MASTER THESIS

Closing Early Retirement Routes for Younger Female Partners

Evidence From The Abolishment of The State Pension Partner Allowance in The Netherlands

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July 1, 2022

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Abstract – This study examines whether abolishing the state pension partner allowance in the Dutch pension system in 2015 contributed to the closing of early retirement routes for younger female partners. Until 2015, people with a younger partner who reached the state pension age got a partner allowance if their younger partner earned little or no income. The partner allowance can be seen as a stimulus to push retirement forward. By using a Differences-in-Differences design, this study estimates the effect of the pension reform on retirement decision-making, labour supply and training behaviour. The findings show no evidence that the younger female partners extended their retirement and remained active in the labour market. When focusing on the age gap and income, the findings only show a significant negative effect of the reform on labour supply for younger female partners with little or no income. Therefore, this study shows limited evidence for an effect of this pension reform and no evidence for a contribution to closing early retirement routes for younger female partners.

Key words: pension reforms, partner allowance, ageing, complementarity of leisure

1. Introduction

The ageing population affects all OECD countries and puts pressure on the pension systems. To ensure access to generous pension provisions, countries' public policies play an essential role in guaranteeing the sustainability of a pension system. Therefore, many countries have reformed their pension systems. The main focus of these reforms is on increasing the state pension age and closing early routes into retirement (OECD, 2003; IMF, 2020).

In the Netherlands, the government also adapted their pension system. One measure is the abolishment of the state pension partner allowance in 2015. Before 2015, individuals who reached the state pension age with a younger partner, with no or little income, received an allowance. This partner allowance (PA) reached its maximum of 50% of the minimum wage (in 2015, this was around 750 euros per month) (Tyros, van Ewijk & Stevens, 2021). Due to women's increasing labour market participation and the increasing importance of the occupational pension, the government decided to abolish this allowance (Doove et al., 2019).

In this study, I examined whether abolishing the state pension PA contributed to closing early retirement routes for younger female partners. The gender gap in labour force participation

has narrowed (van Thor et al., 2018). However, there is an underutilisation of the elderly in the labour market (FD, 2017). With an ageing population, there is a need to increase the labour supply among the elderly, mainly women (Stigter & Wilthagen, 2022). If the labour market participation of the elderly does not change, the Dutch labour force will shrink (CBS, 2015). Abolishing the PA may not only have reduced public spending but also may have kept younger female partners longer in the labour market. Therefore, this study gives insight into how much a pension reform can contribute to closing early retirement routes.

The state pension PA was a considerable amount of income. Mainly women with little or no income and a large age gap with an older partner, missing out on a substantial amount of income due to the abolition. Therefore, this study paid particular attention to how the age gap and the income of the younger female partner affect the effect of the policy change on the different outcomes. With increasingly dual-earner couples, the retirement decision has shifted to a collaborative decision. By evaluating the abolishment of the PA with a focus on different couple characteristics, we get more insight into which mechanisms are at stake regarding couples' retirement decision-making.

This study examined the effect of this policy change by conducting a differences-in-differences (DiD) analysis. This quasi-experimental design allowed to compare a treatment and control group before and after the policy change. The control group consisted of younger female partners of individuals who reached their state pension in the five years before the abolishment of the PA and the treatment group of younger female partners of individuals who reached their state pension in the five years after the reform. To measure the effectiveness of the pension reform on closing early retirement routes, I looked at the retirement decision, labour supply and training behaviour. The data used for these analyses come from the LISS panel. This panel consists of longitudinal survey data of around 5000 Dutch households.

This study contributes to the extensive literature on pension systems and retirement decisions in developed countries. Many of this existing empirical evidence focuses on the individual, while this study focuses on females in couples. With women's increasing labour market participation, it is relevant to study the dynamics in couples and how this affects retirement decision-making.

The abolishment of the Dutch PA has been studied before. Doove et al. (2019) and Garcia and van Soest (2021) found empirical evidence that the PA induced early retirement for younger

female partners. Tyros et al. (2021), who looked at the response in anticipation of the policy change, found that households did not respond in anticipation of the abolishment of the PA. However, these studies used administrative microdata (Tyros et al., 2021; Doove et al., 2019; Garcia & van Soest, 2021). By using survey data, I was able to observe more mechanisms. None of the previous studies paid attention to the training behaviour. At the same time, participation in training might indicate that someone is planning to remain active in the labour market and wants to keep employability high (Montizaan, Cövers & de Grip, 2010). Also, the retirement decision and labour supply could be studied more in-depth by the variables measured in the survey data.

In general, the findings show limited evidence for an effect of abolishing the PA on either the retirement decision, labour supply or training behaviour. The separate analyses for younger female partners with a more significant age gap did not show an effect. Only when focusing on people with little or no income, the findings show a significant negative effect of abolishing the PA on labour supply. The labour supply decreased. Therefore, this study shows limited evidence for an effect of abolishing the Dutch PA on the different outcomes. The allowance did not contribute to closing early retirement routes for younger female partners.

The structure of this paper is as follows. Section 2 contains the institutional background on the Dutch pension system and partner allowance. Section 3 discusses the theory of retirement decision-making and empirical evidence. Section 4 provides the data and methodology. Second 5 presents the findings, and section 6 discusses these findings and consists of a conclusion.

2. Institutional Background

- 2.1 The Dutch pension system

The Dutch pension system consists of three pillars: a state pension under the General Old Age Pension Act (AOW), an occupational pension that requires employees to build up pension through their employers and an individual supplementary pension (DNB, n.d.).

For the first pillar, individuals collect 2 per cent of the state pension per year of residence in the Netherlands. This rule implies that someone must have lived at least 50 years in the Netherlands before reaching the state pension age to receive the full state pension (Rijksoverheid, n.d.). Depending on if someone lives with a partner, the retired person gets either 70% of the social minimum or 100% of the social minimum together with his or her retired partner. Individuals are

only eligible for the state pension if he or she reaches the specific birth-cohort retirement age. Since the introduction of the first pillar in 1957, the state pension age was 65 until recently. Since 2013 the state pension age has increased gradually (*Table 1*). Currently, the state pension age is connected to life expectancy, meaning that if life expectancy increases, the state pension age also increases (Atav et al., 2019). The partner allowance was also part of the first pillar until its abolishment in 2015. For Dutch women, the total pension income still consists, on average, of more than 60 per cent of the state pension (Kali et al., 2021).

The second pillar complements the first pillar and is the occupational pension. The height of these savings depends on individuals' income and the pension arrangements in a firm or sector. The employees and the employers contribute to a firm or sector pension fund by paying a monthly premium. Recently the Dutch government also adopted a reform in this second pillar. Before 2006 workers could, several years before reaching the state pension age, opt-out for an early retirement scheme (VUT and pre-retirement). However, individuals who reached the state pension age before 2015 were still eligible for a compensation scheme (Atav et al., 2019).

The third pillar consists of individuals saving for retirement. There are various options for this in the form of pension plans. The Dutch government has made it fiscally attractive to save extra for the pension through this third pillar (Atav et al., 2019; Rijksoverheid, n.d.).

- 2.2 The abolishment of the partner allowance

The state pension allowance had the aim to prevent households from poverty after retirement. People who reached the state pension age could receive an allowance on top of their state pension if their partner did not yet reach the state pension age and had little or no income (Rijksoverheid, n.d.). However, in 1995 the Dutch government announced to abolish the partner allowance by 2015. Due to this early announcement, the elderly had a long time to prepare for the policy change (Atav et al., 2019; Tyros et al., 2021).

The partner allowance reached a maximum of 50% of the minimum wage, around €750 monthly in 2015. The allowance reduces if the younger partner has an income of more than €258,75. Above this amount, two-thirds of the income is deducted from the allowance. When younger partners earn more than €1570,79 gross per month, their older partner is not eligible for the partner allowance. An individual is also not eligible for the allowance if the younger partner has other income higher than €874,69 per month. Finally, if the combined income is higher than

€874,69 gross per month, the supplement is reduced by a maximum of 10% (Sociale Verzekeringsbank, n.d.).

Table 1: Overview of the birth cohorts and the state pension age and eligibility of the partner allowance.

Year of birth	State pension age	Partner allowance
1947	65 years	Available when their younger partner earns little or no income
1948	65 years and 1 month (Jan – Nov1948) 65 years and 2 months (Dec 1948)	Available when their younger partner earns little or no income
1949	65 years and 2 months (Jan – Oct 1949) 65 years and 3 months (Nov – Dec 1949)	Available when their younger partner earns little or no income
1950	65 years and 3 months (Jan – Sept 1950) 65 years and 6 months (Oct– Dec 1950)	No
1951	65 years and 6 months (Jan – June 1951) 65 years and 9 months (July – Dec1951)	No
1952	65 years and 9 months (Jan – Mar 1952) 66 years (Apr– Dec 1952)	No
1953	66 years and 4 months	No
1954	66 years and 4 months	No

Source: Dutch central government

3. Literature review

This section discusses the previous theory and empirical evidence on retirement decision-making and pension reforms. Further, based on the literature review, expectations are formulated for this study.

- 3.1 Theory

Theory suggests we can see the retirement decision as an optimisation problem. Individuals make decisions based on their lifetime utility and constraints by the institutional structure. When something changes, people re-evaluate their decisions (Boeri & van Ours, 2021). Implying that abolishing the PA puts an extra constraint on early retirement, and people would adjust their retirement decision.

The life-cycle model would predict that individuals would respond to the policy change by adapting their consumption and labour supply. This model of Ando and Modigliani (1963) states

that people behave and consume according to their discounted total lifetime income, also known as smoothening. When a pension reform negatively affects the individual, it forces someone to adjust their life cycle income or increase labour supply. On the other hand, literature on behavioural economics questions this assumption. People tend to focus on short-term benefits and underestimate future costs. This behaviour could lead to overconsumption today and insufficient savings and labour supply for the future income shock (Agnew, 2010).

Until recently, the body of literature on retirement decision-making only consisted of theory assuming that each individual in a household behaves as a single decision-maker maximising its utility. Therefore, Chiappori (1988) developed a structural collective model for labour supply and retirement decisions. The key assumption of this model is that in a multi-person household, members of the household have their own utility functions but collaborate in a bargaining process which generates a Pareto-efficient allocation for the household. This assumption implies that a younger partner's retirement decision also depends on the Pareto-efficient allocation of the household.

None of the previous literature pays attention to training behaviour when evaluating the retirement decision of individuals or couples after a pension reform. Nevertheless, human capital theory suggests that individuals participate more in training if early retirement routes are closed since the benefits of investing in training are reaped for a more extended period (Montizaan, Cövers & de Grip, 2010).

- 3.2 Empirical evidence

The empirical evidence on retirement decision-making and pension reforms also mainly focuses on the individual. However, several studies have already analysed the retirement decision of couples. Henkens et al. (2020) found empirical evidence showing that we can see the retirement decision to a certain extent as a household decision. This evidence counts for both dual-earner couples as well as non-dual earner couples. Michaud et al. (2020) studied couples' retirement by using the structural collective model of Chiappori (1988) on labour supply and retirement of partners with paid work. They found significant results for complementarities in both leisure and labour supply preferences. Besides this, they also found that the percentages of couples retiring simultaneously also depend strongly on budget opportunities. Further, the study of Atalay, Barrett and Simiski (2019) showed that it is relevant to study spousal behaviour when evaluating a pension

reform. They evaluated two Australian pension reforms that targeted the individual and found spillover effects in labour supply and the retirement decision that are symmetric by gender.

Previous studies already have been done on the abolishment of the Dutch PA. Doove et al. (2019) and Garcia & van Soest (2021) studied how couples dealt with their pension when the allowance was available for the younger partner. By using both a Regression Discontinuity Design (RDD) and the differences-in-differences (DiD) method, Doove et al. (2019) found significant effects of the abolishment of the PA on the income and labour market participation of female younger partners. Therefore, this study suggests those female younger partners of individuals who reach the state pension age and with a low income respond to the abolishment in their income and labour market participation by remaining active in the labour market. Garcia et al. (2021) found similar results. With the use of administrative microdata and hazards models, they found evidence which indicates that female younger partners' probabilities to exit from part-time employment into retirement close to the older partners' state pension age was higher with the availability of the partner allowance. In couples where the man works part-time and is the younger partner, the partner allowance did not affect the labour supply decisions.

Tyros et al. (2021) used the abolishment of the PA to study the effect of a change in future income in savings, labour supply and consumption. With administrative microdata, they conducted a difference-in-differences-in-differences analysis. They found no evidence that couples anticipate this policy change (a significant income shock). Although the long-term announcement period, couples did not adapt their behaviour before the abolishment of the partner supplement. A possible explanation is that people overestimate their pension benefits from the first pillar. Van Duijn et al. (2013) found empirical evidence that Dutch people expect higher retirement replacement rates than they receive. This behaviour is mainly caused by ignorance about pension institutions.

