %	48 %	7 %
2016	49 %	59 %	49 %	9 %
2017	54 %	58 %	50 %	7 %
2018	56 %	60 %	68 %	7 %

Source: AMF.

The reason why looking at how people withdraw their occupational pension is relevant when discussing the timing of the withdrawal is that the default option for the withdrawal is always annuitized. The exciting part in Table 4 is that the distribution of people choosing a fixed-term for KAP-KL jumped in 2018 from 50 to 68 percent. The likely reason for this, as AMF also notes, is the change of the automatic payout age.

There could be two explanations for this. Firstly, research has shown that when people make an active decision, unreasonable many tend to choose a fixed-term withdrawal option (Benartzi et al., 2011). For people with the SAF-LO or KAP-KL that applied to withdraw their occupational pension before age 65, more than 80 percent have chosen a fixed-term option (Hagen, 2017). The change of the automatic payout age to 67 forced people to make an active decision and apply if they wanted to receive their pension at the age of 65. It is, therefore, likely that many of those that applied to withdraw it at age 65 did choose a fixed-term option, increasing the total number of people choosing a fixed-term option and resulting in a higher share of people choosing a fixed-term option.

Secondly, if some people allowed themselves to get nudged before and received the automatic payout at age 65, even if they did not want it or minded being without it, they would have received it as an annuity. Removing the automatic payout would have resulted in these people not withdrawing it at all and, thereby, fewer people withdrawing it as an

annuity at age 65. This would have changed the proportion between fixed-term and annuities, increasing the rate of people withdrawing it in a fixed-term.

Based on the data from AMF, I can argue that something happened with people's withdrawal decisions when the automatic payout age changed. Unfortunately, I cannot say exactly how it affected the decision. I cannot be sure that it made people withdraw their occupational pension later, even though it could have been so.

It can be necessary for the hypothesis of the labor supply to know if it is mainly due to more people choosing fixed-term or fewer people withdrawing it as annuities, as it would likely have opposite effects on how people perceive the opportunity cost of working. The former would result in a higher monthly income and possible consumption, increasing the perceived opportunity cost of working. Contrary, the latter would result in no occupational income during the month, which would keep the perceived opportunity cost of working at the same level. With no change in the perceived opportunity cost of working, it is more likely that the individual would not have stopped working than if they received the extra income in the form of an occupational pension.

5.3   Discussion

The result from the difference-in-difference estimation implies that people are more rational about their retirement decision than their saving decision. However, there are some possible explanations as to why the change of the default option did not influence the labor supply that is worth discussing.

An explanation could be that removing the "signaling effect" and increasing the perceived opportunity cost of working could have canceled each other out. Removing the automatic payout at age 65 would have influenced people to keep working as it no longer signaled to retire at age 65. Contradictory, if the change of automatic payout age increased the number of people choosing a fixed-term option and how they perceived the opportunity cost of working, it would have influenced people to stop working at the age of 65. Therefore, these two consequences could have canceled each other out and resulted in no change in older workers' labor supply.

Another explanation could be that people did not withdraw their occupational pension at age 65 and still retired from work. The loss of the occupational pension might

not have affected people financially to a large extent; therefore, they did not mind being without it at the beginning of retirement.

It could also be that some behavioral factors, such as social norms and reference ages, cannot be changed from one year to another. Changing the default option might not have removed a nudge that would have had an initial effect on the retirement age but instead, have a more long-term effect on how people think about the timing of retirement.

Conclusion

This thesis investigates how a default option can influence the retirement decision. By using aggregate data, I conduct a difference-in-difference study to estimate the impact of changing the automatic payout age from 65 to 67 on the timing of exiting the labor market. I also use data from a report by the pension company AMF to discuss the effect on the timing of the occupational pension withdrawal.

The result of the thesis does not verify the hypotheses that changing the automatic payout age would increase the labor supply of workers aged 65–66 and the withdrawal age. No significant effect can be seen on the labor supply by older workers. However, this thesis has not estimated the withdrawal timing, but supporting data suggest that the automatic payout influenced the withdrawal decision. Unfortunately, no answer on if the default option actually influenced "when" people withdrew and not only "how" can be provided here.

It is still unclear if people are generally rational regarding their retirement timing. The findings in this thesis indicate that they might be more rational regarding when to exit the labor market than what might have been expected.

For policymakers, the result should hesitate them from intervening too much in people's retirement decisions. The reason we have not seen the retirement age increase similarly to the life expectancy could very well be because people willingly give up future consumption to increase leisure time, and it could continue until an equilibrium is found. Policy changes meant to increase the retirement age could, therefore, temper the natural equilibrium and be undesired by individuals.

For future research, a natural step would be to investigate whether default options can influence individuals' decisions on when to withdraw their pensions. It would be interesting because it could provide a better picture of how the perceived opportunity cost of working might have changed, which could be an essential step in understanding the decision on when to exit the labor market.

As this is an early study of the default options role in the retirement decision, I would encourage more research in this topic. Using a longer time frame and different control groups could provide another result.

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Appendix

Table A1   Average number of employees in each profession-group for the government sector and municipal and regional sector aged 65–66 between years 2014–2019.

SSYK 12 code	Profession-group	Government sector	Municipal and regional sector
11	Politicians, CEOs and senior officials, etc.	17	48
12	Managers in finance, personnel, marketing and sales as well as other administration, etc.	38	58
13	Managers in IT, logistics, R&D, real estate companies, construction and engineering operations and manufacturing, etc.	3	42
14	Managers in education	-	243
15	Managers in health care and other community services	97	393
21	Occupations with requirements for in-depth university competence in natural sciences and technology	125	138
22	Occupations with requirements for in-depth university competence in health and medical care	82	3,563
23	Occupations with requirements for in-depth university competence in education	905	4,795
24	Professions with requirements for in-depth university competence in finance and administration	413	928
25	Professions with requirements for in-depth university competence in finance and administration	73	77
26	Professions with requirements for in-depth university competence in law, culture and social work, etc.	190	710
31	Occupations with requirements for university competence or the equivalent in technology	43	160
32	Occupations with requirements for university education or equivalent in health and medical care and laboratory	57	333
33	Occupations with requirements for university education or equivalent in finance and administration	568	185
34	Occupations with requirements for university education or equivalent in culture, health care and social work	18	255
35	Occupations with requirements for university education or equivalent in IT, sound and lighting technology, etc.	22	42
41	Office assistants and secretaries	102	1,063
42	Customer service occupations	28	68
43	Occupations in materials management, etc.	5	13
44	Other office and customer service occupations	17	94
51	Service professions	13	532
53	Care professions	17	6,657
54	Other guarding and security professions	83	28
61	Agricultural and horticultural occupations	-	63
71	Building and construction professions	-	45
72	Metalworking and repair professions	-	10
73	Fine mechanics, graphics and arts and crafts professions	7	-

SSYK 12 code	Profession-group	Government sector	Municipal and regional sector
74	Installation and service professions in electricity and electronics	-	5
81	Process and machine operators	-	108
83	Transport and machine driver professions	12	53
91	Cleaning professions	15	232
94	Fast food staff, kitchen and restaurant assistants, etc.	7	310
96	Recycling workers, newspaper distributors and other service workers	38	53
00	Other professions	260	-