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Master's Programme in Economic Demography

A gender perspective on retirement patterns in Europe

The role of work-related characteristics in explaining cross-country differences in retirement decisions

by

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This study addresses the question whether – and to what extent – work-related characteristics can explain the differences in retirement rates across thirteen European countries. To answer the research question from a gender perspective, a logistic regression and Blinder-Oaxaca decomposition analysis is conducted for the female and male population in each of the selected countries based on data from the Survey of Health, Ageing and Retirement in Europe (SHARE). The results show that, within the scope of this study, work-related factors are associated with the probability to retire. However, the major part of the disparity in retirement rates of the states is driven by the residual effect, which is referred to institutional differences between countries. This leads to the overall conclusion that work quality might be a crucial element for the retirement decisions of individuals but it cannot explain retirement variations across borders. Distinguishing the results between the sexes shows that the magnitude of the differences between countries is to a large extent influenced by the differences among women, which show more heterogeneous results for all factors than men when comparing the thirteen European countries. This indicates the need for further research in order to understand the underlying mechanisms that drive the retirement decision-making of women in Europe.

Keywords: retirement decisions, work quality, Blinder-Oaxaca decomposition, SHARE

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1 Introduction

Longevity is one of the most distinguished outcomes of modern development in Europe and the Western world (Bengtsson & Scott, 2010). The improvements of health standards due to medical progress led to a higher predicted life expectancy and a gain in healthier years in older ages. Facilitated by long-term fertility rates below replacement level of 2.1 children per woman, the demographic development is not only shifting towards an ageing but also shrinking population in most industrialised countries (Lee, 2003). Economic consequences are displayed in the raising old-age support ratio, which indicates the proportion of people that are economically dependent on the workforce in a country. The old-age support ratio is measured by the number of people aged 65 and older compared to people in working age from 20 to 64 years of age. This arbitrary set age limit does, however, not completely reflect working population versus non-working population as people enter the labour market at different times, for instance due to the duration of their education, and exit it earlier or later than the statutory retirement age. Nonetheless, it is an important indicator when talking about the feasibility of the pension schemes. In countries belonging to the Organisation for Economic Co-operation and Development (OECD), the old-age support ratio is estimated to fall on average from 4.2 in 2012 to 2.1 in 2050 (OECD, 2014). In other words, 2.1 persons in working age might have to support one retiree in 2050 compared to 4.2 persons in 2012. These numbers vary within the OECD countries and even within Europe based on different fertility and mortality rates as well as, to a much smaller extent, net migration. Northern European countries such as Norway, Sweden and Denmark are estimated to have an old-age support ratio of 2.3 in 2050, whereas Southern European countries such as Spain, Portugal and Italy will face more drastically developments with an estimated ratio of 1.4 to 1.5 in 2050 (OECD, 2014).

Pension schemes, initially established to secure the well-being of the elderly, are becoming a financial burden for younger generations as the financial sustainability of the public social security systems heavily depends on tax contributions of the working population (Lee, 2003). Statutory retirement ages set in the mid-sixties, when people were expected to live only a few years after retirement age, do no longer comply with the increasing life expectancy after retirement age. Today, men live on average 16 and women 20 years after retirement (OECD, 2008). For these reasons, maintenance of the welfare state will put legal and economic pressure on the future working population to prolong their working life (Bengtsson & Scott, 2010). Migration as well as a sharp increase of fertility would not substantially alter the development of the support ratios in the future. Shifting the upper limit of the working age to higher ages could, however, help to attain a sufficient old-age support ratio. This would imply an increase to roughly 75 years in most countries (UN, 2001). Delaying labour departure of older workers is not only relevant for governmental institutions in order to reduce the financial pressure on the pension schemes. Against the background of an increasing gap between labour demand and supply, especially of skilled labour force, retaining older workers is becoming more and more important for employers (Van Daalen, et al., 2009). For these

reasons, retirement is an increasingly relevant subject in research and public debates. Raising the statutory retirement age gradually and closing early retirement windows has already been taken place in a lot of OECD countries, which is leading to a trend reversal from early retirement patterns to a prolongation of the working life. Compared to 2010, the number of economically active workers in the European Union (EU) aged 55 to 64 years rose by 7.1 points to 53.3 percent in 2015 (Teichgraber, 2014). However, many older workers still retire before the statutory retirement age in their countries, especially women (OECD, 2015).