- 3.3 Expectations

The main research question in this study is whether the abolishment of the Dutch state pension PA contributed to the closing of early retirement routes for younger female partners. Based on the empirical evidence and the structural collective model, younger female partners are expected to make retirement decisions based on their own and older partner’s preferences (Chiappori, 1988; Henkens et al., 2002). Due to the complementarity of leisure, younger female partners’ preference for retirement increases as soon as their older partner retires. However, budget opportunities are

also crucial in retirement decisions (Michaud et al., 2020). The relevance of budget opportunities is also what the life-cycle model suggests (Ando & Modigliani, 1963). Therefore, I expect younger female partners to remain longer in the labour force and postpone retirement due to the abolishment of the PA.

This study also focuses on the labour supply and training behaviour. Although it can be expected that younger female partners participate longer in the labour market, I expect similar results as in the study of Tyros et al. (2021), in which younger partners do not anticipate with a higher labour supply before their older partner retires. Furthermore, this study will examine if people anticipate the policy change by investing in training. Since this study expects younger female partners to postpone retirement and remain active in the labour market, I expect the younger female partners to participate more in training based on the human capital theory (Montizaan, Cövers & de Grip, 2010).

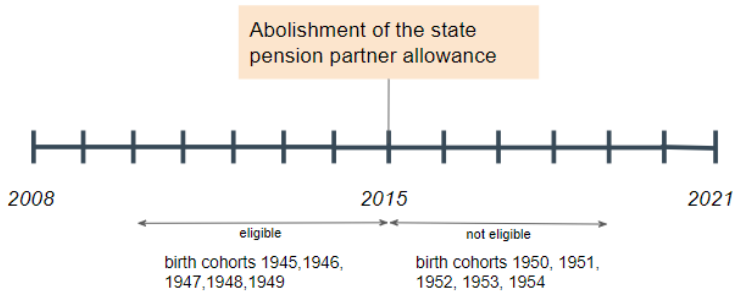
4. Methodology and data

- 4.1 Methodology

This study uses a DiD method to measure the effect of abolishing the state pension PA. The policy change allowed to use this quasi-experimental design. Other studies on the PA also used a quasi-experimental design (Doove et al., 2019; Garcia et al., 2021; Tyros et al., 2021). The design makes it possible to compare a treatment and control group before and after the policy change. Therefore, inferences can be made about the effect of the treatment on the outcomes we measured.

The treatment is the abolishment of the Dutch state pension PA. The treatment group contains younger female partners of individuals from birth cohorts who reached their SPA just after the abolishment. These are the birth cohorts from 1950 to 1954. The control group contains the younger female partners of individuals from birth cohorts 1945 to 1949. In this group, the older partners were eligible to get a PA next to their state pension when their younger partners met the income criteria. *Figure 1* shows the policy change's timeline and the older partners' birth cohorts included in this study.

Figure 1. Timeline of the abolishment of the state pension partner allowance.



Note: The birth cohorts are the birth years of the older partners.
Eligible is the control group, not eligible the treatment group.

In this study, the focus is also on the heterogeneous effect of the age gap between partners. To measure the extent to which the age gap affects the responses to the policy change, I conducted a separate analysis for couples with a small and a large age gap. Two treatment groups were created based on the median gap in birth years. One treatment group comprises younger female partners with relatively small birth year gaps from their older partners. It means that the intensity of the income effect of the abolishment of the PA is relatively low. The other treatment group consists of younger female partners with more significant gaps in age with their partners. For them, the intensity of the loss in income is relatively high.

Besides the age gap, this study also looked for heterogeneous effects by income. The PA was only available for younger partners with little or no income. Therefore, it is more likely to find an effect on one or more of the outcomes for younger female partners with little or no income than younger female partners with a higher income. I generated a dummy variable in which one value contains the younger female partners with no income or a gross income up to 1500 euros per month. The other value contains people with a gross income of more than 1500 euros per month. By doing this, it is possible to check for heterogeneous effects among younger female partners based on their gross income.

A potential challenge for the estimated method used is the other pension reforms introduced in the Netherlands around the same time. In 2015 a second pillar (occupational) pension reform was also implemented. Individuals who reached the state pension age before 2015 could use an attractive early retirement scheme. This second pillar reform complicates drawing causal inferences on abolishing the Dutch PA alone. A separate analysis was conducted on younger

female partners in 1950 or later to control for this reform. In this way, I can check if there are differences in the estimated effects for the different outcomes. Also, the reform in the state pension age from 2013 might affect the results. Because of this, I only worked with base year 2013 and 2014 to limit the effect of this reform on the results. The base year 2013 is used for a robustness check.

- 4.2 Data & sample

This empirical analysis makes use of the panel data from the LISS panel. The LISS panel contains data on 5,000 households in the Netherlands. The researchers gather the data through online surveys, and the panel is based on an accurate probability sample to aim for a representative panel for the Dutch population (LISS panel, n.d.). The longitudinal data used includes data from the questionnaire on 'Work and Schooling.' This data is collected every year in April and May. In addition, data is used from the household box containing background characteristics. This study uses data from 2013 to 2019 for our primary analyses, resulting in seven waves of data on multiple dependent variables measuring the behaviour and effects in retirement, labour supply, income and training, and relevant control variables.

The population of interest in this study are younger female partners of individuals who reached the state pension age in the Netherlands. In around 80% of the households, the younger partner is female (Tyros et al., 2021). The targeted group for the partner allowance were individuals with a younger partner with little or no income. However, this arrangement could incentivise younger partners with more income than the threshold to reduce their labour supply or stop working. Therefore, this study focuses on all younger female partners with an age gap of one year or more with their older partners.

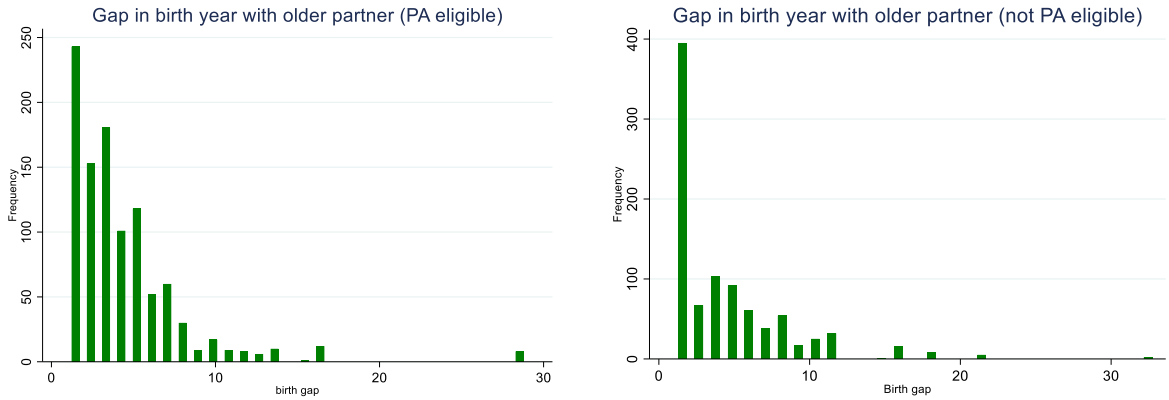
We only included younger female partners of individuals who reached their state pension age five years before and after the abolishment of the PA. We first identified the couples in the data, and secondly, only younger female partners remained in the dataset. Since households are dropped and replaced in the subsequent waves, we use the panel data for repeated cross-sectional data analyses. Table 2 shows the summary statistics for the different outcomes in our sample from 2013 to 2019. The number of observations is 1934 for 329 individuals. The summary statistics for all variables, including controls, can be found in the Appendix (*Table 6*).

Table 2. Summary statistics for the longitudinal data (period 2013-2019).

Variable		Observ.	Mean	Std. Dev.	Min	Max
Expected retirement age	Overall	482	64.896	2.765	53	71
	Control	147	65.422	2.464	57	71
	Treatment	335	64.666	3.207	53	70
Paid work	Overall	1,930	0.338	0.473	0	1
	Control	1,018	0.228	0.420	0	1
	Treatment	912	0.462	0.499	0	1
Hours work (actual)	Overall	829	20.759	12.758	0	60
	Control	319	18.182	12.523	0	55
	Treatment	510	22.371	12.650	0	60
Hours worked (contract)	Overall	690	23.207	10.075	0	40
	Control	241	21.402	10.238	1	40
	Treatment	449	24.176	9.862	0	40
Training participation	Overall	1,881	0.115	0.320	0	1
	Control	971	0.069	0.254	0	1
	Treatment	910	0.165	0.371	0	1

Figures 2a and 2b present the age gap between the younger female partner and older partners in our sample. The figures show that the gap in the birth year is relatively more sizable for the younger female partners of individuals who are PA eligible (control group) than for the younger female partners of individuals who are not PA eligible (treatment group).

Figure 2a & 2b. The birth year gap between the younger female partners and their older partners for both the control (left) and treatment group (right).

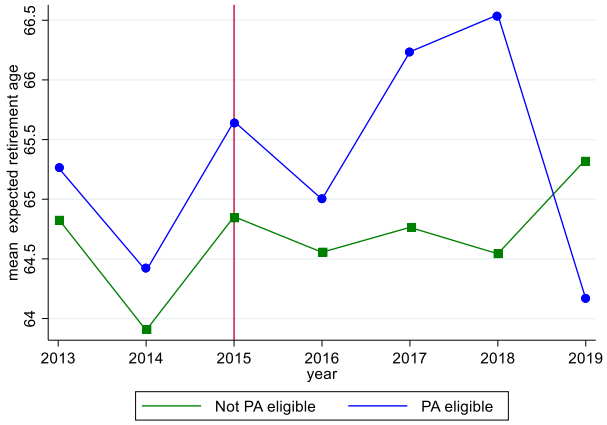


- 4.3 Operationalization

The main research question is whether abolishing the state pension PA contributed to closing early retirement routes for younger female partners. Multiple outcome variables related to retirement, labour supply, and training behaviour are used to measure this.

The first outcome measures the expected retirement age. This dependent variable measures at what age people expect to retire. Only individuals between 45 and 65 got this question. *Figure 3* presents the expected retirement age for the control and treatment groups. Before 2015 the mean differs for the control and treatment groups, but there seems to be a common trend. From 2015 onwards, after the abolishment of the PA, the control and treatment groups have different trends in the expected retirement age. The average expected retirement age for the treatment group (not PA eligible) is lower for the control group (PA eligible). This is remarkable since this group is, on average, younger and faces a higher state pension age. After 2018, the expected retirement age becomes higher for the treatment group than for the control group.

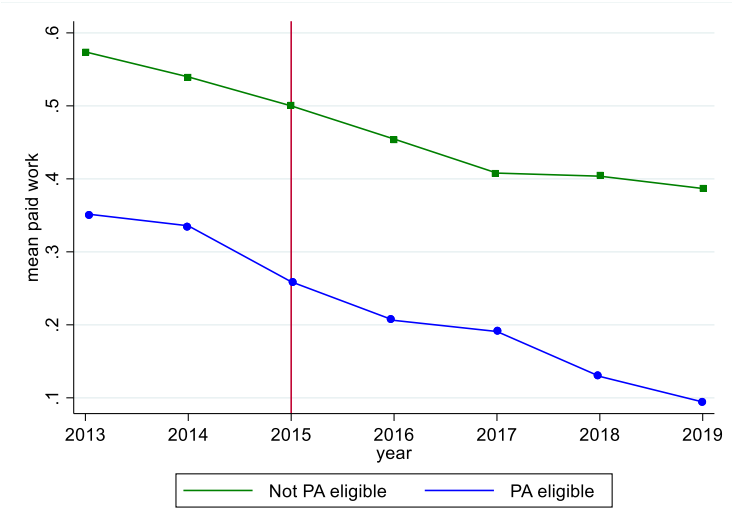
Figure 3. The mean of the expected retirement age for the control (PA eligible) and treatment group (not PA eligible) in 2013-2019.



The second outcome looks at if someone has paid work. This dummy variable tells us something about retirement. I expect that if the abolishment of the PA contributes to the closing of early retirement routes, the individuals in the sample will continue to be longer in paid jobs. *Figure* 4 shows the trend in (mean) paid work from 2013 until 2019, in which zero means no work and one means paid work. For the treatment group (not PA eligible), there is a similar decreasing trend in the mean for paid work in the two years before and after the abolishment of

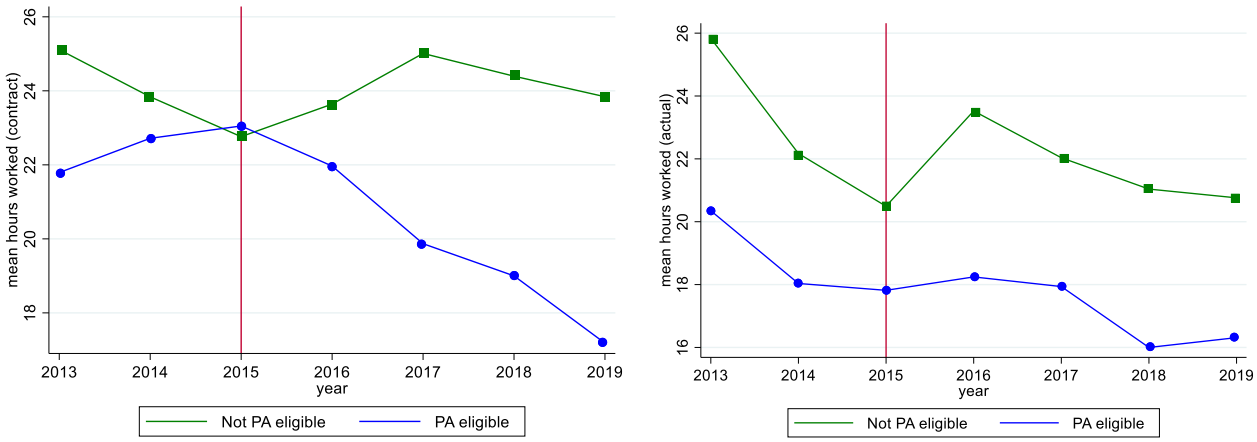
the PA. In the first two years after the abolishment, there seems to be a converging trend as the decreasing mean in paid work for the control group (PA eligible) flattened.

