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Social Determinants of Early Retirement

Bachelor's thesis

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Abstract

As the population continues to age, it is important to determine what motivates people to opt for early retirement. This thesis investigates the social determinants of early retirement with a primary focus on the role of a living parent. A logistic regression is performed on data from the Czech Republic, southern and northern Europe. Our results suggest that workers with at least one living parent are more likely to plan early retirement in the Czech Republic and southern Europe, and less likely to do so in northern Europe. Moreover, wider family background motivates the workers to retire earlier. Our findings imply that improved formal care and flexible working arrangements may offer a solution to the growing number of early pensions.

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Abstrakt

Vzhledem ke stále stárnoucí populaci je důležité určit faktory odchodu do předčasného důchodu. Tato práce zkoumá sociální determinanty předčasného odchodu do důchodu s primárním zaměřením na roli žijícího rodiče. Na datech z České republiky, jižní a severní Evropy je provedena logistická regrese. Naše výsledky naznačují, že pracovníci s alespoň jedním žijícím rodičem častěji plánují odchod do předčasného důchodu v České republice a jižní Evropě, kdežto v severní Evropě méně často. Širší rodinné zázemí navíc motivuje pracovníky k předčasnému odchodu do důchodu. Z našich zjištění vyplývá, že zlepšení formální péče a flexibilní pracovní úvazky mohou nabídnout řešení rostoucímu počtu předčasných důchodů.

Klasifikace JEL	J22, J26
Klíčová slova	Předčasný odchod do důchodu, Česká republika, sociální determinanty
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Acronyms

SHARE Survey of Health, Ageing and Retirement in Europe

ČSÚ Český statistický úřad

ČSSZ Česká správa sociálního zabezpečení

pp percentage points

CZ Czech

CZM Czech men

CZW Czech women

NM Nordic men

NW Nordic women

SM Southern men

SW Southern women

Chapter 1

Introduction

In the Czech Republic, 20.4% of the population is older than 65 years. This is slightly lower than the European Union average of 21.3% (Eurostat 2024). According to the medium scenario forecast of the ČSÚ, the proportion of people aged 65 and over in the Czech population will gradually increase to 30% by the beginning of the year 2059 (ČSÚ 2018).

The phenomenon of early retirement is becoming increasingly prevalent. In 2010, early retirees comprised only approximately one-fifth of the total number of old-age pensions in the Czech Republic, while by the end of the year 2020 the percentage was 27.2% and by the end of 2021 it was 28.1%. In 2022, this figure had risen to 28.73%. In March 2024, the percentage of early retirees decreased to 26.21%. Men made up 43.53% of the early retirees and women 56.47% (ČSSZ 2024).

The increase observed in 2022 was influenced by two exceptional adjustments of pensions, which resulted in a brief period of time during which applying for early retirement was more financially beneficial than waiting for the standard pension (ČSÚ 2023). The reforms of 2023 and 2024 should disincentivize early retirement with regards to standard retirement. After October 2023, the early retirement is possible no sooner than at the age of 62 years, and the total accrual factor is reduced by 1.5% for each 90 days of early retirement. After October 2024, the minimum required insurance period will increase to a minimum of 40 years.

The decision to retire early is complex and subject to economic and sociodemographic determinants. Empirical literature has revealed that both physical and psychological health status are predictors of early retirement (Schuring *et al.* 2012; Mein 2000). Low-paid jobs and dissatisfaction in one's job was

positively related to early retirement (Kim & Feldman 1998; Kubicek *et al.* 2010). Being divorced or widowed was found to increase the probability of early retirement, especially for men (Elovainio *et al.* 2003; Mein 2000).

The results provided by previous research on the role of a living parent are inconclusive. This thesis will contribute to this stream of empirical research by focusing on a living parent as a factor influencing the probability of planning early retirement in the Czech Republic, southern and northern Europe.

Using a logit model, we analyze a SHARE dataset of 1396 individuals between 50-60 years in the Czech Republic, 2829 respondents in southern and 4204 respondents in northern Europe who are between 55-65 years of age. Only pre-retirement sample of population was included, because we focus on the will to retire as soon as possible, not the actual retirement decision due to data availability. This is not a drawback for our research, as Solem *et al.* (2014) suggest that the correlation between the preferred retirement age and the actual retirement age is strong ($r=0.51$).

We identified a living parent as a factor increasing the will to retire as soon as possible in Czechia and southern Europe, whereas in northern Europe, the effect is significant but negative. This indicates that Czech and southern respondents choose time-demanding form of caregiving, whereas nordic respondents rather support their parents financially. We further identified grandparenthood as a factor increasing the likelihood of early retirement plans, whereas previous literature was inconclusive. Our results suggest that marriage is a predictor of early retirement plans, especially for women, contradicting the previous empirical literature. We found no evidence of a stronger family bond in southern countries, which is suggested by some of the previous research (Hank 2007). Our results support the finding that satisfaction in one's job lowers the probability of early retirement plans and add self-employment as another factor.

This thesis has the following structure: Chapter 2 examines the existing literature on the topic of determinants of early retirement, Chapter 3 describes the data and the selected variables, Chapter 4 defines the methods of our analysis. Chapter 5 presents the obtained results, which are further discussed in Chapter 6. The thesis is concluded in Chapter 7.

Chapter 2

Literature review

The decision to retire is influenced by multiple economic and social factors which are taken into account by contemporary research.

In this section, various determinants of early retirement such as social background, education, health or life events such as the death of a parent will be examined from the view of existing literature. We will analyse how a living parent influences the decision to retire early and who is more inclined to provide informal care to their parents. Gender, size of family, residential proximity and current life stage may play a role in these decisions.

2.1 Caregiving

Important life events such as the death of a parent may influence the decision to leave the workforce early, be it through the stress they bring to the individual and its negative impact on health, or through the easier transition from worklife to retirement, which may happen when the individual has already reduced their work hours, possibly because of providing some informal caregiving to a parent (Kridahl & Silverstein 2019). On the other hand, a living parent may increase the probability of early retirement since they may require informal care from their working children (Stoiko & Strough 2019).

Svensson *et al.* (2015) suggest that adult women with deceased parents are in greater risk of early retirement. This may be because of poor health from stress and lack of social support or because they have no need to provide financial support to their relatives. In particular, childless women with no living parents had the lowest retirement age (approximately 62 years) of all groups in this study, which were divided based on the size and geographical proximity

of their family and timing of life events such as the birth of their children and grandchildren. Kridahl & Silverstein (2019) indicate that during the time after parental death the risk of retirement increases, especially when it is the mother that died, since her children may be required to provide more care to the widowed father than if it was the father that died and the mother who would become widowed. This confirms their hypothesis that elderly men are more vulnerable when becoming widowers. In addition, this effect of parental death was more noticeable among women than men. Overall, this study suggests that adult children with only one living parent are at higher risk of retirement.

When the focus is shifted on life events such as children leaving their nest, this happening later in parents' life may also provoke them to retire later, since they may still feel economic responsibility for them (Svensson *et al.* 2015). This study indeed confirmed this idea for women who started a family late and thus had children still at home.

2.2 Health and marital satisfaction

Poor health status may play an important role in the decision to retire early. Kubicek *et al.* (2010) suggest that one's poor health is indeed associated (but not strongly) with early retirement. Schuring *et al.* (2012) agree with the notion that poor health increases the probability of early retirement and remarks that it is rather long-term health problems than acute illness that do so. Additionally, poor health of a spouse may lead to lower probability of early retirement, as spousal illness leads to higher demands in marriage and lower marital satisfaction (Kubicek *et al.* 2010). A possible explanation could be the need to escape stressful family situation by working, or the need to financially provide more when one's spouse is unable to do so. It is then not surprising that being satisfied in marriage was associated with higher probability of early retirement, as such individuals may place importance on family peace when deciding on retirement timing.

If we look at the relationship between actual health and self-perceived health of an individual and their implications on retirement timing, Karpansalo *et al.* (2004) show in their study with only male participants that self-perceived health (measured by self-assessment in a questionnaire) is a strong indicator of actual health (measured by physician diagnoses). Individuals assessing their own health as deficient were often those who had higher alcohol consumption, smoked more and had higher BMI. Poor self-perceived health was associated

with developing mental disorders and led to other problems. Furthermore, they show that poor self-perceived health is a predictor of early retirement, especially when concerning mental health problems and cardiovascular diseases. Mein (2000) supported the finding that psychological problems in men increase the risk of early retirement.

2.3 Work environment

Certain types of jobs have adverse effects on health and therefore impact retirement timing. Karpansalo *et al.* (2004) shows that blue-collar workers and men with lower education tend to assess their health as average, whereas most better educated men and white-collar workers consider their health as good, which points on endogeneity between self-perceived health status and type of job. Nevertheless, Kubicek *et al.* (2010) present different opinion on how the type of job connects to early retirement - in their study, psychologically demanding jobs indirectly increased the risk of early retirement through work-to-family conflict and physically demanding jobs decreased it, even though various previous studies indicated that physically demanding jobs increase the risk of early retirement through health problems (e.g. Salonen (2003)). Mein (2000) found that higher job demands among civil servants increased the likelihood of early retirement among women, but not men.