Social security provision and particularly the retirement age is strongly connected to retirement decisions (Gruber & Wise, 1999). Institutional regulations about retirement differ in part considerably between countries but also within a country when considering a gender perspective. Gender differences have been addressed in many studies leading to the general conclusion that men are more likely to engage in paid work at older ages than women. One possible explanation lies in lower statutory retirement ages for women. A large part, however, is also influenced by social norms and roles or responsibilities of women within the family, including the engagement in informal work (Komp, et al., 2010). Many studies have been conducted in various countries to analyse when and in what way older workers decide to withdraw themselves from the labour market. Prominent literature has emphasised the importance of education, health, work and gender on retirement (Wang et al. 2009; Börsch-Supan et al., 2009; Komp et al., 2010), which indicates the relevance of considering the composition of populations when conducting cross-country comparisons on retirement patterns.

The aim of this Master's Thesis in Economic Demography is to investigate the differences of retirement decision in selected European countries from a gender perspective. In specific, retirement rates of older workers from thirteen European countries are analysed on basis of work-related factors to answer the following three research questions:

I. *Do work-related factors influence retirement decisions of workers in Europe?*

II. *Can work-related factors explain cross-country differences in retirement rates?*

III. *Does the influence and explanatory power of work-related factors on retirement decisions differ between the sexes?*

Based on data from the Survey of Health, Ageing and Retirement in Europe (SHARE), these questions are addressed by examining the transition from employment into retirement of older workers in 13 European countries: Austria, Belgium, Czech Republic, Denmark, Estonia, France, Germany, Italy, Netherlands, Slovenia, Spain, Sweden, and Switzerland. Older worker in this sense are individuals that belong to the age-group 55 years and older, which are commonly referred to as the "Baby-Boomer" generation. The Baby-Boomer generation was born from around 1946 onwards to approximately 1964 and is successively approaching retirement age (Lanzieri, 2011).

After this introduction, the following section will provide the reader with background information on theories and previous research in the field of retirement decision-making. Chapter three describes the data and econometric model used in this study. In order to analyse the research questions, a logistic regression and Blinder-Oaxaca decomposition analysis is

conducted. The Blinder-Oaxaca analysis decomposes retirement differences into two types of effects: differences in population characteristics and a residual effect that explains to which extend the disparities in the retirement rates are driven by factors not included in the model. The residual effect captures the influence of other relevant determinants, in particular institutional aspects such as retirement policies as well as cultural norms, labour market conditions and other influences. In chapter four, the results and limitations of the analysis are presented and, last but not least, in chapter five the conclusion is drawn connecting the results with theory and previous research.

2 Background

Chapter two will present popular theories and concepts related to retirement decision-making and provide an overview of current literature in this research field.

2.1 Theoretical Approach

Retirement is an increasingly relevant topic for many researchers and practitioners of different areas, such as economics, sociology, gerontology, and psychology. Consequently, there is a vast amount of theoretical frameworks in order to explain when and in what form older workers retire (Adams & Beehr, 2003). It can generally be studied on three theoretical levels: a macro, meso, and micro level. The *macro* level describes economic interest to maintain the welfare state. It includes government policies, labour market conditions and attitudes of the society towards older workers. The *meso* level context refers to the attitudes of organisations and managers dealing with older employees and comprises the working environment, employers, and as well trade unions. The *micro*, or individual, level includes person-related variables such as health, human capital or family but also how the body and intellect changes with age (Wang, 2009; Nilsson, 2013). Retirement is decided by individuals on the micro level. However, it cannot be solely examined on this level as decision depend on influences from the meso and marco level, too, such as regulations about labour participation at higher ages and different opportunities from labour markets and employers.