Figure 4. The mean of paid work for the control (PA eligible) and treatment group (not PA eligible) in 2013-2019.



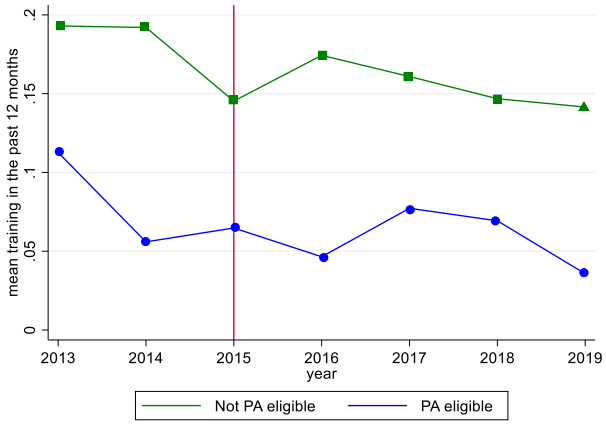
For the outcome of labour supply, this study looks at the hours worked per week, the actual hours on average, and according to the employment contract. *Figures 5a and 5b show* different trends for the actual and contract hours. *Figure 5a* shows that before the PA abolishment, younger female partners in the control group had an increasing trend in hours worked according to the contract. Unlike the younger female partners in the treatment group, in which we see a decreasing trend. However, after the abolishment, there seems to be a diverging trend. The mean in hours worked for the treatment group becomes relatively higher. *Figure 5b* presents the mean in the actual hours worked on average per week. For both groups, there is a negative trend before 2015, in which the mean is higher for the treatment group, implying they have a higher labour supply. Before 2015, there seemed to be a converging trend. Shortly after the policy change, the labour supply of the treatment group sharply increases. However, from 2017 onwards, the labour supply decreases again.

Figures 5a & 5b. The mean of hours worked per week, according to the contract (left, figure 4a) and the actual hours on average (right, figure b), for the control (PA eligible) and treatment group (not PA eligible) in the period 2013-2019.



This study also looked if younger female partners continue to participate longer in job training. For this, a variable was used to measure whether someone, in the past 12 months, participated or currently participates in any educational programs or courses relevant to their work or profession. This is measured with a dummy variable in which the respondent answered yes or no. *Figure 6* below shows that, on average, the treatment group (not PA eligible) participates more in educational programs or courses than the control group (not PA eligible). Immediately after the policy change, we see an increasing trend for the treatment group and a decreasing trend for the control group. However, after one year, we see the opposite. The treatment group remains to participate more on average in training.

Figure 6. The mean of the participation in training for the control (PA eligible) and treatment group (not PA eligible) in 2013-2019.



The previous graphs show not for all outcomes a common trend for treatment and control before the policy change. At the same time, the common trend assumption is an essential condition for doing a DiD. Therefore, this study also did placebo tests, including a placebo treatment variable, to check for the common trend assumption. If the results are significant, the common trend might be violated. Also, event studies were plotted five years before and after the policy change and are useful to control for a common trend. The outcomes can be found in the results section. When the results show no support for the common trend assumption, it limits the internal validity of this study.

- 4.4 Estimation strategy

To estimate the impact of the abolishment of the PA on different outcomes, a treatment and control group were compared through a DiD design. The control group consists of younger female partners of individuals from birth cohorts 1945 to 1949 reaching their state pension age between 2010 to 2014, and the treatment group consists of the younger female partners of individuals from birth cohorts 1950 to 1954 reaching their state pension between 2015 to 2019.

By conducting the repeated cross sectional analysis by Ordinary Least Squares regressions (OLS) and event study plots different outcomes were estimated. For the OLS the focus was on three different post-reform periods, one, three, and five years after the reform. This allowed to include more younger female partners in our sample and not only the younger female partners of individuals reaching their state pension in the year after the reform. The event studies were plotted

five years before and five years after the policy change. The event studies give estimates for each year seperately.

For all DiD regressions, 2014 was used as the base year. To check for the robustness of our results, the DiD analyses were also conducted with 2013 as the base year. Equation 5.1 shows the regression we did for our different outcomes.

$$Y_{i,t} = \beta_0 + \beta_1 treated_{i,t} + \beta_2 POST_i + \beta_3 \left(treated_{i,t} * POST_i\right) + X_{i,t} + \varepsilon_{i,t} \qquad (5.1)$$

Where $Y_{i,t}$ are the five different outcomes: the expected retirement age, paid work, hours worked (actual and contract), and training. $Treated_{i,t}$ is the binary variable which indicates whether the younger female partner is part of the control group ($treated_{i,t}$ = 0) or treatment group ($treated_{i,t} = 1$). $POST_i$ is the time dummy indicating whether it is the pre-or post-reform period. $POST_i$ = 0 is in the main models 2014. $POST_i = 1$ is either 2015, 2015 to 2017 or 2015 to 2019 depending on the post-reform period used for the regressions. $\left(treated_{i,t} * POST_i\right)$ is an interaction term that provides us with the differences-in-differences estimation across the pre-and post-reform period for treatment and control. Therefore, this variable will tell if the policy change affects the outcomes.

$X_{i,t}$ is a vector of the controls used in this study. X includes education, members in the household, origin and age. For education and origin dummy variables were generated. Education is measured by the highest education someone attained with a diploma, and origin is measured by either Dutch, first or second-generation immigrant. This study controls for origin because first-generation immigrants might delay their retirement. They spend fewer years in the Netherlands and build up fewer state pension rights. Also the number of household members is taken into the regression, because it might have a negative impact on the outcomes. Previous research showed that children have a negative and significant effect on retirement (Garcia & Soest, 2021). Lastly, $\varepsilon_{i,t}$ is the error term indicating the (unexplained) variance in the model.

5. Results

This section presents the empirical results. First, the main results are discussed for each outcome, followed by the results, which look at the heterogeneous effects of age gap and income. Further,

the results are presented of the robustness checks. Lastly, the results of the placebo tests are discussed. For the OLS regressions, results are presented for one, three, and five years after the reform. For the event study plots, estimates are made for each year separately, up to five years after the reform.

- 5.1 Main effects

Effects on the retirement decision

In *Table 3*, the DiD estimator (interaction term) reflects the effect of abolishing the PA on the expected retirement age. The OLS estimates of different post-reform periods show no significant effect of abolishing the PA on the expected retirement age of younger female partners. The estimated coefficients for the DiD estimator are negative for Models 2 and 3. These results are not in line with the predicted outcome. Based on the literature, I expected that younger female partners would respond to the policy change with a higher (expected) retirement age. The event study plot for the expected retirement age (*Figure 7*) also does not indicate that the treatment affected the expected retirement age for younger female partners. There is no clear increasing or decreasing pattern after the policy change in 2015.

The controls for higher vocational education and second-generation immigrants significantly correlate with the expected retirement age for all post-reform periods. A possible explanation for the significant negative relation between higher vocational education and expected retirement age ($p<0.10$) might be the positive relationship between a higher income and early retirement. A positive association was found for second-generation immigrants at a 1% significance level. Although second-generation immigrants are not affected by fewer pension rights, lower socio-economic status and less income and wealth might force them to postpone retirement.

In *Table 4*, the results show the estimates for the effect of abolishing the PA on whether the younger female partner has paid work. We expect that if the abolishment of the PA contributes to the closing of early retirement routes, younger female partners will remain longer in a paid job. However, the results do not indicate an effect of the policy change on paid work. None of the estimates for the DiD estimator is statistically significant. The event study plots for paid work (*Figure 8*) also do not indicate an effect. The event study estimates remain about the same level, and there seems to be no substantial change in the values after the pension reform.

Table 3. Results of the OLS for expected retirement age.

	Expected retirement age		
	Model 1	Model 2	Model 3
Post-reform	0.820	1.000	1.010
	(0.556)	(0.610)	(0.613)
Treatment	-0.291	0.0171	0.112
	(0.742)	(0.705)	(0.691)
Treatment x Post-reform	0.0820	-0.0521	-0.0498
	(0.810)	(0.808)	(0.796)
Intermediate secondary education	-0.185	-0.799	-0.508
	(1.121)	(0.966)	(0.803)
Higher / pre-university secondary education	-0.0968	-1.609	-1.718*
	(1.148)	(1.063)	(0.931)
Middle vocational education	-1.117	-1.198	-0.830
	(1.200)	(1.037)	(0.872)
Higher vocational education	-2.078*	-2.531**	-2.312**
	(1.203)	(1.076)	(0.962)
University	-0.335	-0.0399	0.160
	(1.596)	(1.642)	(1.503)
Number of members in the household	-0.350	-0.145	-0.100
	(0.447)	(0.326)	(0.293)
First gen.	-1.724	1.709*	1.572*
	(1.320)	(0.931)	(0.928)
Second gen.	2.042***	2.702***	2.733***
	(0.676)	(0.741)	(0.647)
Age	-1.265	-3.013***	-3.397***
	(1.503)	(1.061)	(0.999)
Age²	0.00965	0.0257***	0.0292***
	(0.0131)	(0.00915)	(0.00862)
Constant	106.9**	153.6***	163.5***
	(42.97)	(30.67)	(28.78)
Observ.	144	315	400
R-squared	0.181	0.184	0.200

Note: Clustered standard errors by individual
Treated is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

Table 4. Results of the OLS for paid work.

	Paid work		
	Model 1	Model 2	Model 3
Post-reform	-0.0447	-0.0310	-0.0273
	(0.0322)	(0.0381)	(0.0396)
Treatment	-0.0492	-0.0503	-0.0516
	(0.0763)	(0.0700)	(0.0669)
Treatment x Post-reform	0.0265	0.00145	0.0182
	(0.0445)	(0.0501)	(0.0517)
Intermediate secondary education	0.100	0.0468	0.0350
	(0.0670)	(0.0670)	(0.0632)
Higher / pre-university education	0.179	0.117	0.0961
	(0.115)	(0.0991)	(0.0877)
Middle vocational education	0.269***	0.201**	0.180**
	(0.0862)	(0.0830)	(0.0773)
Higher vocational education	0.409***	0.349***	0.311***
	(0.0877)	(0.0847)	(0.0773)
University	0.506***	0.249*	0.171
	(0.133)	(0.138)	(0.132)
Number of members in the household	-0.00330	-0.00188	0.0200
	(0.0393)	(0.0410)	(0.0394)
First gen.	-0.0961	-0.120	-0.148
	(0.164)	(0.167)	(0.142)
Second gen.	-0.0361	-0.101	-0.0926
	(0.0951)	(0.0800)	(0.0814)
Age	0.179***	0.144**	0.120*
	(0.0639)	(0.0680)	(0.0616)
Age²	-0.00183***	-0.00155***	-0.00134***
	(0.000563)	(0.000574)	(0.000512)
Constant	-3.832**	-2.699	-2.035
	(1.826)	(2.026)	(1.869)
Observ.	492	1,153	1,567
R-squared	0.213	0.238	0.261

Note: Clustered standard errors by individual
Treated is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

For the control variables, a significant correlation was found between people who obtained a diploma in middle vocational education, higher vocational education, and at the university and having a paid job. These results are presumably because people who obtained more education are more often in a paid job.

Effects on labour supply

For the effect on labour supply, the effect of the policy change is estimated on the hours worked per week, both actual and according to the employment contract. *Tables 5 and 6* show the results of the DiD estimators of both outcomes for three post-reform periods. For these estimates, no significant results were found of the treatment on hours worked. The event study plot (*Figure 9*) shows an increasing trend for hours worked according to the employment contract, although labour supply first dropped in 2015. Therefore, it is hard to say whether this is due to the abolishment of the PA. Based on the event study plot for hours worked (actual), there is no indication that the policy change had an effect (*Figure 10*).

For the control variables, the results show a significant positive correlation ($p<0.01$) for second-generation immigrants with the hours worked per week. Second-generation younger female partners tend to work significantly more per week, based on their actual hours and employment contract. For hours worked (contract), the findings also show a significant positive correlation for younger female partners who obtained higher vocational education as their highest education at the 10% significance level (*Tables 5 and 6*).

Effects on training

The results in *Table 7* show the OLS estimates of the participation in training in the last 12 months. The findings show no effects of the policy change on training behaviour. The estimated coefficient is for all DiD estimators negative. The event study plot (*Figure 11*) also does not show a clear different trend after the policy change.