Salary has also been found a predictor of early retirement. Well-paid jobs entail higher opportunity costs of retiring than low-paid jobs, which is the reason why low salary was found to be positively related to early retirement (Kim & Feldman 1998). Additionally, as workers approach retirement age, they tend to set higher reservation wages, despite the fact that this does not appear to be correlated with having a stronger labour market position (Coen *et al.* 2010). Another explanation could be that people with high salaries are usually better educated and make better financial decisions, therefore better understand the economic benefits of not retiring early, or are generally more content and attached to their jobs (Venti & Wise 2015).

Dissatisfaction in one's job may lead to stress-induced health problems and may be linked to early retirement. Mein (2000) shows that civil servants who were dissatisfied in their job were more likely to retire early, especially men. Kubicek *et al.* (2010) also state that job satisfaction lowers the risk of early retirement and adds that its effect is weaker than that of marital satisfaction.

2.4 Gender

Women and men consider different factors when deciding to retire early. For example, living parent may influence the adult child in different ways depending on the child's gender. In current literature, it is often hypothesized that the responsibility of caregiving for elderly parents falls onto female relatives, as it is society's expectation of women given by cultural and historical gender norms (Svensson *et al.* 2015). However, the rate of female participation in the workforce has risen considerably nowadays and thus women may not feel as compelled to participate in societal gender roles as before.

Dentinger & Clarkberg (2002) found out that caregiving influences women to retire early as they may be more inclined to invest their time into it, whereas men actually retire later as they choose to invest financially into caregiving.

Dentinger & Clarkberg (2002) also show that it is the nature of the relationship between the caregiver and the care recipient that influences retirement. In this study, caregiving to elderly parents had much lesser effect on women's retirement timing than caregiving to a spouse. For men, caregiving to a spouse also had more significant effect than caring for an parent, but in the opposite direction – there was a delay in their retirement, again showing their need to rather provide care financially.

Stoiko & Strough (2019) support the idea that it is not gender on its own that links caregiving to early retirement, but gender roles that do. In this study, when men took on caregiving roles typical for women, that is caregiving built on time transfer, their retirement timing also resembled women's. This means that whoever decides to provide care by investing their own time into it is more likely to retire earlier, no matter their gender. Investing financially may then provoke later retirement, no matter the gender. Thus, there seems to be no evidence that retirement timing is dependant on some innate biological pattern, but more so on different individual behavior and other influences (Cahill *et al.* 2015).

2.5 Proximity to relatives and family bond

Litwin & Tur-Sinai (2015) suggest that individuals living at lower distance from their social network were often those who retired early. Overall, higher proximity to one's relatives and the strength of the family bond, which is often weakened by geographical distance, may be an important factor in early

retirement, because people are then prone to invest more of their time into caregiving. If people live closer to their elderly parents, they may be more inclined to provide informal care to them, for example because of reduced time cost of commuting. Pillemer & Suitor (2013) demonstrate that the adult children who lived in proximity to their parents, that is less than two hour drive, were six times more likely to become caregivers than children who lived further away.

Hank (2007) states that the factors associated with higher proximity to one's relatives are poor parental health, lower education and gender - mothers are more likely to coreside with their children than fathers and are more likely to keep daily contact with them. Similarly, daughters are more likely to contact their parents than sons, however, they also tend to leave home earlier than sons.

Findings from Hank (2007) on the association between geographical distance and the strength of the family bond indicate that the most contacted children are in nearly 70% of cases also the closest living ones, and the probability of having more than weekly contacts significantly diminishes if the distance is greater than 25 km, especially in Mediterranean countries, where greater distance is less common and thus more associated with poor relationship between parents and children. Moreover, studies observe a divide between southern and northern European countries in terms of strength of the family bond. There are differences in living arrangements, the frequency of contact, the amount of care provided to grandchildren and geographical distance between parents and adult children based on culture and customs. Hank (2007) shows that southern, central and northern European countries have all their own clear patterns. Adult children coresiding with their parents is the prevailing type of living arrangement in Mediterranean countries, whereas the lowest rate of coresidence (17%) and highest occurrence of parent-nearest child distance greater than 25 km was found in Scandinavian countries. Strong social welfare system in Scandinavia may be the factor here. In the central region, the modal distance was less than 25 km. Southern countries are typically thought of as "strong family bond" countries and northern as "weak family bond" countries. Thus, if grandparents provide any care to their grandchildren, Mediterranean grandparents show the highest propensity to do so frequently, and Nordic, Dutch and French grandparents the lowest (Hank & Buber 2008). This could be because co-residence is the norm and the common way of transferring resources between children and parents in Mediterranean countries, and in the case that provision of care happens in non-co-residing families, it tends to be more intense (Hank & Bu-

ber 2008). Hank & Buber (2008) however provide also opposing suggestion that the probability to provide some form of care is lowest in Mediterranean countries and highest among Danish, Dutch, French and Swedish grandparents. The reason could be that because family relations tend to be stronger, grandparents are inclined to report providing care only from a certain higher threshold, thus some more basic childcare activities might go unreported (this is not a limitation in our study, where leaving the workforce is essentially a proxy for caregiving). Moreover, there is a lack of public day care in Mediterranean countries which hinders employment of mothers, who may thus opt to stay at home full-time with little to no need of help from grandparents. This situation is quite common, since the female labor force participation rate is well below 50% in the Mediterranean countries (Hank & Buber 2008).

2.6 Social background

People may adjust their retirement timing depending on their social background. Solid social background provides support during stressful events such as parental death and eases the mental and physical workload imposed by caregiving to elderly parents. Kridahl & Silverstein (2019) investigated whether the presence of siblings in family mitigates the risk of retiring early. They demonstrate that increasing the number of siblings indeed simultaneously decreases the risk of early retirement, and this holds true especially for women, who are more frequently the caregivers.

Marital status may affect retirement due to the possible positive effect on one's well-being (Elovainio *et al.* 2003). Similarly, married individuals want to retire at similar time as their spouse (Gustman & Steinmeier 2004). However, the probability is likely to decrease with lower quality of the relationship between the spouses, which is linked to how much the partners value time spent together (Gustman & Steinmeier 2004). Evidence suggests that men are more influenced by their partner's retirement status than women (Gustman & Steinmeier 2004). However, the results may be biased by the fact that women usually retire year to two earlier in traditional retirement (OECD 2021a).

On the other hand, Mein (2000) shows that widowed men and women, divorced men and single women have higher probability of retiring earlier than married individuals because they may be less likely to have dependants to support. Alternatively, their health could have been negatively affected by having no spouse, especially when the individual is male (Elovainio *et al.* 2003).

Elovainio *et al.* (2003) even discovered that being divorced or widowed is related to early retirement only for men.

Another aspect of retirement may be the role of **grandparenthood**, depending on how much grandparents provide help with caregiving. Lumsdaine & Vermeer (2015) did not find sufficient evidence that caring for grandchildren influences early retirement probability, but found out that the birth of a new grandchild increases the probability of retirement by 8%. This may be because the demand for care from the middle generation is much stronger in the early years of the grandchild's life. They argue that women perceive grandchild care as an additional responsibility and do not substitute other activities for it. Moreover, if there is a situation when the working woman cannot both work and care for a grandchild at the same time, she is more likely to give up caring responsibilities than working responsibilities (Lumsdaine & Vermeer 2015). Backhaus & Barslund (2021) provide contradicting evidence suggesting a negative effect of grandparenthood on women's labor supply. No effect was found for men. Hochman & Lewin-Epstein (2013) compared the retirement preferences of individuals with any grandchildren to those of individuals with no grandchildren. They indicate that grandparents do show preferences to retire early compared to individuals with no grandchildren, but found no significant difference in preferences between those who actually provided care for them and those who did not. Possible explanation could be that grandparenthood provides a sense of ageing, which helps individuals leave behind their working identity regardless of whether they spend time looking after their grandchildren or not.

Chapter 3

Data

3.1 Dataset

The data used in the analysis are from the easySHARE 8.0.0 dataset released in 2022. The respondents of this survey are 50+ years old. The dataset consists of 8 waves, each one takes place approximately every two years and the respondents do not have to participate in every wave. EasySHARE is a simplified version of the SHARE dataset with limited number of variables, containing the same observations. Since the access to the easySHARE dataset is limited, it is not attached to this thesis.

3.2 Preparing the data

In order to account for cultural differences, we conducted separate analyses of the data for the Czech Republic, southern and northern European countries.

For the Czech Republic we considered only respondents aged 50-60, because the age of standard retirement is 65, and it was possible to enter early retirement from the age of 60 until 2023. This sample thus covers individuals who may be contemplating early retirement but have not reached retirement eligibility yet.