For the control variables, the results show a significant positive correlation between participation in training and the younger female partners who attained higher vocational education as their highest education at a 1% significance level. For the post-reform period of 2015 to 2019, a significant negative correlation was found for the younger female partners who were first-generation immigrants at a 10% significance level. This result might be due to higher educated people being more willing to learn.

Table 5. Results of the OLS for hours worked (actual).

	Hours worked (actual)		
	Model 1	Model 2	Model 3
Post-reform	0.172	1.147	1.098
	(2.116)	(2.117)	(2.086)
Treatment	-1.057	-1.888	-1.315
	(2.392)	(2.389)	(2.380)
Treatment x Post-reform	-0.906	0.318	0.327
	(2.466)	(2.224)	(2.248)
Intermediate secondary education	-0.913	-12.85	-16.82
	(6.771)	(10.22)	(10.96)
Higher / pre-university secondary education	6.306	-4.545	-8.659
	(7.284)	(10.41)	(11.13)
Middle vocational education	1.963	-8.411	-13.50
	(6.815)	(10.27)	(11.02)
Higher vocational education	6.443	-2.775	-7.047
	(6.892)	(10.34)	(11.09)
University	-0.482	-5.800	-8.558
	(7.769)	(10.77)	(11.38)
Number of members in the household	2.084	0.957	0.749
	(1.442)	(1.519)	(1.457)
First gen.	-9.576	-7.483	-3.195
	(6.098)	(6.169)	(5.428)
Second gen.	18.11***	17.11***	17.40***
	(4.307)	(2.232)	(2.016)
Age	1.966	3.563	4.292**
	(2.465)	(2.394)	(2.029)
Age²	-0.0223	-0.0380*	-0.0435**
	(0.0226)	(0.0218)	(0.0183)
Constant	-24.60	-50.71	-70.19
	(66.89)	(66.07)	(57.28)
Observ.	256	518	660
R-squared	0.177	0.234	0.228

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

Table 6. Results of the OLS for hours worked (contract).

	Hours worked (contract)		
	Model 1	Model 2	Model 3
Post-reform	1.236	-0.0192	-0.199
	(0.988)	(1.411)	(1.557)
Treatment	-3.666*	-4.052**	-3.846**
	(1.988)	(1.960)	(1.944)
Treatment x Post-reform	-1.374	1.119	1.602
	(1.286)	(1.651)	(1.800)
Intermediate secondary education	-2.702	-2.855	-2.753
	(3.564)	(2.920)	(2.765)
Higher / pre-university education	5.985	4.115	4.150
	(3.890)	(3.518)	(3.519)
Middle vocational education	3.355	3.659	4.039
	(3.680)	(3.242)	(3.144)
Higher vocational education	4.091	5.686*	5.983*
	(3.813)	(3.288)	(3.131)
University	2.719	4.447	5.846
	(5.884)	(5.406)	(4.849)
Number of members in the household	0.857	-0.256	-0.887
	(0.917)	(1.211)	(1.308)
First gen.	-5.578	-2.940	0.992
	(4.836)	(5.188)	(3.823)
Second gen.	8.424***	8.453***	8.032***
	(2.705)	(2.743)	(2.490)
Age	3.119	2.978	3.359*
	(2.164)	(2.012)	(1.821)
Age²	-0.0336*	-0.0330*	-0.0359**
	(0.0198)	(0.0183)	(0.0166)
Constant	-44.67	-35.94	-47.51
	(58.51)	(54.79)	(49.39)
Observ.	212	428	548
R-squared	0.254	0.285	0.284

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

Table 7. Results of the OLS estimates for training participation.

	Training		
	Model 1	Model 2	Model 3
Post-reform	0.0419	0.0733***	0.0786***
	(0.0254)	(0.0274)	(0.0276)
Treatment	-0.0467	-0.0444	-0.0325
	(0.0471)	(0.0447)	(0.0425)
Treatment x Post-reform	-0.0501	-0.0347	-0.0328
	(0.0398)	(0.0392)	(0.0371)
Intermediate secondary education	-0.0343	-0.0324	-0.0264
	(0.0253)	(0.0229)	(0.0211)
Higher / pre-university secondary education	0.0532	0.0889*	0.0947**
	(0.0499)	(0.0473)	(0.0442)
Middle vocational education	0.0633	0.0300	0.0321
	(0.0471)	(0.0361)	(0.0318)
Higher vocational education	0.172***	0.185***	0.177***
	(0.0539)	(0.0466)	(0.0431)
University	0.0323	0.112	0.0774
	(0.0923)	(0.111)	(0.116)
Number of members in the household	0.0292	0.0455	0.0476
	(0.0301)	(0.0335)	(0.0330)
First gen.	-0.0622	-0.112	-0.140*
	(0.0886)	(0.0710)	(0.0755)
Second gen.	0.0774	0.0141	-0.0112
	(0.0606)	(0.0345)	(0.0275)
Age	0.107***	0.106***	0.0954***
	(0.0251)	(0.0272)	(0.0264)
Age²	-0.00111***	-0.00109***	-0.000979***
	(0.000240)	(0.000249)	(0.000237)
Constant	-2.364***	-2.439***	-2.193***
	(0.664)	(0.760)	(0.760)
Observ.	490	1,143	1,527
R-squared	0.165	0.188	0.179

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

- 5.2 Heterogeneous effects

This study also checked for the effect of the age gap among couples. Couples with a more significant age gap are likely to be more affected by this policy change. Since they possibly miss out on a more substantial amount of income by abolishing the allowance and due to the complementarity of leisure. Therefore, two treatment groups were created: one group with a small age gap (low-intensity group) and one with a larger age gap (high-intensity group). However, the results show no significant outcomes for the DiD estimator for the high-intensity group. The results are presented in the Appendix (*Tables 9 to 18*). Therefore, there is no indication of heterogeneous effects for couples with different age gaps.

Since the target audience of the PA were younger partners of individuals with little or no income, a separate analysis was conducted to check for heterogeneous effects based on the income of younger female partners. I checked for the post-reform period 2015-2019 whether younger female partners with no income or a gross income up to 1500 euros per month responded differently to the policy change than female younger partners with a gross income of 1500 euros or more per month. A dummy variable was created to distinguish between the low and high-income groups. For hours worked (contract), a statistically significant negative effect was found of the policy change at a 5% significance level (*Table 19*, Appendix). For the group with a low income, the findings suggest that the abolishment of the PA caused a decrease in hours worked by 5.21 hours per week, everything else equal. This is an interesting finding because it does not align with the predicted outcome based on previous literature. Since budget opportunities play an essential role in the retirement decision, it would be more likely that younger female partners with a low income would increase their labour supply.

- 5.3 Robustness checks

For robustness, this study checked whether the results are sensitive to a change in the base year. The effects of the policy change were estimated on the outcomes again with the base year 2013 instead of 2014 (*Tables 20 to 24*, Appendix). In general, the results did not change and therefore have no implications for the results. However, I find a statistically significant negative effect for the DiD interaction term at a 10% significance level for the outcome hours worked (contract) (*Table 23*, Appendix). This result implies that the hours worked per week (contractual) decreased

by 2.502 due to abolishing the PA, everything else equal. For the other two post-reform periods, the results remain insignificant similar to the initial results (*Tables 23*, Appendix).

Second pillar reform

The abolishment of the state pension partner allowance was not the only pension reform. At the same time as this policy change, there was also a second pillar (occupational) pension reform in the Netherlands. To control for the second pillar reform, a separate analysis was conducted on younger female partners born after 1950 for the post-reform period 2015-2019. The coefficients for the interaction term remain insignificant (*Table 25,* Appendix). There are no differences in the estimated treatment effects for the outcomes.

- 5.4 Placebo tests

Two placebo tests were done to test if there is support for the common trend assumption. These placebo tests are based on two different periods. The first placebo test is with the base year 2009, and the placebo treatment variable consists of the post-reform period 2012-2014. The second placebo test consists of 2012 as the base year and has a placebo treatment variable consisting of the post-reform period 2013-2014.

For the placebo tests for paid work, labour supply and training behaviour, the results for the DiD are not significant, meaning there is support for the common trend assumption (*Tables 26 & 27*, Appendix). However, for expected retirement age, one placebo test does show significant results (*Table 27,* Appendix). For the placebo test with the base year 2012, the findings show a significant effect for the DiD estimator at a 5% significance level. In the event study plot, the estimates also drop in value after 2012. A possible explanation might be that since 2013 the state pension started to increase gradually after being 65 years for an extended period. This reform might explain the difference, but not the negative effect. This result indicates that the common trend assumption might be violated for the expected retirement age.

6. Discussion and conclusion

In this study, I examined whether a specific pension reform contributed to closing early retirement routes for women. With an ageing population, keeping the elderly in the labour force as long as possible is crucial. Mainly for women, there is still a vast potential.

The main findings show no significant results of the abolishment of the PA on either the retirement decision, labour supply or training behaviour. These results are not entirely in line with the expectations. Due to the importance of budget opportunities and the income shock of abolishing the allowance caused, I would expect younger female partners to postpone their retirement, continue working, and invest longer in training opportunities. Also, when doing a separate analysis for younger female partners with little or no income, the findings show no significant results for expected retirement age, paid work and training. The findings show a significant result for the years after the policy change only for labour supply. However, this was a negative effect of the abolishment of the PA on the hours worked per week (according to their employment contract). This outcome is not in line with the idea of budget opportunities (Michaud et al., 2020) since this group was the primary target audience of the state pension PA due to their low income.

When focusing on the age gap, the results also do not show an effect of the policy change on younger female partners with a more significant age gap with their older partners. At the same time, previous literature states that as soon as their partner retires, the preference for retirement increases for the younger female partner (Henkens et al., 2002; Michaud et al., 2020). This policy change does not give empirical evidence for an effect of this reform on the complementarity of leisure.

A possible explanation for these findings is that younger female partners are not responding rationally to the policy change. This response is in line with the idea of behavioural economics, in which people focus on the short-term benefits of retirement and underestimate future costs. It could lead to insufficient labour supply and training behaviour for future costs. People expect higher replacement rates than they receive (Andrew, 2010; van Duijn et al., 2013). Furthermore, previous research found that women do not respond immediately in their retirement decision if their male partner is affected by a pension reform (Stancanelli, 2017). The status of men as breadwinners possibly implies that they shape the retirement planfulness, which also shapes what their female partners do (Moen et al., 2006). However, this study only focused on the response of the younger female partner. It remains unclear whether the older partners adjusted their behaviour to this reform and is, therefore, a limitation of this study.

This study also has some other limitations. Although this study's strength is the use of survey data, the sample sizes were relatively small. It reduces the power of the analyses, and

therefore, I might have found no effect due to the small sample size. Secondly, the common trend assumption is weak for some outcomes. Apart from the expected retirement age, the placebo tests did not indicate that the common trend assumption might be violated. However, when I graphically explored the different outcomes, the graphs did not always show a clear common trend before 2015. Therefore, I cannot state that this study entirely holds internal validity.

Further, this study worked with a control and treatment group that might not be balanced for every background characteristic since it included relatively many birth cohorts. For example, the age gap between the control and treatment groups is relatively large. These differences lower the internal validity of this study. Also, due to the fact, multiple policy reforms have been introduced in the last decade in the Netherlands.

With an ageing population, society will face challenges in the future for the labour market. The state pension partner allowance can reduce public spending but does not provide a (partial) solution for these challenges by closing early retirement routes for younger female partners. Future research on retirement could study other pension reforms and focus on the dynamics between couples and their decision-making on retirement. Also, the behaviour of the male partner should be taken into account since the male partner remains the breadwinner in most households. Most of the theory and empirical evidence focuses on the individual when studying the effects of pension reforms. However, obtaining more knowledge on the retirement decision-making of couples could give more guidelines for policy on how to close early retirement routes for females in a couple.

References

Agnew, J. R. (2010). Pension participant behavior. *Behavioral Finance, 577.*

Amaglobeli, D., Dabla-Norris E. & Gaspar, V. (2020). Getting older but not poorer: As societies age worldwide, pensions and public policies must adapt. *IMF, Finance & Development, 57 (1): 30-34*

Ando, A. & Modigliani, F. (1963). The "life cycle" hypothesis of saving: Aggregate implications and tests. *American Economic Review, 53(1): 55-84.*

Atalay, K., Barrett, G.F. & Siminski, P. (2019). Pension incentives and the joint retirement of couples: evidence from two natural experiments. *Journal of Population Economics, 32: 735-767.*

Atav, T., Jongen, E. & Rabaté, S. (2019). The Effects of the Increase in the Retirement Age in the Netherlands. *CPB Discussion Paper.*

Boeri, T. and van Ours, J. (2021).The Economic of Imperfect Labor Markets. *Princeton (third Edition)*

CBS (13-05-2015). Zal vergrijzing leiden tot een tekort aan arbeidskrachten? *Available at* https://www.cbs.nl/nl-nl/nieuws/2015/20/zal-vergrijzing-leiden-tot-een-tekort-aan-arbeidskrachten-

Chiappori (1988). Rational Household Labour Supply. *Econometrica, 56(1): 63-89.*

Van Duijn, M., Mastrogiacomo, M., Lindeboom, M. & Lundborg, P. (2013). Expected and actual replacement rates in the pension system of the Netherlands: how and why do they differ? *PEF, 12(2): 168-189.*

Doove, S., ter Haar, D., Schalken, N. & Span, T. (2019). Inkomens- en arbeidsmarktpositie van de jongere partners van AOW-gerechtigden: Kwantitatieve effectmeting in het kader van de afschaffing van de AOW-partnertoeslag. *Centraal Bureau voor de Statistiek.*

Duval, R. (2003). The Retirement Effect of Old-Age Pension and Early Retirement Schemes in OECD Countries. *OECD Economics Department Working Paper No.370.*

Elshout, S. (5 april 2022). Background Variables LISS Panel. *Tilburg: Centerdata.*

Garcia, A.N. & van Soest (2021). How does an allowance for a non-working younger partner affect the retirement behaviour of couples? *Journal of Pension Economics and Finance, 2021: 1-31*.

Kali, S., Been, J., Knoef, M. & van Marijk Kooy, A. (2021). Gelijke rechten, maar geen gelijke pensioenen: de gender gap in Nederlandse tweepijlerpensioenen. *Netspar Design Paper 178.*

Kruse, H. (2021). Joint Retirement in Couples: Evidence of Complementarity in Leisure. *Scand. J. of Economics, 123(3): 995-1024.*

Liss Panel (n.d.) "About the panel". *Available at:* https://www.lissdata.nl/about-panel

Moen, P., Plassmann, V. & Dentiger, E. (2006). Deciding the Future: Do Dual-Earner Couples Plan Together for Retirement? *American Behavioral Scientist, 49(10): 1422-1443.*

Montizaan, R., Cövers, F. & de Grip, A. (2010). The effects of pension rights and retirement age on training participation: evidence from a natural experiment. *Labour Economics, 17: 240-247.*

Michaud, P.C., van Soest, A. & Bissonette, L. (2020). Understanding joint retirement. *Journal of Economic Behavior & Organization, 173: 386-401*.

Mokkerstorm, L. (19 July 2017). 'Nederland loopt €48 mrd mis door onderbenutting ouderen'. *Available at:* https://fd.nl/economie-politiek/1211093/nederland-loopt-48-mrd-mis-door-onderbenutting-ouderen-ldc2cazJ1fJs

De Nederlandsche Bank (n.d.). Pensions. *Available at:* https://www.dnb.nl/en/current-economic-issues/pensions/

Rijksoverheid (n.d.). AOW-leeftijd stijgt minder snel. *Available at:* https://www.rijksoverheid.nl/onderwerpen/pensioen/toekomst-pensioenstelsel/aow-leeftijd-stijgt-minder-snel#:~:text=De%20AOW%2Dleeftijd%20blijft%20in,levensverwachting%2C%20maar%20in%20mindere%20mate.

Rijksoverheid (n.d.). Krijg ik AOW als ik later in Nederland ben komen wonen? *Available at:* https://www.rijksoverheid.nl/onderwerpen/algemene-ouderdomswet-aow/vraag-en-antwoord/krijg-ik-aow-als-ik-later-in-nederland-ben-komen-wonen#:~:text=U%20bouwt%20een%20volledige%20AOW,uw%20AOW%20bij%2016%20jaar.

Rijksoverheid (n.d.). Wanneer kan ik een AOW-partnertoeslag krijgen? *Available at:* https://www.rijksoverheid.nl/onderwerpen/algemene-ouderdomswet-aow/vraag-en-antwoord/wanneer-kan-ik-een-aow-partnertoeslag-krijgen#:~:text=Geen%20AOW%2Dpartnertoeslag,of%20niet%20te%20veel%20verdient

Sociale Verzekeringsbank (n.d.). AOW-toeslag. *Available at*: https://www.svb.nl/nl/aow/hoeveel-AOW-en-andere-pensioenen/aow-toeslag

Streefkerk, M. (June 2021). Work and Schooling – LISS core study, wave 13. *Tilburg: Centerdata.*

Van Thor, J., Portegijs, W. & Hermans, B. (2018). Willen vrouwen meer werken (en mannen minder)? *Available at* https://digitaal.scp.nl/emancipatiemonitor2018/willen-vrouwen-meer-werken-en-mannen-minder/

Tyros, S. van Ewijk, C. & Stevens, R. (2021). Shock to future income and (lack of) consumption smoothening: Evidence from the abolition of the state pension partner supplement in the Netherlands. *Netspar discussion paper 16.*

Stancanelli, E. (2017). Couples' retirement under individual pension design: A regression discontinuity study for France. *Labour Economics, 149: 14-26.*

Stigter, A. & Wilthagen, T. (10 February 2022). Arbeidsdeelname kan en moet fors omhoog. *Available at:* https://esb.nu/esb/20069611/arbeidsdeelname-kan-en-moet-fors-omhoog

Woolridge, J.M. (2013). Introduction to Econometrics. *Cengage Learning (first edition).*

Appendix

A. Summary statistics

Table 8. Summary statistics for the longitudinal data (period 2013-2019)

Variable		Observ.	Mean	Std. Dev.	Min	Max
Expected retirement age	Overall	482	64.896	2.765	53	71
	Control	147	65.422	2.464	57	71
	Treatment	335	64.666	3.207	53	70
Paid work	Overall	1,930	0.338	0.473	0	1
	Control	1,018	0.228	0.420	0	1
	Treatment	912	0.462	0.499	0	1
Hours work (actual)	Overall	829	20.759	12.758	0	60
	Control	319	18.182	12.523	0	55
	Treatment	510	22.371	12.650	0	60
Hours worked (contract)	Overall	690	23.207	10.075	0	40
	Control	241	21.402	10.238	1	40
	Treatment	449	24.176	9.862	0	40
Training participation	Overall	1,881	0.115	0.320	0	1
	Control	971	0.069	0.254	0	1
	Treatment	910	0.165	0.371	0	1
Age	Overall	1,934	61.673	5.187	29	73
	Control	1,018	64.037	4.483	34	73
	Treatment	916	59.046	4.622	29	68
Numbers of members	Overall	1,934	2.263	0.668	2	6
in the household	Control	1,018	2.140	0.492	2	6
	Treatment	916	2.398	0.799	2	6
Primary education	Overall	1,934	0.064	0.245	0	1
	Control	1,018	0.090	0.287	0	1
	Treatment	916	0.035	0.184	0	1
Intermediate secondary	Overall	1,934	0.403	0.491	0	1
education	Control	1,018	0.463	0.499	0	1

	Treatment	916	0.337	0.473	0	1
Higher / pre-university	Overall	1,934	0.094	0.292	0	1
secondary education	Control	1,018	0.107	0.309	0	1
	Treatment	916	0.080	0.271	0	1
Middle vocational	Overall	1,934	0.194	0.395	0	1
education	Control	1,018	0.154	0.361	0	1
	Treatment	916	0.238	0.426	0	1
Higher vocational	Overall	1,934	0.185	0.388	0	1
education	Control	1,018	0.119	0.324	0	1
	Treatment	916	0.259	0.438	0	1
University	Overall	1,934	0.018	0.133	0	1
	Control	1,018	0.020	0.139	0	1
	Treatment	916	0.016	0.127	0	1
Dutch	Overall	1,891	0.915	0.279	0	1
	Control	1,001	0.905	0.293	0	1
	Treatment	890	0.926	0.262	0	1
First-generation	Overall	1,891	0.048	0.213	0	1
immigrant	Control	1,001	0.046	0.209	0	1
	Treatment	890	0.049	0.217	0	1
Second-generation	Overall	1,891	0.038	0.190	0	1
immigrant	Control	1,001	0.049	0.216	0	1
	Treatment	890	0.025	0.155	0	1

B. Event studies

Figure 7. Event study plots for expected retirement age using coefplot.

Figure 8. Event study plots for paid work using coefplot.

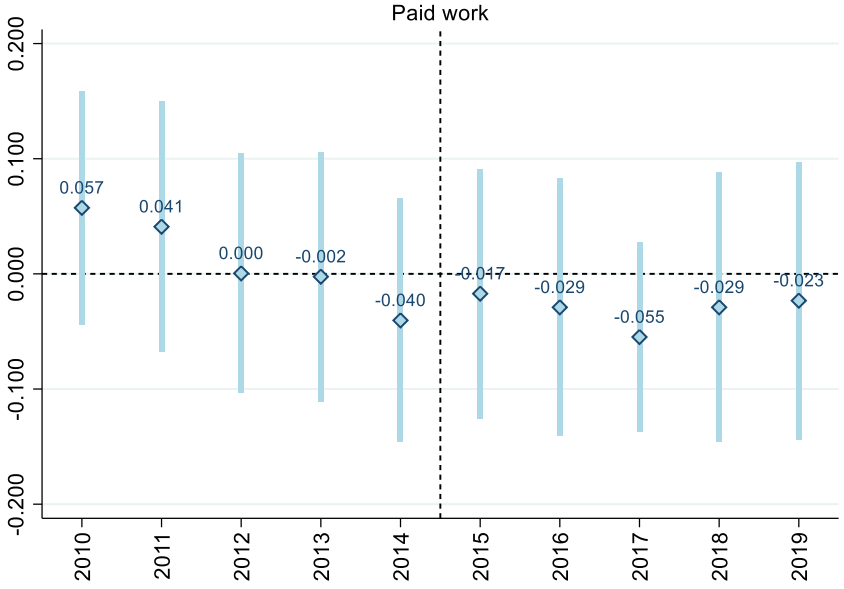


Figure 9. Event study plots for hours worked (actual) using coefplot.

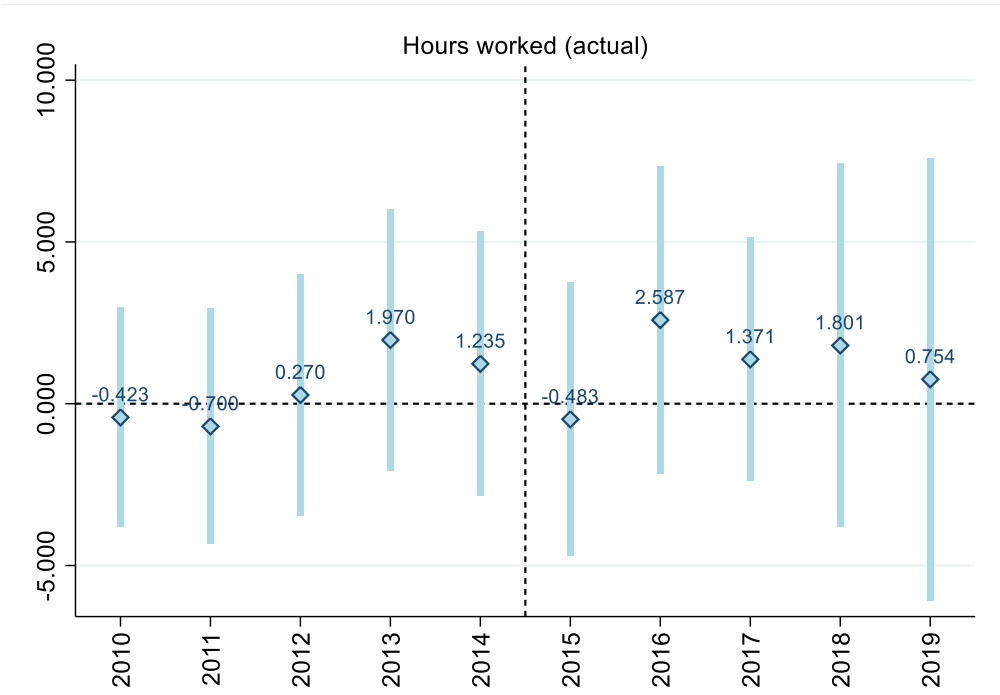


Figure 10. Event study plots for hours worked (contract) using coefplot.