The sample of nordic countries covers Sweden, Denmark and Finland. The sample of southern countries covers Italy, Spain, Greece and Portugal. Only respondents between 55-65 were considered, as the early retirement age in these countries was higher than in the Czech Republic prior to the reform in 2023 (OECD 2021b).

For a robustness check, the sample was split into males and females based on the variable *female*.

Since the dependent variable concerns retirement plans, we filtered the observations using the variable *Current job situation* (*currentjob*) so that they include only employed or self-employed individuals, thus leaving out the unemployed, permanently sick or disabled, homemakers and those who had already retired. The sample for the Czech Republic analyses 1396 individuals, the sample for northern Europe covers 4204 individuals and for southern Europe 2829. To avoid working with highly correlated independent variables, we constructed correlation matrices (Appendix A) and considered 0.45 and -0.45 as bounds.

3.3 Selection of the variables and descriptive statistics

The variables used are chosen based on empirical research and data availability. Descriptive statistics for the Czech Republic are provided in Table 3.1, for northern Europe in Table 3.2 and for southern Europe in Table 3.3.

3.3.1 Dependent variable

The binary dependent variable *early_ret* describes whether the respondent would like to retire as early as they can from their current job. The answer "yes" is indicated by 1 and answer "no" by 0. The proportion of Czech respondents who answered "yes" was 50.63%, whereas in the north, only 33% provided the same response. The highest proportion was observed among respondents from the southern region, reaching 62.95%.

3.3.2 Independent variables

Our primary variable of interest, *parent_alive*, indicates whether the respondent has at least one living parent. If so, it takes on the value of 1. Conversely, if both parents are deceased, the variable takes on the value of 0. This variable was not available in the original dataset, but we constructed it from the dummy variables *mother_alive* and *father_alive*. A total of 56.75% of Czech respondents in the age category 50-60 years had at least one living parent. This figure was 45.35% for nordic respondents and 46.37% for southern respondents. Note, however, that nordic and southern respondents covered older respondents (55-65 years).

Variable *mar_stat* was created to reflect the marital status of the respondent and whether they are living together with their spouse. It equals 1 for respondents who are in registered partnership or who are married and living together with their spouse. Conversely, a value of 0 is assigned to respondents who are married, but living separately, divorced, widowed, or who have never been married at all. A total of 75.54% of Czech respondents were in a registered partnership or married and living together. For nordic respondents, the figure was 78.88%. The highest percentage was observed among southern respondents, at 88.24%.

Eduyears describe the number of years of education of the individual. The respondents, on average, had completed 12 years of education. This figure was higher for northern respondents than in the Czech Republic, 13.67. The respondents from the southern region exhibited the lowest average number of years spent in education, with an average of 10.92 years.

The variables *siblings_n* and *grandchildren_n* indicate the number of siblings and grandchildren, respectively, that the respondent has. We have decided to exclude extreme observations with a number of siblings exceeding 10 or the number of grandchildren exceeding 25, excluding 4 observations in the Czech Republic, 66 observations in the southern countries and 41 observations in the northern countries. The mean number of siblings per respondent was 1.85, while the mean number of grandchildren per respondent was 1.63 grandchildren. In the north, both the mean numbers of siblings and grandchildren were higher - 2.3 and 2.17, respectively. In the south, the mean number of siblings was 2.58, while the mean number of grandchildren was notably lower than anticipated, at 0.92.

Figure 3.1: Distribution of the number of grandchildren - Czech Republic

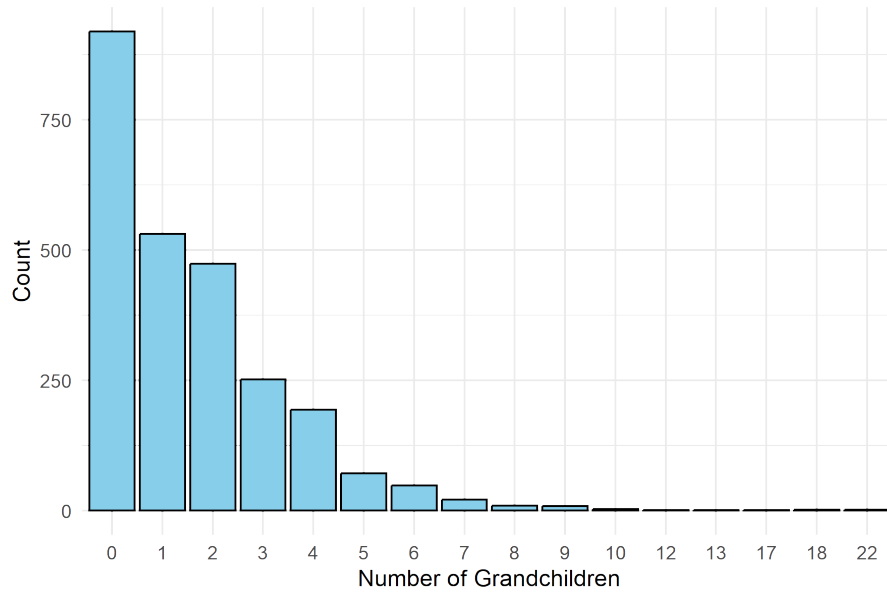


Figure 3.2: Distribution of the number of grandchildren - Northern Europe

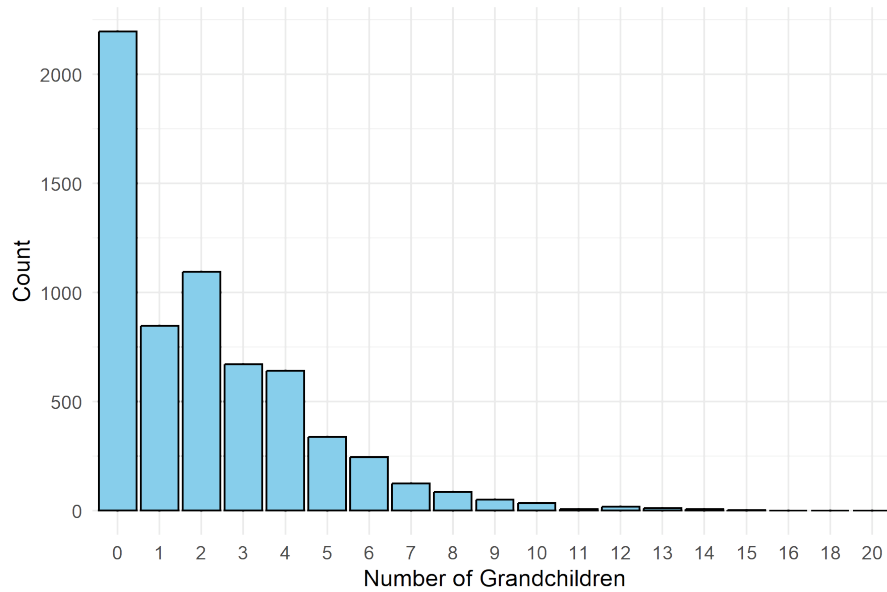
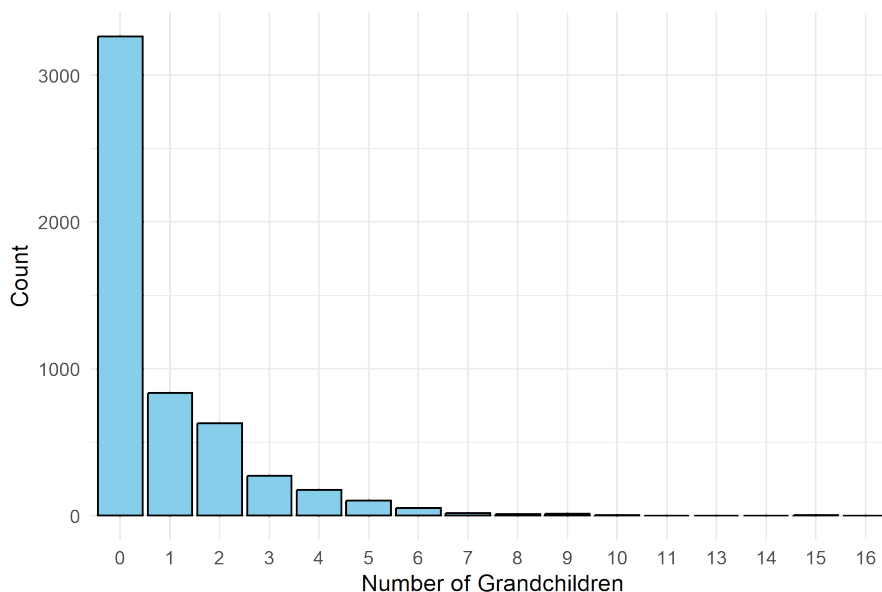


Figure 3.3: Distribution of the number of grandchildren - Southern Europe



The number of people residing in the respondent's household is indicated in the variable *hhsiz*. The mean values for Czech and northern respondents were found to be 2.5 and 2.09, respectively.

The dummy variable *Given help to others outside the household (givenhelp)* is based on whether the respondent has provided assistance with personal care, household matters or paper work such as settling financial or legal matters to family member outside of the household, a friend or neighbor. Czech respondents answered positively in 47.1% cases. On the other hand, only 21.52% of the southern respondents gave a positive answer. This variable was not employed in the nordic model, as it was not statistically significant and had a negative impact on the model's goodness-of-fit.

The respondents assessed their self-perceived health in the variables *sphus*, ranging from 1 - poor to 5 - excellent. The median value for Czech and southern respondents was 3, indicating that the average respondent experienced some health problems. Nordic respondents were more content with their self-perceived health - the median value was 4.

The CASP-12 score (*qualityoflife*) is a sum of four subscales: control, autonomy, pleasure, self-realization. The range of scores is from 12 to 48, with higher numbers indicating a higher level of life quality. On average, the measured level of life quality in the Czech Republic was found to be 36.19. For respondents in the southern region, the mean was found to be very similar at

36.85.

The mobility index, denoted by (*mobilityind*), which ranges from 0 to 4, is the sum of walking 100 meters, walking across a room, climbing several flights of stairs and climbing one flight of stairs. Lower numbers indicate greater difficulty in performing these activities. The median value was 4 for both Czech and southern respondents, thus majority of the respondents did not experience any difficulties.

The respondents' current job situation is further specified using the variable *self_empl*, which identifies self-employed respondents. Value of 0 is assigned to those who are either employees or civil servants. Conversely, the value of 1 is assigned to self-employed respondents. Self-employed respondents made up 13.1% of the Czech respondents. In the northern regions, 11.5% of respondents were self-employed. Self-employment was most prevalent among respondents from southern regions, with a proportion of 29.62%.

Satisfaction with one's job is measured with the variable *satisfaction* on a scale from 1 to 4, where 1 indicates strong dissatisfaction and 4 strong satisfaction. The median values for Czech and southern respondents were equal to 3, for nordic respondents the median was 4. It can be concluded that respondents were in general quite satisfied with their working lives.

Table 3.1: Descriptive Statistics - Czech Republic

	Mean	SD	Min	Max	Median	NA's	Observations
early_ret	0.506	0.500	0	1	1	17	2,526
parent_alive	0.568	0.496	0	1	1	92	2,451
siblings_n	1.851	1.290	0	9	2	0	2,543
mar_stat	0.755	0.430	0	1	1	0	2,543
hysize	2.525	1.069	1	12	2	0	2,543
eduyears	12.791	2.974	1	22	12	24	2,519
grandchildren_n	1.625	1.945	0	22	1	0	2,543
givenhelp	0.470	0.499	0	1	0	576	1,967
qualityoflife	36.193	5.356	18	48	36	124	2,419
mobilityind	3.842	0.426	1	4	4	0	2,543
self_empl	0.131	0.337	0	1	0	2	2,541
sphus	3.148	0.921	1	5	3	0	2,543
satisfaction	3.212	0.608	1	4	3	700	1,843

In the nordic model, we additionally used variables *income*, *depressionsscale*, *receivedhelp*, *vigorous_activities*. These variables were not employed in the Czech nor the southern model, as they were not statistically significant and had little to no impact on the model's goodness-of-fit.

The average imputed household net income was 45,419.21 euros. The variable measuring depression was constructed from 12 indicators: depressed mood, pessimism, suicidality, guilt, sleep, interest, irritability, appetite, fatigue, concentration, enjoyment and tearfulness. The value of 0 meant "very depressed" and the value of 12 "not depressed". Since the median value was 11, depression was not prevalent among nordic respondents.

The dummy variable *Received help from outside the household (receivedhelp)* is based on whether the respondent has received assistance with personal care, household matters or paper work such as settling financial or legal matters from any family member outside of the household, a friend or neighbor. Respondents answered positively in 21.14% cases.

The frequency of performing vigorous activities such as sports, heavy housework, or a job that involves physical labor was measured by *vigorous_activities*, and ranged on a scale from 1: "more than once a week" to 4: "hardly ever, or never". The median value was 1, indicating an active lifestyle among northern respondents.

Table 3.2: Descriptive Statistics - Northern Europe

	Mean	SD	Min	Max	Median	NA's	Observations
early_ret	0.330	0.470	0	1	0	56	6,336
parent_alive	0.454	0.498	0	1	0	53	6,339
siblings_n	2.297	1.448	0	9	2	0	6,392
mar_stat	0.789	0.408	0	1	1	0	6,392
hhsz	2.092	0.696	1	9	2	0	6,392
eduyears	13.666	3.356	1	25	14	495	5,897
grandchildren_n	2.170	2.417	0	20	2	0	6,392
self_empl	0.115	0.319	0	1	0	2	6,390
sphus	3.751	1.007	1	5	4	4	6,388
satisfaction	3.523	0.613	1	4	4	1,760	4,632
income	45,419.210	21,246.440	0	377,956.200	44,501.990	0	6,392
depressionscale	10.384	1.661	1	12	11	42	6,350
receivedhelp	0.211	0.408	0	1	0	2	6,390
vigorous_activities	1.954	1.222	1	4	1	3	6,389

The sole additional variable incorporated into the southern model was *area*, which described the area of the respondents' home, ranging from 1 - a big city, to 5 - a rural area or village. The median value (3) indicated a residence in a large town.

Table 3.3: Descriptive Statistics - Southern Europe

	Mean	SD	Min	Max	Median	NA's	Observations
early_ret	0.629	0.483	0	1	1	21	5,368
parent_alive	0.464	0.499	0	1	0	203	5,186
siblings_n	2.583	1.854	0	9	2	0	5,389
mar_stat	0.882	0.322	0	1	1	0	5,389
eduyears	10.916	4.668	0	25	11	340	5,049
grandchildren_n	0.919	1.577	0	16	0	0	5,389
givenhelp	0.215	0.411	0	1	0	803	4,586
qualityoflife	36.853	5.470	12	48	37	341	5,048
mobilityind	3.748	0.583	0	4	4	1	5,388
self_empl	0.296	0.457	0	1	0	1	5,388
sphus	3.239	0.923	1	5	3	1	5,388
satisfaction	3.175	0.678	1	4	3	1,447	3,942
area	3.086	1.424	1	5	3	289	5,100

Chapter 4

Methodology

In this section, we will describe the model used for our analysis. Given that the dependent variable is binary, it is possible to select either the logit or the probit model. As the logit model assumes logistic distribution and probit normal distribution of the error term, we selected logit for our analysis.

We will define the logit model based on Wooldridge (2013). Binary response models are specified as

$$P(y = 1|\mathbf{x}) = G(\beta_0 + \beta_1x_1 + \dots + \beta_kx_k) = G(\beta_0 + \mathbf{x}\beta) \quad (4.1)$$

Where $0 < G(z) < 1$ for all real numbers z . In the logit model, G is expressed as:

$$G(z) = \exp(z)/[1 + \exp(z)] = \lambda(z), \quad (4.2)$$

The marginal effect of an independent variable on the response probability is obtained through:

$$\frac{\delta P(y = 1|\mathbf{X})}{\delta x_j} = \frac{\delta p(\mathbf{X})}{\delta x_j} = g(\beta_0 + \mathbf{X}\beta)\beta_j, \quad (4.3)$$

where $g(z) = \frac{dG}{dz}(z)$. If x_1 is a binary explanatory variable, then the marginal effect of changing x_1 from zero to one, holding all other variables fixed, is as follows:

$$G(\beta_0 + \beta_1x_1 + \beta_2x_2 + \dots + \beta_kx_k) - G(\beta_0 + \beta_2x_2 + \dots + \beta_kx_k). \quad (4.4)$$

Similarly, if x_k denotes a discrete variable, the effect of x_k going from c_k to

$c_k + 1$ on the probability is

$$G[\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k (c_k + 1)] - G(\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k c_k). \quad (4.5)$$

The goodness-of-fit of the model is obtained through the McFadden's pseudo R^2 , which is obtained through $1 - \alpha_{ur}/\alpha_0$, where α_{ur} is the log-likelihood function for the estimated model and α_0 is the log-likelihood function in the model with only an intercept.