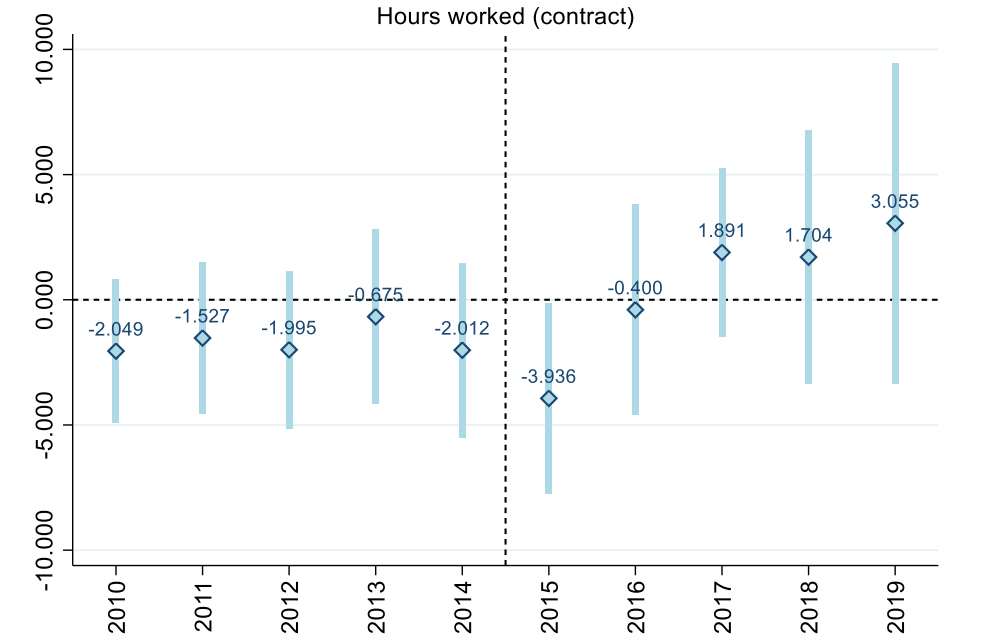
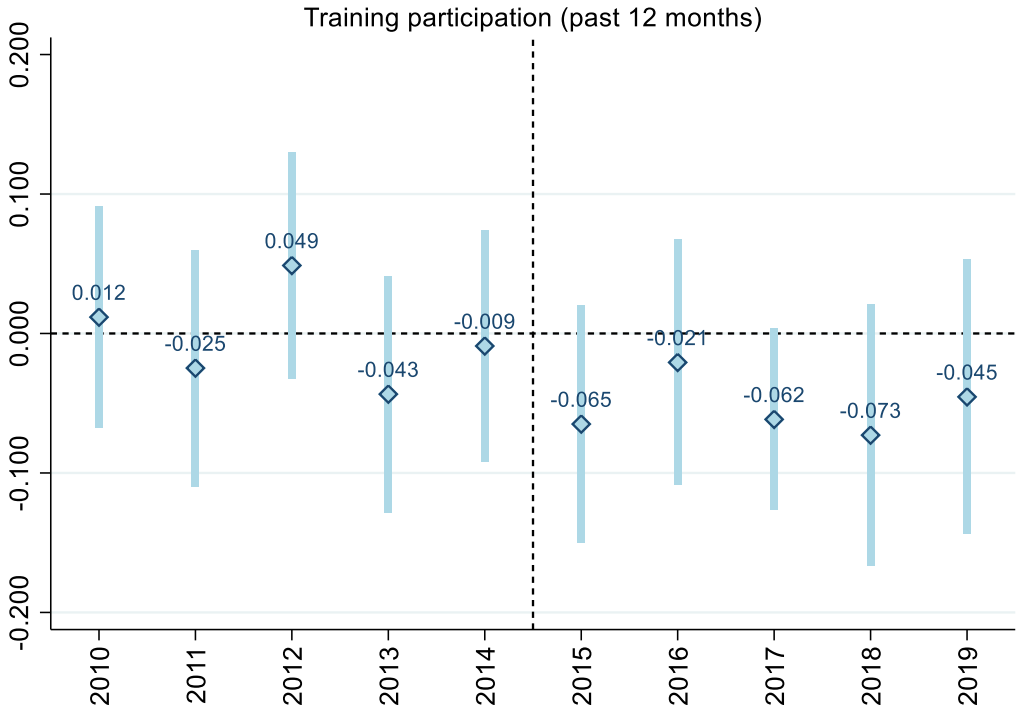


Figure 11. Event study plots for training using coefplot.



C. Heterogeneous effects

Table 9. Results of OLS for expected retirement age: *low intensity*.

	Expected retirement age		
	Model 1	Model 2	Model 3
Post-reform	1.095*	0.797	0.745
	(0.587)	(0.591)	(0.576)
Treatment	-0.619	-0.888	-0.944
	(0.683)	(0.702)	(0.697)
Treatment x Post-reform	-0.735	0.146	0.328
	(0.767)	(0.755)	(0.724)
Intermediate secondary education	-0.483	-1.157	-0.823
	(1.312)	(0.978)	(0.786)
Higher / pre-university secondary education	-0.368	-1.936*	-2.001**
	(1.350)	(1.101)	(0.946)
Middle vocational education	-1.372	-1.512	-1.073
	(1.369)	(1.069)	(0.856)
Higher vocational education	-2.164	-2.745**	-2.463**
	(1.364)	(1.088)	(0.941)
University	-0.330	-0.177	0.0169
	(1.754)	(1.638)	(1.476)
Number of members in the household	-0.405	-0.216	-0.172
	(0.436)	(0.323)	(0.289)
First gen.	-1.778	1.793*	1.628*
	(1.339)	(0.983)	(0.965)
Second gen.	2.068***	2.683***	2.692***
	(0.640)	(0.693)	(0.613)
Age	-1.540	-2.993***	-3.314***
	(1.322)	(0.999)	(0.942)
Age²	0.0127	0.0259***	0.0288***
	(0.0113)	(0.00852)	(0.00805)
Constant	113.0***	152.6***	161.0***
	(38.58)	(29.13)	(27.29)
Observ.	144	315	400
R-squared	0.201	0.196	0.210

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

Table 10. Results of the OLS for paid work: *low intensity*.

	Paid work		
	Model 1	Model 2	Model 3
Post-reform	-0.0185	-0.0234	-0.0117
	(0.0287)	(0.0331)	(0.0364)
Treatment	-0.0299	-0.0269	-0.0146
	(0.0716)	(0.0679)	(0.0658)
Treatment x Post-reform	-0.0367	-0.0437	-0.0424
	(0.0434)	(0.0487)	(0.0508)
Intermediate secondary education	0.0962	0.0408	0.0290
	(0.0668)	(0.0677)	(0.0640)
Higher / pre-university education	0.181	0.119	0.0957
	(0.114)	(0.0980)	(0.0877)
Middle vocational education	0.264***	0.193**	0.171**
	(0.0859)	(0.0842)	(0.0791)
Higher vocational education	0.406***	0.342***	0.304***
	(0.0876)	(0.0856)	(0.0785)
University	0.513***	0.260*	0.175
	(0.133)	(0.142)	(0.134)
Number of members in the household	-0.00355	-0.00425	0.0171
	(0.0386)	(0.0400)	(0.0385)
First gen.	-0.0906	-0.113	-0.142
	(0.165)	(0.169)	(0.143)
Second gen.	-0.0371	-0.101	-0.0924
	(0.0957)	(0.0806)	(0.0815)
Age	0.160**	0.117*	0.102*
	(0.0648)	(0.0679)	(0.0612)
Age²	-0.00162***	-0.00127**	-0.00115**
	(0.000565)	(0.000566)	(0.000500)
Constant	-3.462*	-2.118	-1.649
	(1.872)	(2.044)	(1.873)
Observ.	492	1,153	1,567
R-squared	0.214	0.239	0.262

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

Table 11. Results of OLS for hour worked (actual): *low intensity*.

	Hours worked (actual)		
	Model 1	Model 2	Model 3
Post-reform	-1.459	0.585	0.472
	(1.703)	(1.528)	(1.489)
Treatment	0.926	0.786	0.197
	(2.450)	(2.439)	(2.457)
Treatment x Post-reform	2.561	2.292	2.613
	(2.271)	(2.123)	(2.159)
Intermediate secondary education	-0.0279	-11.97	-16.03
	(7.063)	(10.27)	(10.89)
Higher / pre-university secondary education	7.322	-3.365	-7.792
	(7.579)	(10.44)	(11.06)
Middle vocational education	2.460	-8.029	-13.17
	(7.070)	(10.29)	(10.92)
Higher vocational education	6.625	-2.658	-6.959
	(7.183)	(10.38)	(10.99)
University	0.0249	-5.018	-8.028
	(7.933)	(10.83)	(11.31)
Number of members in the household	2.098	1.115	0.966
	(1.409)	(1.480)	(1.426)
First gen.	-9.929	-8.057	-3.712
	(6.243)	(6.459)	(5.560)
Second gen.	18.20***	17.24***	17.57***
	(4.281)	(2.270)	(2.078)
Age	1.730	3.272	4.304**
	(2.136)	(2.100)	(1.824)
Age²	-0.0207	-0.0359*	-0.0442***
	(0.0194)	(0.0189)	(0.0164)
Constant	-17.76	-43.16	-70.24
	(59.52)	(59.45)	(52.36)
Observ.	256	518	660
R-squared	0.182	0.239	0.234

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

Table 12. Results of OLS for hour worked (contract): *low intensity*.

	Hours worked (contract)		
	Model 1	Model 2	Model 3
Post-reform	-0.127	0.152	0.153
	(0.955)	(1.016)	(1.114)
Treatment	-1.356	-0.623	-0.790
	(1.882)	(1.894)	(1.910)
Treatment x Post-reform	0.290	0.379	0.671
	(1.285)	(1.448)	(1.494)
Intermediate secondary education	-2.183	-2.904	-3.094
	(2.829)	(2.454)	(2.375)
Higher / pre-university education	7.492**	4.957	4.463
	(3.286)	(3.184)	(3.287)
Middle vocational education	3.489	3.043	3.208
	(2.881)	(2.687)	(2.638)
Higher vocational education	4.220	5.149*	5.223*
	(3.105)	(2.809)	(2.710)
University	3.577	4.836	5.720
	(5.932)	(5.525)	(4.882)
Number of members in the household	0.707	-0.395	-0.980
	(0.903)	(1.211)	(1.313)
First gen.	-6.810	-3.528	0.448
	(5.308)	(5.548)	(3.900)
Second gen.	8.677***	8.745***	8.232***
	(3.232)	(3.052)	(2.745)
Age	0.602	1.413	2.202
	(1.900)	(1.816)	(1.640)
Age²	-0.00903	-0.0181	-0.0250*
	(0.0172)	(0.0165)	(0.0151)
Constant	16.34	2.726	-18.52
	(52.49)	(50.28)	(44.81)
Observ.	212	428	548
R-squared	0.226	0.269	0.153

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

Table 13. Results of OLS for training: *low intensity*.

	Training		
	Model 1	Model 2	Model 3
Post-reform	0.00304	0.0542**	0.0345
	(0.0372)	(0.0215)	(0.0340)
Treatment	-0.0409	0.0388	-0.0445
	(0.0443)	(0.0429)	(0.0420)
Treatment x Post-reform	0.0150	-0.0232	0.0261
	(0.0411)	(0.0395)	(0.0376)
Intermediate secondary education	-0.0324	-0.0313	-0.0265
	(0.0248)	(0.0220)	(0.0206)
Higher / pre-university secondary education	0.0649	0.0990*	0.101**
	(0.0527)	(0.0514)	(0.0470)
Middle vocational education	0.0610	0.0245	0.0255
	(0.0467)	(0.0365)	(0.0326)
Higher vocational education	0.169***	0.178***	0.168***
	(0.0538)	(0.0462)	(0.0431)
University	0.0514	0.129	0.0900
	(0.0979)	(0.118)	(0.120)
Number of members in the household	0.0283	0.0438	0.0466
	(0.0304)	(0.0337)	(0.0331)
First gen.	-0.0527	-0.102	-0.134*
	(0.0882)	(0.0720)	(0.0765)
Second gen.	0.0797	0.0179	-0.00679
	(0.0623)	(0.0346)	(0.0281)
Age	0.0786***	0.0801***	0.0733***
	(0.0216)	(0.0222)	(0.0219)
Age²	-0.000807***	-0.000822***	-0.000754***
	(0.000201)	(0.000194)	(0.000184)
Constant	-1.758***	-1.873***	-1.671**
	(0.598)	(0.681)	(0.685)
Observ.	490	1,143	1,527
R-squared	0.158	0.0542**	0.174

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

Table 14. Results of OLS for expected retirement age: *high intensity*.

	Expected retirement age		
	Model 1	Model 2	Model 3
Post-reform	0.359	0.943**	1.073**
	(0.500)	(0.470)	(0.437)
Treatment	0.619	0.888	0.944
	(0.683)	(0.702)	(0.697)
Treatment x Post-reform	0.735	-0.146	-0.328
	(0.767)	(0.755)	(0.724)
Intermediate secondary education	-0.483	-1.157	-0.823
	(1.312)	(0.978)	(0.786)
Higher / pre-university education	-0.368	-1.936*	-2.001**
	(1.350)	(1.101)	(0.946)
Middle vocational education	-1.372	-1.512	-1.073
	(1.369)	(1.069)	(0.856)
Higher vocational education	-2.164	-2.745**	-2.463**
	(1.364)	(1.088)	(0.941)
University	-0.330	-0.177	0.0169
	(1.754)	(1.638)	(1.476)
Number of members in the household	-0.405	-0.216	-0.172
	(0.436)	(0.323)	(0.289)
First gen.	-1.778	1.793*	1.628*
	(1.339)	(0.983)	(0.965)
Second gen.	2.068***	2.683***	2.692***
	(0.640)	(0.693)	(0.613)
Age	-1.540	-2.993***	-3.314***
	(1.322)	(0.999)	(0.942)
Age²	0.0127	0.0259***	0.0288***
	(0.0113)	(0.00852)	(0.00805)
Constant	112.4***	151.7***	160.0***
	(38.75)	(29.26)	(27.40)
Observ.	144	315	400
R-squared	0.201	0.196	0.210

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

Table 15. Results of OLS for paid work: *high intensity*.