Furthermore, the Hosmer-Lemeshow test statistic was employed as an additional goodness-of-fit measure. According to Hosmer & Lemeshow (2000), the test is based on dividing the data into groups based on the values of the estimated probabilities. Typically, the number of groups is $g = 10$. The test statistic is defined as follows:

$$\hat{C} = \sum_{k=1}^g \frac{(o_k - n'_k \bar{\pi}_k)^2}{n'_k \bar{\pi}_k (1 - \bar{\pi}_k)}, \quad (4.6)$$

where n'_k is the total number of subjects in the k^{th} group,

$$o_k = \sum_{j=1}^{c_k} y_j \quad (4.7)$$

is the number of responses among the c_k covariate patterns in the k^{th} decile, and

$$\bar{\pi}_k = \sum_{j=1}^{c_k} \frac{(m_j \hat{\pi}_j)}{n'_k} \quad (4.8)$$

is the average estimated probability. If the p-value of this test is greater than 0.05, it signifies that there are no significant differences between the observed and estimated probabilities and that the model is an appropriate fit for the data.

Chapter 5

Results

The results of our analysis are shown in this chapter. As the regression is logistic, we do not interpret the coefficients directly, but construct a table of marginal effects. We will present three regressions on individuals aged 50-60 from the Czech Republic, first for everyone (*CZ*) and then for the subset of men (*CZM*) and women (*CZW*) in Table 5.1. Next we will show the results of the regression performed in nordic (*North*) and southern (*South*) countries for respondents aged 55-65 (Table 5.2), which we will also perform separately for men (*NM* and *SM*) and women (*NW* and *SW*) in Table B.1.

5.1 Czech Republic

The estimated model looks as follows:

$$\begin{aligned} \text{early_ret}_i = & \beta_0 + \beta_1 \text{parent_alive}_i + \beta_2 \text{siblings_n}_i + \beta_3 \text{mar_stat}_i \\ & + \beta_4 \text{hhsiz}_i + \beta_5 \text{eduyears}_i + \beta_6 \text{grandchildren_n}_i \\ & + \beta_7 \text{givenhelp}_i + \beta_8 \text{qualityoflife}_i + \beta_9 \text{mobilityind}_i \\ & + \beta_{10} \text{self_empl}_i + \beta_{11} \text{sphus}_i + \beta_{12} \text{satisfaction}_i \\ & + \beta_{13} \text{parent_alive}_i \times \text{siblings_n}_i + \beta_{14} \text{mar_stat}_i \times \text{hhsiz}_i + u_i \end{aligned} \quad (5.1)$$

Our main explanatory variable of interest, *parent_alive*, implies that having at least one living parent increases the probability of planning early retirement by 15.3 pp (percentage points). This is in line with our expectations that individuals with a living parent prefer to retire earlier possibly for caregiving reasons, which is further supported by the results of the interaction term be-

tween *parent_alive* and *siblings_n*. These indicate that growing number of siblings lessens the effect of a living parent by 6 pp, likely because the division of caregiving responsibilities would be easier with more siblings. The results for the variable *givenhelp* correspond with these findings, since they indicate that respondents who participated in some form of caregiving or similar tasks are more likely to plan early retirement by 5.6 pp.

On the other hand, while higher number of siblings mitigates the effect of a living parent, on its own it increases the probability of planning early retirement by 5.3 pp. This may be because such individuals look forward to retirement because of their larger social network. Similarly, the probability increased by 2.1 pp for respondents with more grandchildren, which is in line with our expectations that respondents look forward to spending time with grandchildren when thinking about retirement.

Married respondents or those in registered partnership were 23.3 pp more likely to plan early retirement, but this effect is mitigated by 8.9 pp by an increase in household size, possibly indicating that while stable social background makes respondents look forward to retiring as soon as possible, large households present financial difficulties and obligation to stay in employment, as the respondents still likely have dependant children. On its own, with an increase in household size the probability grew by 6.1 pp.

When the respondents spent more years in education, the probability of planning early retirement lowered by 1.4 pp. This is in line with our expectations that better educated individuals have more options in the labor market, are able to choose a career suitable for their needs and therefore are more likely to stay in their jobs.

The probability of planning early retirement decreases by 1.7 pp as quality of life index increases. Such effect is of no surprise, since respondents reporting satisfaction in life would not wish for a change. Similarly, dissatisfaction with one's job increased the probability of early retirement wishes by 19.3 pp.

As for the variables describing health status, difficulties with mobility increased the propensity by 8.7 pp. As expected, poor self-perceived health increased the propensity by 9.5 pp.

Furthermore, being self-employed decreased the probability of early retirement wishes by 11.1 pp, since self-employed individuals are responsible for arranging their own pensions.

The goodness of fit was measured using the McFadden's pseudo R^2 and the Hosmer-Lemeshow test. For McFadden's pseudo R^2 , we obtained 0.137, while

the Hosmer-Lemeshow test returned a p-value of 0.4287, indicating that our model fits the data well.

Table 5.1: Marginal Effects - Czech Republic

Variable	CZ	CZW	CZM
parent_alive	0.153**	0.084	0.174*
siblings_n	0.053***	0.046**	0.042
mar_stat	0.233**	0.258**	0.206
hhsiz	0.061*	0.061	0.067
eduy	-0.014**	—	-0.017*
grandchildren_n	0.021*	0.023*	0.017
givenhelp	0.056	—	—
qualityoflife	-0.017***	-0.015***	-0.022***
mobilityind	-0.087*	-0.081	-0.06
self_empl	-0.111**	-0.124*	-0.121*
sphus	-0.095***	-0.083***	-0.107***
satisfaction	-0.193***	-0.206***	-0.176***
parent_alive × siblings_n	-0.060*	-0.019	-0.077*
mar_stat × hhsiz	-0.089**	-0.102*	-0.076
Observations	1396	932	736
McFadden R-squared:	0.137	0.13	0.145
Hosmer-Lemeshow p-value	0.4287	0.4241	0.189

Note: *** p<0.001, ** p<0.01 * p<0.05 . p<0.1

5.1.1 Men and women

We ran the same model without the variable *givenhelp*, as it contained high number of missing values, on the dataset filtered for men and women separately. Additionally, we removed *eduy* from the model for women, as it lost its significance and negatively impacted the model's goodness-of-fit. This points to women being barely influenced by their years of education, possibly because they choose different occupations than men (e.g. less physically demanding jobs, which would have larger health implications and thus be more relevant in retirement timing) or are faced with different obstacles in their careers like motherhood or gender pay gap. That does not mean that women do not consider job specifics in the decision, since being self-employed decreased the probability of early retirement plans by 12.4 pp. The effect of self-employment in men was similar - a 12.1 pp decrease in probability. Satisfaction in job remained

important for both, with the effect of an 17.6 pp increase for dissatisfied men and 20.6 pp for women.

For men, the social determinants *grandchildren_n* and *hhsiz*e lost their significance. When filtering for women, parental vital status lost its significance, contrary to our expectations. The marginal effect of this variable also turned out to be larger for men - a 17.4 pp increase in probability, mitigated by 7.7 pp by an increase in the number of siblings. While we expected women to be influenced by their parents more than men because of the traditional caregiving gender roles, this effect can be explained by women being more used to being responsible for providing care to relatives, whether it is parents, children or grandchildren, thus they take on caregiving as an additional responsibility and do not feel the need to leave workforce for these reasons.

Our regression led to an unexpected result also for the effect of marital status, which was higher and more significant for women. Studies saying that being divorced or widowed is related to early retirement only for men (e.g. (Elovainio *et al.* 2003)) are therefore contradicted in our model, which also points in the opposite direction - marriage is a predictor of early retirement plans for both men and women. This effect being more significant for women could be simply explained by the fact that women are more motivated by wider social background when looking to retire early. Such explanation is further supported by the number of siblings retaining significance for women even when not in relation to parental vital status, and the number of grandchildren having more weight for women.

As for the goodness-of-fit, we obtained 0.145 in McFadden's pseudo R^2 in the model for men, and 0.13 in the model for women. The Hosmer-Lemeshow test returned p-value of 0.4241 for women and 0.189 for men, indicating that both models fit the data well.

5.2 Nordic and southern states

The estimated model for northern Europe looks as follows:

$$\begin{aligned}
 \text{early_ret}_i = & \beta_0 + \beta_1 \text{parent_alive}_i + \beta_2 \text{income}_i + \beta_3 \text{siblings_n}_i \\
 & + \beta_4 \text{depression_scale}_i + \beta_5 \text{grandchildren_n}_i + \beta_6 \text{self_empl}_i \\
 & + \beta_7 \text{satisfaction}_i + \beta_8 \text{mar_stat}_i + \beta_9 \text{hhsz}_i + \beta_{10} \text{eduyears}_i \\
 & + \beta_{11} \text{sphus}_i + \beta_{12} \text{vigorous_activities}_i + \beta_{13} \text{receivedhelp}_i \\
 & + \beta_{14} \text{parent_alive}_i \times \text{income}_i + \beta_{15} \text{mar_stat}_i \times \text{hhsz}_i \\
 & + \beta_{16} \text{grandchildren_n}_i \times \text{satisfaction}_i + u_i
 \end{aligned} \tag{5.2}$$

The estimated model for southern Europe is the following:

$$\begin{aligned}
 \text{early_ret}_i = & \beta_0 + \beta_1 \text{parent_alive}_i + \beta_2 \text{givenhelp}_i + \beta_3 \text{siblings_n}_i \\
 & + \beta_4 \text{grandchildren_n}_i + \beta_5 \text{mobilityind}_i + \beta_6 \text{self_empl}_i \\
 & + \beta_7 \text{qualityoflife}_i + \beta_8 \text{satisfaction}_i + \beta_9 \text{mar_stat}_i \\
 & + \beta_{10} \text{eduyears}_i + \beta_{11} \text{sphus}_i + \beta_{12} \text{area}_i + u_i
 \end{aligned} \tag{5.3}$$

The results for nordic countries indicate a slight tendency to be more motivated by income and financial situation than in the southern countries and the Czech Republic. Our main variable of interest *parent_alive* had the opposite effect in the northern countries than in the other regions - a living parent decreased the probability of planning early retirement by 7 pp, which was slightly mitigated by interaction term between *parent_alive* and *income*, that is by 0.0002 pp. This supports the hypothesis of weaker family bonds in northern countries, or a tendency to choose formal care, which requires respondents to consider their income. These findings also correspond with some of the previous studies, as discussed in Chapter 2, where having deceased parents increased the risk of retirement in Sweden (Kridahl & Silverstein 2019). Even though the effect of *income* alone was also very low (a 0.0002 pp decrease), this was the only instance where it was kept in the model because of its high statistical significance.

As expected, a living parent increased the probability by 4.7 pp for southern countries. We also anticipated that the impact would be more pronounced than that observed in the Czech Republic. However, this did not prove to be the case.

We found no significant effect for *siblings_n* or *givenhelp* in neither of the

regressions. Instead, northern respondents took into account whether they have received any help from outside their household, which lowered the probability of early retirement plans by 3.3 pp. This can be explained by respondents feeling more confident in their support network, thus staying in the workforce.

The probability of planning early retirement increased by 4.5 pp for northern respondents with more grandchildren. These results indicate that even though northern respondents may choose to rather support their parents financially, they are more inclined to invest their time into their grandchildren. We found that this effect was mitigated by being satisfied in one's job by 1.4 pp. Higher number of grandchildren increased the probability by 1.5 pp for southern respondents. In comparison with the northern countries and the Czech Republic, the respondents from southern countries were the least affected by the number of grandchildren.

The effect of being married was larger in the north (a 24.7 pp increase) than in the south (a 9.4 pp increase), although mitigated by an increase in household size by 11.3 pp in the north. On its own, the growing household size increased the probability of early retirement plans by 5.6 pp, pointing to the fact that northern respondents do look forward to larger social network when thinking about retiring. The magnitude of the effects of marital status, household size and their interaction term in the north was similar to those observed in the Czech Republic.

Overall, the effect of the variables describing family status in southern countries is too low to affirm the hypothesis of strong southern family bond, or the southern respondents are simply motivated more by other factors in the retirement decision. The reasoning could be similar as in the case where we found lesser effect of a living parent on Czech women than Czech men: the southern respondents are accustomed to caring for their relatives, thus take it on as an additional responsibility and do not let it impact their retirement plans.

The effect of education had the same direction in both nordic and southern countries. One year decreased the probability by 1.3 pp in nordic countries; this is an effect identical to that observed in the Czech Republic. In southern countries, the probability was reduced by 0.8 pp.

Respondents from northern countries did not seem to be significantly influenced by the quality of life index, whereas southern respondents reporting higher satisfaction levels were less likely to plan early retirement by 0.6 pp. Instead, we used *depression scale* as a mental health proxy for northern re-

spondents, which showed that worsening depression symptoms increased the probability by 1.1 pp.

Dissatisfaction with one's job again caused a significant increase in the probability - for northern respondents by 15.2 pp and for southern ones by 13.1 pp. Nevertheless, this effect was most pronounced in the Czech Republic.

As for the indicators of health, the effect of worsening self-perceived health was quite similar in both models, specifically a 4 pp increase for northern respondents and 5.8 pp increase for southern ones. While it didn't play a significant role in the nordic model, the worsening mobility caused a 3.5 pp increase for southern respondents. These results may thus indicate that nordic cultures are less influenced by their own health in the decision to retire. The impact of health was greatest among Czech respondents.

We used *vigorous_activities* in the nordic model, which showed that activities like jobs involving physical labour increased the probability of early retirement plans by 1.5 pp. Another variable describing job specifics, *self_empl*, showed that self-employment decreased the probability of planning early retirement by 9.2 pp for northern respondents and by 12.3 for southern ones. The difference in these figures may be related to the different types of pension schemes for the self-employed across European countries. Choi (2009) classifies Sweden, Denmark and Finland as countries that provide a basic pension that covers the whole population in the same way, supplemented by a mandatory earnings-related schemes for the self-employed. Spain, Italy and Greece do not provide a basic pension but special separate earnings-related schemes.

In the southern countries, respondents living further from the city and in rural areas were by 1.9 pp more likely to plan early retirement. A higher cost of living in cities, higher concentration of non-career driven individuals or tighter social networks could be the factors.

The goodness-of-fit was again measured by McFadden's pseudo R^2 and we obtained 0.088 for the nordic model and 0.073 for the southern one. The p-value obtained from the Hosmer-Lemeshow test was 0.9428 for the nordic model and 0.5509 for the southern model, indicating that both models fit the data well.

Table 5.2: Marginal Effects - Northern and Southern Europe

Variable	North	South
parent_alive	-0.07	0.047*
income	$-2.414e - 06^{***}$	—
givenhelp	—	-0.004
siblings_n	-0.004	0.002
depressionscale	-0.011*	—
grandchildren_n	0.045*	0.015*
mobilityind	—	-0.035
self_empl	-0.092***	-0.123***
qualityoflife	—	-0.006**
satisfaction	-0.152***	-0.131***
mar_stat	0.247***	0.094**
hhsiz	0.056*	—
eduyears	-0.013***	-0.008***
sphus	-0.040***	-0.058***
vigorous_activities	-0.015*	—
receivedhelp	-0.033	—
parent_alive × income	$2.024e - 06^{**}$	—
grandchildren_n × satisfaction	-0.014*	—
mar_stat × hhsiz	-0.113***	—
area	—	0.019**
Observations	4204	2829
McFadden R-squared:	0.088	0.073
Hosmer-Lemeshow p-value	0.9428	0.5509

Note: *** p<0.001, ** p<0.01 * p<0.05 . p<0.1.

5.2.1 Supplementary analysis - nordic men and women

When filtering the dataset for women, all variables retain statistical significance except for *receivedhelp* and *depressionscale*. On the other hand, only the variables describing income, type of employment, job satisfaction, marital status, years of education and self-perceived health remain statistically significant when filtering for men. Surprisingly, a variable for a living parent retains its negative effect as in the general nordic model even for women. This shows that both nordic men and women may have a tendency to rather support their parents financially than with time transfer, disregarding traditional gender roles, or arrange formal care. Still, the effect is large for women with a 9 pp decrease in probability, whereas for men, the decrease is not statistically significant.

The growing number of grandchildren increases the probability by 5.6 pp for women. Similarly to the general model, satisfaction with one's job mitigates it by 1.8 pp.

By far the largest factor for northern women was being married - married women were by 35.3 pp more likely to plan early retirement. The benefit of shared living expenses and incomes between the spouses is again mitigated by 21.2 pp with an increase in household size, though. On its own, large households made women look forward to retiring early - the marginal effect was a 14.5 pp increase. While married men were also more likely to plan early retirement, the effect of marriage was smaller - 13.3 pp, and the mitigating effect of larger household turned out to be insignificant. While both genders look forward to the time with their spouses in retirement, when the couple no longer has dependants in their household to support and thus less financial burden, it is reflected in the women's decision more than the husband's.

The effect of years of education was not determined by gender practically at all - the marginal decrease was 1.3 pp and 1.4 pp for women and men, respectively.

The biggest impact on men's retirement plans was through job satisfaction, which decreased the probability by 16.6 pp. For women the magnitude was similar - 14.2 pp. *Vigorous_activities* increased the probability by 2.3 pp, but only for women - the effect of physical labour seems to be small and nonsignificant for men.

We obtained 0.09 and 0.092 as the McFadden's pseudo R^2 for the model regressed on women and men, respectively. The results of the Hosmer-Lemeshow test indicated that the models are a good fit for the data, as evidenced by the p-values of 0.3035 and 0.9709 for women and men, respectively.

5.2.2 Supplementary analysis - southern men and women

The regressors *grandchildren_n*, *qualityoflife* and *mar_stat* lose their statistical significance when filtering the dataset for southern men. Otherwise, the results are similar for men and women. Satisfaction in the respondents' job and self-employment have the greatest influence among the regressors - female respondents were by 13.5 pp more likely to plan early retirement when dissatisfied, and male respondents by 12.7 pp. Self-employment decreased the probability of early retirement plans by 11.4 pp for women and 13 pp for men. The obtained McFadden's pseudo R^2 was 0.091 for women and 0.063 for men.