	Paid work		
	Model 1	Model 2	Model 3
Post-reform	-0.0552	-0.0671*	-0.0541
	(0.0338)	(0.0395)	(0.0411)
Treatment	0.0299	0.0269	0.0146
	(0.0716)	(0.0679)	(0.0658)
Treatment x Post-reform	0.0367	0.0437	0.0424
	(0.0434)	(0.0487)	(0.0508)
Intermediate secondary	0.0962	0.0408	0.0290
Education	(0.0668)	(0.0677)	(0.0640)
Higher / pre-university	0.181	0.119	0.0957
secondary education	(0.114)	(0.0980)	(0.0877)
Middle vocational	0.264***	0.193**	0.171**
Education	(0.0859)	(0.0842)	(0.0791)
Higher vocational	0.406***	0.342***	0.304***
Education	(0.0876)	(0.0856)	(0.0785)
University	0.513***	0.260*	0.175
	(0.133)	(0.142)	(0.134)
Number of members in	-0.00355	-0.00425	0.0171
the household	(0.0386)	(0.0400)	(0.0385)
First gen.	-0.0906	-0.113	-0.142
	(0.165)	(0.169)	(0.143)
Second gen.	-0.0371	-0.101	-0.0924
	(0.0957)	(0.0806)	(0.0815)
Age	0.160**	0.117*	0.102*
	(0.0648)	(0.0679)	(0.0612)
Age²	-0.00162***	-0.00127**	-0.00115**
	(0.000565)	(0.000566)	(0.000500)
Constant	-3.492*	-2.145	-1.664
	(1.873)	(2.058)	(1.890)
Observ.	492	1,153	1,567
R-squared	0.214	0.239	0.262

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

Table 16. Results of OLS for hours worked (actual): *high intensity*.

	Hours worked (actual)		
	Model 1	Model 2	Model 3
Post-reform	1.102	2.877*	3.085*
	(1.601)	(1.618)	(1.710)
Treatment	-0.926	-0.786	-0.197
	(2.450)	(2.439)	(2.457)
Treatment x Post-reform	-2.561	-2.292	-2.613
	(2.271)	(2.123)	(2.159)
Intermediate secondary	-0.0279	-11.97	-16.03
education	(7.063)	(10.27)	(10.89)
Higher / pre-university	7.322	-3.365	-7.792
education	(7.579)	(10.44)	(11.06)
Middle vocational	2.460	-8.029	-13.17
education	(7.070)	(10.29)	(10.92)
Higher vocational	6.625	-2.658	-6.959
education	(7.183)	(10.38)	(10.99)
University	0.0249	-5.018	-8.028
	(7.933)	(10.83)	(11.31)
Number of members in	2.098	1.115	0.966
the household	(1.409)	(1.480)	(1.426)
First gen.	-9.929	-8.057	-3.712
	(6.243)	(6.459)	(5.560)
Second gen.	18.20***	17.24***	17.57***
	(4.281)	(2.270)	(2.078)
Age	1.730	3.272	4.304**
	(2.136)	(2.100)	(1.824)
Age²	-0.0207	-0.0359*	-0.0442***
	(0.0194)	(0.0189)	(0.0164)
Constant	-16.83	-42.37	-70.04
	(59.35)	(59.29)	(52.17)
Observ.	256	518	660
R-squared	0.182	0.239	0.234

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

Table 17. Results of OLS for hours worked (contract): *high intensity*.

	Hours worked (contract)		
	Model 1	Model 2	Model 3
Post-reform	0.163	0.531	0.823
	(0.934)	(1.126)	(1.145)
Treatment	1.356	0.623	0.790
	(1.882)	(1.894)	(1.910)
Treatment x Post-reform	-0.290	-0.379	-0.671
	(1.285)	(1.448)	(1.494)
Intermediate secondary	-2.183	-2.904	-3.094
education	(2.829)	(2.454)	(2.375)
Higher / pre-university	7.492**	4.957	4.463
secondary education	(3.286)	(3.184)	(3.287)
Middle vocational	3.489	3.043	3.208
education	(2.881)	(2.687)	(2.638)
Higher vocational	4.220	5.149*	5.223*
education	(3.105)	(2.809)	(2.710)
University	3.577	4.836	5.720
	(5.932)	(5.525)	(4.882)
Number of members in	0.707	-0.395	-0.980
the household	(0.903)	(1.211)	(1.313)
First gen.	-6.810	-3.528	0.448
	(5.308)	(5.548)	(3.900)
Second gen.	8.677***	8.745***	8.232***
	(3.232)	(3.052)	(2.745)
Age	0.602	1.413	2.202
	(1.900)	(1.816)	(1.640)
Age²	-0.00903	-0.0181	-0.0250*
	(0.0172)	(0.0165)	(0.0151)
Constant	14.99	2.103	-19.31
	(52.38)	(50.16)	(44.57)
Observ.	212	428	548
R-squared	0.226	0.269	0.274

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

Table 18. Results of OLS for training: *high intensity*.

	Training		
	Model 1	Model 2	Model 3
Post-reform	0.0181	0.0542**	0.0605***
	(0.0183)	(0.0215)	(0.0213)
Treatment	0.0409	0.0388	0.0445
	(0.0443)	(0.0429)	(0.0420)
Treatment x Post-reform	-0.0150	-0.0232	-0.0261
	(0.0411)	(0.0395)	(0.0376)
Intermediate secondary	-0.0324	-0.0313	-0.0265
education	(0.0248)	(0.0220)	(0.0206)
Higher / pre-university	0.0649	0.0990*	0.101**
education	(0.0527)	(0.0514)	(0.0470)
Middle vocational	0.0610	0.0245	0.0255
education	(0.0467)	(0.0365)	(0.0326)
Higher vocational	0.169***	0.178***	0.168***
education	(0.0538)	(0.0462)	(0.0431)
University	0.0514	0.129	0.0900
	(0.0979)	(0.118)	(0.120)
Number of members in	0.0283	0.0438	0.0466
the household	(0.0304)	(0.0337)	(0.0331)
First gen.	-0.0527	-0.102	-0.134*
	(0.0882)	(0.0720)	(0.0765)
Second gen.	0.0797	0.0179	-0.00679
	(0.0623)	(0.0346)	(0.0281)
Age	0.0786***	0.0801***	0.0733***
	(0.0216)	(0.0222)	(0.0219)
Age²	-	-	-
	0.000807***	0.000822***	0.000754***
	(0.000201)	(0.000194)	(0.000184)
Constant	-1.799***	-1.873***	-1.715**
	(0.598)	(0.681)	(0.697)
Observ.	490	1,143	1,527
R-squared	0.158	0.181	0.174

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

Table 19. Results of the OLS repeated cross section model in post-reform period 2015-2019 for younger female partners by gross income (low and high).

	Expected retirement age		**Paid work**		**Hours worked (actual)**		**Hours worked (contract)**	
	Low	*High*	*Low*	*High*	*Low*	*High*	*Low*	*High*
Post-reform	0.0453	0.131	-0.0349	-0.153	-2.487	6.796	1.835	1.020
	(1.101)	(0.771)	(0.0414)	(0.0945)	(1.946)	(4.489)	(1.669)	(1.441)
Treatment	0.755	-0.524	0.0618	-0.105	0.433	3.550	4.763	1.183
	(1.223)	(1.051)	(0.0897)	(0.102)	(3.600)	(3.470)	(3.026)	(2.170)
Treatment x Post-	-0.616	1.320	-0.0313	0.168	-2.375	-4.049	-5.205**	-0.119
reform	(1.483)	(1.056)	(0.0676)	(0.106)	(2.743)	(4.536)	(2.266)	(1.775)
Intermediate secondary	2.151**		0.0259		5.606		0.439	
education	(0.871)		(0.0393)		(4.578)		(3.782)	
Higher / pre-university	2.348**	-1.885**	0.0878	-0.0209	11.16**	0.547	2.600	4.210
secondary education	(0.925)	(0.793)	(0.0826)	(0.111)	(4.202)	(2.671)	(3.777)	(2.535)
Middle vocational	1.151	-0.604	0.112	-0.0907	10.09*	-0.932	10.03**	3.393
education	(1.246)	(1.025)	(0.0794)	(0.143)	(5.332)	(2.712)	(4.792)	(2.730)
Higher vocational	-4.124*	-2.182**	0.225**	-0.0903	6.077	0.275	0.850	1.691
education	(2.353)	(0.858)	(0.107)	(0.118)	(5.069)	(2.581)	(4.487)	(2.553)
University		0.455	-0.167**	0.0983	10.13**	1.443	2.406	8.171**
		(1.587)	(0.0783)	(0.102)	(4.353)	(4.877)	(3.695)	(3.746)
Number of members in	-0.0402	-0.0533	0.0767	0.0303	-3.249**	1.311	-4.879**	-0.136
the household	(0.339)	(0.366)	(0.0875)	(0.0383)	(1.330)	(1.315)	(1.906)	(0.800)
First gen.	3.594***	1.105	-0.0547	0.110	-14.62***	4.029	-1.218	6.691***
	(1.269)	(0.731)	(0.165)	(0.115)	(3.162)	(4.571)	(6.097)	(1.334)
Second gen.	-0.676	2.985***	-0.184**	-0.0109	21.08***	14.01***	19.36***	6.725*
	(2.163)	(0.945)	(0.0857)	(0.0957)	(2.392)	(2.041)	(3.116)	(3.770)
Age	-6.770	-4.797***	-0.0393	0.607***	-7.379***	2.345	-9.548***	-0.996
	(6.793)	(1.535)	(0.0499)	(0.0733)	(2.104)	(5.285)	(2.712)	(4.116)
Age^2	0.0549	0.0415***	0.000111	-0.00546***	0.0661***	-0.0262	0.0879***	0.00544
	(0.0558)	(0.0133)	(0.000433)	(0.000648)	(0.0209)	(0.0464)	(0.0254)	(0.0362)
Constant	271.7	203.2***	1.996	-15.83***	219.4***	-28.34	276.7***	64.36
	(206.7)	(44.08)	(1.563)	(2.043)	(50.17)	(150.1)	(72.05)	(116.8)
Observ.	72	208	686	314	174	256	139	235
R-squared	0.496	0.266	0.167	0.388	0.166	0.188	0.403	0.256

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the partner allowance
Low is a group with a gross income less than 1500 euros per month. High is above 1500 euros.
*p < 0.10; **p<0.05; ***p<0.01

Table 20. Results of the OLS for expected retirement age. Base year 2013.

	Expected retirement age		
	Model 1	Model 2	Model 3
Post-reform	0.525	0.635	0.594
	(0.460)	(0.509)	(0.507)
Treatment	-0.575	-0.154	-0.0367
	(0.553)	(0.551)	(0.540)
Treatment x Post-reform	0.0541	-0.0655	-0.0288
	(0.664)	(0.661)	(0.648)
Intermediate secondary	0.0882	-0.364	-0.185
education	(1.242)	(1.246)	(1.124)
Higher / pre-university	-0.131	-1.244	-1.383
secondary education	(1.324)	(1.314)	(1.206)
Middle vocational	-0.824	-0.861	-0.591
education	(1.300)	(1.299)	(1.173)
Higher vocational	-1.540	-2.010	-1.912
education	(1.319)	(1.328)	(1.227)
University	-0.0841	0.173	0.289
	(1.662)	(1.752)	(1.626)
Number of members in	-0.244	-0.147	-0.119
the household	(0.372)	(0.295)	(0.272)
First gen.	-0.104	1.881**	1.753*
	(0.991)	(0.893)	(0.918)
Second gen.	1.905***	2.433***	2.500***
	(0.604)	(0.660)	(0.604)
Age	-0.435	-2.458**	-2.934***
	(1.251)	(0.974)	(0.922)
Age²	0.00247	0.0208**	0.0252***
	(0.0108)	(0.00840)	(0.00795)
Constant	82.94**	138.2***	150.8***
	(36.15)	(28.27)	(26.67)
Observ.	216	387	472
R-squared	0.122	0.146	0.163

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

D. Robustness check

Table 21. Results of the OLS for paid work. Base year 2013.

	Paid work		
	Model 1	Model 2	Model 3
Post-reform	-0.0208	-0.00897	-0.00530
	(0.0339)	(0.0397)	(0.0409)
Treatment	-0.0424	-0.0361	-0.0361
	(0.0731)	(0.0675)	(0.0647)
Treatment x Post-reform	0.00174	-0.0201	-0.00369
	(0.0445)	(0.0500)	(0.0512)
Intermediate secondary	0.0770	0.0458	0.0370
education	(0.0722)	(0.0677)	(0.0637)
Higher / pre-university	0.202*	0.140	0.117
education	(0.116)	(0.100)	(0.0895)
Middle vocational	0.272***	0.216***	0.195**
education	(0.0904)	(0.0828)	(0.0771)
Higher vocational	0.356***	0.334***	0.307***
education	(0.0884)	(0.0830)	(0.0765)
University	0.504***	0.278**	0.200
	(0.128)	(0.132)	(0.129)
Number of members in	0.000297	0.00129	0.0180
the household	(0.0362)	(0.0372)	(0.0364)
First gen.	-0.103	-0.116	-0.141
	(0.161)	(0.162)	(0.140)
Second gen.	-0.0850	-0.114	-0.104
	(0.0912)	(0.0778)	(0.0785)
Age	0.192***	0.159***	0.137**
	(0.0556)	(0.0590)	(0.0558)
Age²	-0.00197***	-0.00169***	-0.00149***
	(0.000493)	(0.000502)	(0.000466)
Constant	-4.121***	-3.143*	-2.535
	(1.579)	(1.747)	(1.686)
Observ.	739	1,400	1,814
R-squared	0.212	0.236	0.257

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

Table 22. Results of the OLS for hours worked (actual). Base year 2013.