The p-values obtained from the Hosmer-Lemeshow test were 0.4292 for women and 0.7256, again indicating that the models are a good fit for the data. Overall, we did not find any interesting results suggesting stronger southern family bond, even when separating the dataset into men and women.

Chapter 6

Discussion

In this chapter, we will discuss the obtained results. Due to different institutional setup, we conducted separate analyses for southern and northern Europe and the Czech Republic. Our analysis revealed that a living parent does have an impact on the decision to retire early. Czech respondents and respondents from southern Europe were more likely to plan early retirement if they had at least one living parent, while respondents from northern Europe were less likely to plan early retirement if they had at least one living parent. These results suggest that while Czech and southern respondents invest their time into caregiving for parents, northern respondents rather provide financial support. Additionally, the increase in the probability of planning early retirement was mitigated by higher number of siblings for Czech respondents, suggesting a split in caregiving responsibilities. Furthermore, the effect of the living parent was more pronounced among Czech men than Czech women. This indicates that Czech women are more accustomed to providing care, thus less likely to let such responsibilities affect retirement timing.

Furthermore, the results suggest that respondents are motivated by their wider social network when contemplating early retirement. Marriage was found to be a predictor of planning early retirement in all analysed regions, particularly among women. In the Czech Republic and northern Europe, marital status had the greatest impact from the regressors on the respondents' decision to retire. The probability was also increased by higher number of grandchildren and greater size of the household. However, larger household size also mitigated the positive impact of marriage on the probability, suggesting the presence of dependant children. Some of the previous literature (e.g. Hank (2007)) suggests the presence of stronger family bonds in southern countries.

We did not find any supporting evidence, as the employed variables describing the respondents' family status had a greater impact in the Czech Republic and northern Europe than in southern Europe.

Across all regions, self-employed respondents and respondents satisfied with their jobs were significantly less likely to plan early retirement. Less educated individuals were more inclined to plan early retirement. Worsening self-perceived health increased the probability in all regions, although its impact was not as large as had been anticipated. In Czech Republic and southern Europe, respondents with mobility problems were more likely to plan early retirement. Symptoms of depression made respondents from northern Europe look forward to retire early.

Our study is limited by the absence of certain information on the respondents. Firstly, the employed dataset covers information on whether the respondents aspire to retire early, but not whether they actually do so. Secondly, although we employed a variable indicating whether the respondent has provided any care to their family members, the interpretability of this variable is limited due to the lack of information on the frequency of care provided and the identity of the care recipient. Moreover, the definition of care provided in the variable is overly broad, encompassing a range of activities from assisting with personal care to matters that are not directly relevant, such as providing help with financial paper work.

Lastly, the only variable in the dataset indicating whether the respondent is employed in a job involving physical labour also covers performing heavy housework or sports activities. This renders the interpretation of the variable somewhat limited. Further analysis should consider specifying the type of job and the specifics of the potential caregiving in greater detail.

Chapter 7

Conclusion

The purpose of this thesis was to identify the social determinants of early retirement with a particular focus on the effect of caring responsibilities, which contributes to the stream of missing research, which primarily centered around financial and social economic determinants (Venti & Wise 2015; Kim & Feldman 1998). The effect of caregiving responsibilities has been analyzed only marginally in the empirical literature (Dentinger & Clarkberg 2002; Kridahl & Silverstein 2019). This thesis uses a logit model to analyse a SHARE sample of elderly individuals aged 50-60 years for the Czech Republic and 55-65 years for northern and southern Europe, i.e. preretirement segment of population, which is still in labor force (self-employed or employed). The sample for the Czech Republic covers 1396 individuals, the sample for the nordic countries analyses 4204 individuals and the sample for the southern countries 2829 individuals. Robustness checks on subsamples of males and females are carried out.

Our analysis showed that social determinants play an important role in the decision on retirement timing. We confirmed our hypothesis that caring for an elderly parent increases the will to retire early in the Czech Republic and southern Europe. Additionally, we found out that this effect is opposite in northern Europe, suggesting that respondents from northern Europe are more likely to support their elderly parents financially. In the Czech Republic, men were more influenced by the living parent than women, indicating that women are more used to caring for their relatives and less likely to consider it a responsibility that would require leaving workforce. The findings of this study suggest that marriage significantly increases the will to retire early, especially among women. This effect is mitigated in larger households, which indicates the presence of dependant children. Wider social background represented by

grandchildren and siblings increased the probability of early retirement plans. However, the presence of siblings mitigated the effect of a living parent, as siblings can split caregiving responsibilities among themselves. We found no evidence of stronger family ties in southern Europe. We confirmed that worsening self-perceived health and mental health problems increase the likelihood of planning early retirement. On the other hand, education, self-employment and satisfaction with one's job decreased the probability.

Our findings have a number of policy implications. As many workers opt for informal care rather than formal care, home care needs to be supported, for instance through subsidizing and improving the availability of professional care services, which offer assistance to the elderly with personal care and basic needs in their own homes. Next, workers should be offered flexible working arrangements that would allow them to combine caregiving and working.

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Appendix A

Correlation matrices

Table A.1: Correlation Matrix - Czech Republic (Part 1)

	Variable	early_ret	parent_alive	siblings_n	mar_stat	hhsz	eduyears
1	early_ret	1	-0.041	0.055	0.028	-0.019	-0.166
2	parent_alive	-0.041	1	-0.156	-0.029	0.090	0.139
3	siblings_n	0.055	-0.156	1	0.060	0.050	-0.178
4	mar_stat	0.028	-0.029	0.060	1	0.312	0.005
5	hhsz	-0.019	0.090	0.050	0.312	1	0.081
6	eduyears	-0.166	0.139	-0.178	0.005	0.081	1
7	grandchildren_n	0.108	-0.137	0.149	0.015	-0.113	-0.214
8	givenhelp	0.010	0.140	-0.040	-0.019	0.007	0.114
9	qualityoflife	-0.270	0.064	-0.033	0.054	-0.006	0.128
10	mobilityind	-0.104	0.051	-0.029	0.056	0.057	0.050
11	self_empl	-0.104	-0.003	-0.059	0.041	0.035	0.092
12	sphus	-0.218	0.137	-0.026	-0.034	0.011	0.157
13	satisfaction	-0.281	0.016	-0.011	-0.019	-0.004	0.133

Table A.2: Correlation Matrix - Czech Republic (Part 2)

	Variable	grandchildren_n	givenhelp	qualityoflife	mobilityind	self_empl	sphus	satisfaction
1	early_ret	0.108	0.010	-0.270	-0.104	-0.104	-0.218	-0.281
2	parent_alive	-0.137	0.140	0.064	0.051	-0.003	0.137	0.016
3	siblings_n	0.149	-0.040	-0.033	-0.029	-0.059	-0.026	-0.011
4	mar_stat	0.015	-0.019	0.054	0.056	0.041	-0.034	-0.019
5	hhsz	-0.113	0.007	-0.006	0.057	0.035	0.011	-0.004
6	eduyears	-0.214	0.114	0.128	0.050	0.092	0.157	0.133
7	grandchildren_n	1	0.009	-0.048	-0.071	-0.066	-0.130	-0.079
8	givenhelp	0.009	1	0.002	-0.002	-0.005	0.059	0.050
9	qualityoflife	-0.048	0.002	1	0.171	0.037	0.331	0.295
10	mobilityind	-0.071	-0.002	0.171	1	0.004	0.239	0.079
11	self_empl	-0.066	-0.005	0.037	0.004	1	0.024	0.079
12	sphus	-0.130	0.059	0.331	0.239	0.024	1	0.161
13	satisfaction	-0.079	0.050	0.295	0.079	0.079	0.161	1

Table A.3: Correlation Matrix - Northern Europe (Part 1)

	Variable	early_ret	parent_alive	siblings_n	mar_stat	hhsz	eduears	grandchildren_n
1	early_ret	1	0.022	-0.004	0.037	-0.022	-0.118	0.034
2	parent_alive	0.022	1	-0.066	-0.010	0.045	0.023	-0.032
3	siblings_n	-0.004	-0.066	1	-0.027	-0.009	-0.137	0.058
4	mar_stat	0.037	-0.010	-0.027	1	0.418	0.013	0.045
5	hhsz	-0.022	0.045	-0.009	0.418	1	0.073	-0.099
6	eduears	-0.118	0.023	-0.137	0.013	0.073	1	-0.171
7	grandchildren_n	0.034	-0.032	0.058	0.045	-0.099	-0.171	1
8	self_empl	-0.090	0.016	-0.009	0.028	0.044	0.013	-0.017
9	sphus	-0.168	0.051	-0.028	0.050	0.031	0.148	-0.050
10	satisfaction	-0.273	-0.009	0.037	0.027	0.009	0.011	0.023
11	income	-0.078	0.013	-0.067	0.308	0.265	0.193	-0.045
12	depressionscale	-0.122	-0.006	-0.004	0.084	0.065	0.011	-0.013
13	receivedhelp	-0.024	0.007	0.028	-0.096	-0.054	0.059	0.035
14	vigorous_activities	-0.013	-0.035	-0.027	-0.026	-0.032	0.034	0.009

Table A.4: Correlation Matrix - Northern Europe (Part 2)

	Variable	self_empl	sphus	satisfaction	income	depressionscale	receivedhelp	vigorous_activities
1	early_ret	-0.090	-0.168	-0.273	-0.078	-0.122	-0.024	-0.013
2	parent_alive	0.016	0.051	-0.009	0.013	-0.006	0.007	-0.035
3	siblings_n	-0.009	-0.028	0.037	-0.067	-0.004	0.028	-0.027
4	mar_stat	0.028	0.050	0.027	0.308	0.084	-0.096	-0.026
5	hhsz	0.044	0.031	0.009	0.265	0.065	-0.054	-0.032
6	eduears	0.013	0.148	0.011	0.193	0.011	0.059	0.034
7	grandchildren_n	-0.017	-0.050	0.023	-0.045	-0.013	0.035	0.009
8	self_empl	1	0.035	0.096	0.113	0.029	0.005	-0.075
9	sphus	0.035	1	0.188	0.096	0.318	-0.055	-0.143
10	satisfaction	0.096	0.188	1	0.051	0.239	-0.018	-0.012
11	income	0.113	0.096	0.051	1	0.060	-0.051	-0.057
12	depressionscale	0.029	0.318	0.239	0.060	1	-0.096	-0.096
13	receivedhelp	0.005	-0.055	-0.018	-0.051	-0.096	1	0.008
14	vigorous_activities	-0.075	-0.143	-0.012	-0.057	-0.096	0.008	1

Table A.5: Correlation Matrix - Southern Europe (Part 1)

	Variable	early_ret	parent_alive	siblings_n	mar_stat	eduyears	grandchildren_n
1	early_ret	1	0.021	0.021	0.029	-0.116	0.051
2	parent_alive	0.021	1	-0.118	0.009	0.131	-0.078
3	siblings_n	0.021	-0.118	1	-0.009	-0.224	0.174
4	mar_stat	0.029	0.009	-0.009	1	-0.007	-0.005
5	eduyears	-0.116	0.131	-0.224	-0.007	1	-0.242
6	grandchildren_n	0.051	-0.078	0.174	-0.005	-0.242	1
7	givenhelp	-0.007	0.150	-0.043	-0.024	0.092	-0.058
8	qualityoflife	-0.149	0.031	-0.031	0.091	0.178	-0.044
9	mobilityind	-0.070	0.039	0.035	0.052	0.085	-0.059
10	self_empl	-0.094	-0.048	-0.027	0.045	-0.107	0.030
11	sphus	-0.154	0.066	-0.062	0.039	0.157	-0.112
12	satisfaction	-0.189	0.013	-0.031	0.065	0.138	-0.025
13	area	0.062	0.001	0.036	0.062	-0.147	0.080

Table A.6: Correlation Matrix - Southern Europe (Part 2)

	Variable	givenhelp	qualityoflife	mobilityind	self_empl	sphus	satisfaction	area
1	early_ret	-0.007	-0.149	-0.070	-0.094	-0.154	-0.189	0.062
2	parent_alive	0.150	0.031	0.039	-0.048	0.066	0.013	0.001
3	siblings_n	-0.043	-0.031	0.035	-0.027	-0.062	-0.031	0.036
4	mar_stat	-0.024	0.091	0.052	0.045	0.039	0.065	0.062
5	eduyears	0.092	0.178	0.085	-0.107	0.157	0.138	-0.147
6	grandchildren_n	-0.058	-0.044	-0.059	0.030	-0.112	-0.025	0.080
7	givenhelp	1	-0.021	-0.018	-0.024	0.008	0.011	-0.010
8	qualityoflife	-0.021	1	0.236	-0.018	0.288	0.291	0.015
9	mobilityind	-0.018	0.236	1	-0.002	0.295	0.091	0.092
10	self_empl	-0.024	-0.018	-0.002	1	0.063	-0.039	0.054
11	sphus	0.008	0.288	0.295	0.063	1	0.155	-0.034
12	satisfaction	0.011	0.291	0.091	-0.039	0.155	1	0.011
13	area	-0.010	0.015	0.092	0.054	-0.034	0.011	1

Appendix B

Marginal Effects

Table B.1: Marginal Effects - Northern men and women & Southern men and women

Variable	NW	NM	SW	SM
parent_alive	-0.090	-0.045	0.055	0.043
income	$-2.445e - 06^{**}$	$-2.322e - 06^{**}$	—	—
givenhelp	—	—	-0.028	0.022
siblings_n	0.004	-0.013	-0.007	0.009
depressionscale	-0.010	-0.008	—	—
grandchildren_n	0.056*	0.033	0.027**	0.003
mobilityind	—	—	-0.034	-0.036
self_empl	-0.147***	-0.048	-0.114**	-0.130***
qualityoflife	—	—	-0.009**	-0.004
satisfaction	-0.142***	-0.166***	-0.135***	-0.127***
mar_stat	0.353***	0.133*	0.101**	0.071
hhsiz	0.145***	-0.022	—	—
eduy	-0.013***	-0.014***	-0.004	-0.011***
sphus	-0.044***	-0.039***	-0.065***	-0.054***
vigorous_activities	-0.023**	-0.005	—	—
receivedhelp	-0.026	-0.034	—	—
parent_alive × income	$2.368e - 06^*$	$1.638e - 06$	—	—
grandchildren_n × satisfaction	-0.018*	-0.009	—	—
mar_stat × hhsiz	-0.212***	-0.022	—	—
area	—	—	0.019	0.020*
Observations	2206	1998	1216	1613
McFadden R-squared:	0.090	0.092	0.091	0.063
Hosmer-Lemeshow p-value	0.3035	0.9709	0.4292	0.7256

Note: *** p<0.001, ** p<0.01 * p<0.05 . p<0.1.

Appendix C

SHARE Acknowledgement

- This paper uses data from SHARE Waves 1, 2, 3, 4, 5, 6, 7, 8 and 9 (DOIs: 10.6103/SHARE.w1.900, 10.6103/SHARE.w2.900, 10.6103/SHARE.w3.900, 10.6103/SHARE.w4.900, 10.6103/SHARE.w5.900, 10.6103/SHARE.w6.900, 10.6103/SHARE.w7.900, 10.6103/SHARE.w8.900, 10.6103/SHARE.w8ca.900, 10.6103/SHARE.w9.900, 10.6103/SHARE.w9ca900) see Börsch-Supan *et al.* (2013) for methodological details.(1) The SHARE data collection has been funded by the European Commission, DG RTD through FP5 (QLK6-CT-2001-00360), FP6 (SHARE-I3: RII-CT-2006-062193, COMPARE: CIT5-CT-2005-028857, SHARELIFE: CIT4-CT-2006-028812), FP7 (SHARE-PREP: GA N°211909, SHARE-LEAP: GA N°227822, SHARE M4: GA N°261982, DASISH: GA N°283646) and Horizon 2020 (SHARE-DEV3: GA N°676536, SHARE-COHESION: GA N°870628, SERISS: GA N°654221, SSHOC: GA N°823782, SHARE-COVID19: GA N°101015924) and by DG Employment, Social Affairs & Inclusion through VS 2015/0195, VS 2016/0135, VS 2018/0285, VS 2019/0332, VS 2020/0313 and SHARE-EUCOV: GA N°101052589 and EUCOVII: GA N°101102412. Additional funding from the German Ministry of Education and Research, the Max Planck Society for the Advancement of Science, the U.S. National Institute on Aging (U01_AG09740-13S2, P01_AG005842, P01_AG08291, P30_AG12815, R21_AG025169, Y1-AG-4553-01, IAG_BSR06-11, OGHA_04-064, BSR12-04, R01_AG052527-02, HHSN271201300071C, RAG052527A) and from various national funding sources is gratefully acknowledged (see www.share-eric.eu).
- This paper uses data from the generated Börsch-Supan & Gruber (2022) easySHARE data set (DOI: 10.6103/SHARE.easy.800), see Gruber &

Stuck (2014) for methodological details. The easySHARE release 8.8.0 is based on SHARE Waves 1, 2, 3, 4, 5, 6, 7 and 8 (DOIs: 10.6103/SHARE.w1.800, 10.6103/SHARE.w2.800, 10.6103/SHARE.w3.800, 10.6103/SHARE.w4.800, 10.6103/SHARE.w5.800, 10.6103/SHARE.w6.800, 10.6103/SHARE.w7.800, 10.6103/SHARE.w8.800)