	Hours worked (actual)		
	Model 1	Model 2	Model 3
Post-reform	-0.405	0.203	0.00104
	(1.776)	(1.775)	(1.773)
Treatment	-0.184	-0.995	-0.594
	(2.058)	(2.001)	(1.964)
Treatment x Post-reform	-1.795	-0.272	-0.142
	(2.164)	(1.869)	(1.885)
Intermediate secondary education	-3.919	-11.74	-14.86
	(6.083)	(8.745)	(9.710)
Higher / pre-university secondary education	3.299	-3.659	-6.820
	(6.471)	(8.952)	(9.900)
Middle vocational education	-1.163	-7.721	-11.67
	(6.115)	(8.760)	(9.730)
Higher vocational education	1.898	-3.027	-6.111
	(6.160)	(8.833)	(9.801)
University	-6.003	-6.706	-8.349
	(7.037)	(9.433)	(10.21)
Number of members in the household	0.457	0.189	0.210
	(1.164)	(1.284)	(1.270)
First gen.	-7.866	-7.016	-3.503
	(5.172)	(5.666)	(5.108)
Second gen.	14.93***	15.64***	16.07***
	(4.688)	(3.037)	(2.746)
Age	1.657	2.947	3.555*
	(1.986)	(2.107)	(1.860)
Age²	-0.0212	-0.0332*	-0.0377**
	(0.0186)	(0.0193)	(0.0168)
Constant	-2.074	-28.91	-46.34
	(53.01)	(57.96)	(52.61)
Observ.	393	655	797
R-squared	0.164	0.212	0.210

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

Table 23. Results of the OLS for hours worked (contract).Base year 2013.

	Hours worked (contract)		
	Model 1	Model 2	Model 3
Post-reform	1.924*	0.546	0.268
	(1.107)	(1.424)	(1.545)
Treatment	-2.635	-3.056*	-2.872
	(1.784)	(1.763)	(1.760)
Treatment x Post-reform	-2.192	0.486	1.022
	(1.400)	(1.641)	(1.760)
Intermediate secondary education	-2.349	-2.880	-3.003
	(2.790)	(2.504)	(2.433)
Higher / pre-university education	5.873*	4.164	4.018
	(3.104)	(3.005)	(3.064)
Middle vocational education	2.577	2.781	2.970
	(2.926)	(2.734)	(2.719)
Higher vocational education	3.309	4.599*	4.772*
	(2.986)	(2.759)	(2.678)
University	0.163	2.550	3.955
	(5.853)	(5.524)	(4.972)
Number of members in the household	0.374	-0.203	-0.635
	(0.809)	(0.982)	(1.097)
First gen.	-6.046	-4.185	-0.683
	(4.579)	(4.983)	(3.810)
Second gen.	7.132***	7.834***	7.705***
	(2.456)	(2.454)	(2.207)
Age	2.364	2.555	2.904*
	(1.715)	(1.780)	(1.670)
Age²	-0.0277*	-0.0297*	-0.0322**
	(0.0160)	(0.0163)	(0.0153)
Constant	-20.14	-23.06	-33.91
	(45.65)	(48.27)	(45.29)
Observ.	328	544	664
R-squared	0.227	0.258	0.259

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

Table 24. Results of the OLS estimates for training participation. Base year 2013.

	Training		
	Model 1	Model 2	Model 3
Post-reform	0.0280	0.0584**	0.0635**
	(0.0257)	(0.0283)	(0.0290)
Treatment	-0.0584	-0.0573	-0.0471
	(0.0445)	(0.0423)	(0.0402)
Treatment x Post-reform	-0.0334	-0.0195	-0.0176
	(0.0382)	(0.0351)	(0.0335)
Intermediate secondary education	-0.0320	-0.0309	-0.0259
	(0.0284)	(0.0229)	(0.0209)
Higher / pre-university secondary education	0.102*	0.108**	0.109**
	(0.0604)	(0.0507)	(0.0459)
Middle vocational education	0.0658	0.0379	0.0381
	(0.0451)	(0.0363)	(0.0323)
Higher vocational education	0.184***	0.190***	0.182***
	(0.0535)	(0.0470)	(0.0439)
University	0.00619	0.0933	0.0654
	(0.0904)	(0.110)	(0.114)
Number of members in the household	0.0389	0.0475	0.0492
	(0.0284)	(0.0306)	(0.0305)
First gen.	-0.0828	-0.118	-0.141*
	(0.0852)	(0.0723)	(0.0756)
Second gen.	0.0505	0.0119	-0.00932
	(0.0506)	(0.0304)	(0.0257)
Age	0.0925***	0.0958***	0.0874***
	(0.0206)	(0.0225)	(0.0219)
Age²	-0.000980***	-0.001000***	-0.000912***
	(0.000204)	(0.000212)	(0.000202)
Constant	-1.991***	-2.129***	-1.948***
	(0.524)	(0.615)	(0.620)
Observ.	736	1,389	1,773
R-squared	0.150	0.176	0.171

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the PA
Model 1: 2015; Model 2: 2015-2017; Model 3: 2015-2019
*p <0.10; **p<0.05; ***p<0.01

Table 25 . Results of the OLS repeated cross section model in post-reform period 2015-2019 for younger female who were born in 1950 or later.

	Expected retirement age	**Paid work**	**Hours worked (actual)**	**Hours worked (contract)**	**Training**
Post-reform	0.963	-0.0724	1.868	-0.154	0.0923**
	(0.675)	(0.0517)	(2.302)	(1.647)	(0.0377)
Treatment	0.0743	-0.115	-0.638	-3.683*	-0.0312
	(0.733)	(0.0731)	(2.455)	(2.010)	(0.0453)
Treatment x Post-reform	-0.00579	0.0647	-0.340	1.529	-0.0401
	(0.843)	(0.0595)	(2.410)	(1.864)	(0.0437)
Intermediate secondary	-0.484	0.0354	-18.66	-3.664	-0.0324
education	(0.833)	(0.0959)	(11.58)	(3.177)	(0.0309)
Higher / pre-university	-1.701*	0.127	-10.40	3.469	0.115**
secondary education	(0.945)	(0.126)	(11.74)	(3.954)	(0.0556)
Middle vocational	-0.813	0.213**	-15.00	3.335	0.0425
education	(0.888)	(0.105)	(11.62)	(3.486)	(0.0387)
Higher vocational	-2.295**	0.360***	-8.570	5.235	0.198***
education	(0.983)	(0.105)	(11.68)	(3.463)	(0.0502)
University	0.167	0.187	-10.09	5.010	0.0865
	(1.509)	(0.151)	(11.93)	(5.147)	(0.119)
Number of members in	-0.0969	0.0199	0.567	-1.001	0.0453
the household	(0.301)	(0.0427)	(1.576)	(1.453)	(0.0349)
First gen.	1.567*	-0.147	-2.905	1.508	-0.144*
	(0.924)	(0.149)	(5.615)	(4.047)	(0.0790)
Second gen.	2.739***	-0.156	17.20***	8.010***	-0.0400
	(0.656)	(0.115)	(2.003)	(2.519)	(0.0337)
Age	-3.441***	0.144*	4.621**	3.317*	0.120***
	(1.096)	(0.0732)	(2.134)	(1.905)	(0.0287)
Age^2	0.0296***	-0.00155**	-0.0468**	-0.0354**	-0.00122***
	(0.00950)	(0.000623)	(0.0194)	(0.0175)	(0.000264)
Constant	164.8***	-2.649	-76.67	-45.58	-2.844***
	(31.33)	(2.153)	(59.47)	(51.01)	(0.798)
Observ.	395	1,271	637	528	1,266
R-squared	0.195	0.213	0.226	0.265	0.172

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the partner allowance
*p < 0.10; **p<0.05; ***p<0.01

E. Placebo tests

Table 26. Results of the placebo test with post-reform period 2012-2014 and base year 2009.

	Expected retirement age	**Paid work**	**Hours worked (actual)**	**Hours worked (contract)**	**Training**
Post-reform	1.264***	0.0309	-0.563	1.082	0.0117
	(0.379)	(0.0358)	(1.569)	(1.329)	(0.0330)
Treatment	0.657	0.0266	-1.643	-1.755	-0.0378
	(0.644)	(0.0717)	(2.217)	(1.813)	(0.0516)
Treatment x Post-reform	-0.191	-0.0687	1.671	-0.0783	0.0203
	(0.490)	(0.0431)	(1.996)	(1.550)	(0.0492)
Intermediate secondary	0.331	0.0655	-4.042	-0.249	-0.0140
Education	(0.746)	(0.0852)	(4.305)	(2.744)	(0.0378)
Higher / pre-university	-0.557	0.192	2.623	7.274**	0.0510
secondary education	(0.993)	(0.121)	(4.572)	(3.085)	(0.0623)
Middle vocational	-0.631	0.346***	-0.934	4.152	0.0990**
Education	(0.826)	(0.0985)	(4.405)	(2.921)	(0.0485)
Higher vocational	-0.752	0.316***	1.646	5.095*	0.213***
Education	(0.832)	(0.0989)	(4.427)	(2.894)	(0.0577)
University	0.131	0.646***	-9.690*	-3.917	-0.0884
	(1.379)	(0.109)	(5.322)	(5.373)	(0.0746)
Number of members in	-0.319	-0.000406	-1.537*	-0.912	0.0254
the household	(0.318)	(0.0320)	(0.903)	(0.810)	(0.0230)
First gen.	0.642	-0.153	-3.563	-1.434	-0.0448
	(0.783)	(0.140)	(4.832)	(3.658)	(0.0713)
Second gen.	2.514***	-0.112	10.78***	6.687***	-0.0188
	(0.831)	(0.0915)	(3.752)	(1.752)	(0.0556)
Age	-0.852	0.209***	0.602	1.275	0.0909***
	(1.302)	(0.0399)	(1.590)	(1.462)	(0.0169)
Age^2	0.00739	-0.00212***	-0.0131	-0.0176	-0.000949***
	(0.0111)	(0.000384)	(0.0150)	(0.0137)	(0.000175)
Constant	88.24**	-4.613***	37.24	8.223	-2.009***
	(38.33)	(1.036)	(42.61)	(39.01)	(0.404)
Observ.	323	999	590	517	997
R-squared	0.083	0.208	0.135	0.164	0.124

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the partner allowance
*p< 0.10; **p<0.05; ***p<0.01

Table 27. Results of the placebo test with post-reform period 2013-2014 and base year 2012.

	Expected retirement age	Paid work	Hours worked (actual)	Hours worked (contract)	Training
Post-reform	1.321***	0.0291	-0.576	0.314	0.0243
	(0.484)	(0.0275)	(1.100)	(0.968)	(0.0303)
Treatment	0.976	-0.0315	-0.903	-2.757	0.0377
	(0.629)	(0.0727)	(2.133)	(1.869)	(0.0526)
Treatment x Post-reform	-1.265**	-0.0245	0.900	0.775	-0.0847
	(0.639)	(0.0350)	(1.466)	(1.196)	(0.0524)
Intermediate secondary	0.502	0.0709	-4.713	-3.231	-0.0220
education	(0.924)	(0.0853)	(4.537)	(2.365)	(0.0394)
Higher / pre-university	-0.707	0.192	2.050	3.932	0.0519
secondary education	(1.228)	(0.123)	(4.772)	(2.726)	(0.0746)
Middle vocational	-0.406	0.326***	-1.811	0.545	0.0878*
education	(0.976)	(0.102)	(4.665)	(2.500)	(0.0492)
Higher vocational	-0.632	0.332***	0.641	1.397	0.207***
education	(0.990)	(0.0996)	(4.663)	(2.458)	(0.0614)
University	0.150	0.665***	-12.34**	-7.567	-0.0681
	(1.353)	(0.118)	(6.238)	(5.759)	(0.0924)
Number of members in	-0.304	-0.00912	-1.520	-0.626	0.0265
the household	(0.320)	(0.0337)	(0.970)	(0.810)	(0.0273)
First gen.	0.168	-0.167	-4.979	-1.899	-0.0531
	(1.099)	(0.149)	(4.624)	(3.633)	(0.0771)
Second gen.	2.524***	-0.141	14.10***	7.376***	0.0213
	(0.753)	(0.0903)	(3.159)	(1.800)	(0.0711)
Age	-1.045	0.213***	0.956	2.254	0.0884***
	(1.248)	(0.0413)	(1.718)	(1.574)	(0.0180)
Age^2	0.00864	-0.00217***	-0.0171	-0.0267*	-0.000929***
	(0.0108)	(0.000394)	(0.0164)	(0.0150)	(0.000190)
Constant	95.64***	-4.643***	30.80	-13.82	-1.931***
	(36.35)	(1.080)	(44.98)	(41.17)	(0.411)
Observ.	240	758	424	368	756
R-squared	0.075	0.208	0.172	0.166	0.135

Note: Clustered standard errors by individual
Treatment is the group of younger female partners of individuals not eligible for the partner allowance
*p< 0.10; **p<0.05; ***p<0.01