Retirement itself is not a single event but should rather be regarded as a process that unfolds over time. It starts way before and continues even beyond the transition from employment to retirement (Beehr, 1986). It is difficult, however, to find a universal definition for this process. Labour force withdrawal can come earlier, on-time or later than the normal retirement age to enter the pension system (Börsch-Supan, et al., 2009). There are clearly different factors influencing retirement preferences and plans of individuals, and which, in turn, impact their decision when and in what form to retire (Szinovacz, 2003). Planning retirement is a long-term procedure that consists of many pathways, whereas retirement decision is related to behaviour and therefore to the specific moment of leaving the labour force (Topa, et al., 2009). Retirement decision-making is the theoretical framework of this thesis. As there is a number of theories in retirement literature that are used to interpret retirement decisions, the next section will summarise popular theories used in research.

Looking at retirement from a *life cycle perspective* implies that events and sequences are connected to an individual's age and life stage. Experiences and choices in early adulthood can extend into old age and impact retirement decisions. In fact, Elder (1994) stresses that later years of ageing cannot be understood without knowledge about the prior life course

(Elder, 1994). The *continuity theory* refers to an individual's self-concept or the identity, which one seeks to maintain throughout the life. As work is often associated with a role or social position, the degree of personalisation with a job can be connected with the ease or unease to leave the labour force for retirement (Atchley, 1989). The *person-environment fit (P-E) theory* describes the degree of how well a worker fits into his or her current job and primarily refers to the perception of older workers in the first place. Even if the working environment does not change over time, the capacity of dealing with the environment might do. A perception of poorer fit due to declines in cognitive processing or other abilities that come along with the process of ageing can lead to the desire to retire (Feldman & Beehr, 2011). *Economic theories* are very prominent for obvious reasons. Workers cannot retire until they can economically afford to do so. For this reason, older workers might wait until they reach the statutory retirement age, entitling them to receive full pension benefits instead of retiring early, which is often connected to financial penalties in form of deductions from the pensions. Rational decisions based on cost-benefit considerations (Becker, 1976), however, can only partially explain retirement decision-making. Apart from financial rewards, individuals derive other incentives to remain in work, such as the sense of accomplishment or social status (Feldman & Beehr, 2011). According to Barnes-Farrell (2003) *push and pull factors* influence individuals to continue working or to retire. Pull factors, which make people want to stay in their jobs are associated with the attractiveness and rewards of one's work. Push factors, on the other hand, influence the desire to avoid retirement, e. g. due to reduced financial security or a decrease in social contacts and status. The same can be applied the other way around. Push factors associated with negative features, such as unsatisfying job stations, limited work ability, or societal norms about retirement, can facilitate the decision to retire. Also pull factors that are positivity related to retirement such as more time for leisure or to spend with family, motivate to exit employment (Barnes-Farrell, 2003). The retirement decision might as well be influenced by both factors, however, the difference between push and pull factors is the degree of voluntariness. Push factors often lead to involuntary retirement as preferences might differ from actual behaviour, e.g. individuals might prefer to continue working but poor health forces them into retirement. Wang & Shultz (2010) created a summary of potential impact factors that have been considered by empirical studies on retirement. They are clustered under *individual attributes, job and organisational factors, family factors,* and *socioeconomic factors* (Wang & Shultz, 2010). In the next section, more attention will be drawn to the impact factors related to the scope of this thesis.

2.1.1 Individual Factors

Gender differences have been address in many studies. In general, men are more likely to engage in paid work at higher ages than women. Obvious reasons for this are, on the one hand, lower statutory retirement ages for women in some countries and, on the other hand, social roles and responsibility within the family that lead to engagement in informal work (Komp, et al., 2010). Some studies, however, found different trends. Finch (2014) states that women with interrupted careers, e.g. due to care for children or family members, are likely to extend their career life in order to make up for opportunity costs. Their counterparts, or in other words, women with high work orientation also tend to prolong paid work due to 'status maintenance'. However, extending career life might be more difficult for the first group of

women depending on the length of career dis-attachment (Finch, 2014). Status maintenance as a pull factor to stay in employment can be related to the continuity theory since individuals tend to preserve their identity with a work role in the case of high job involvement (Barnes-Farrell, 2003). Looking at both sexes, one aspect that men and women have in common is that they tend to take decisions according to retirement plans of life partners or close friends (Nilsson, et al., 2011).

Health is a key determinant for the timing of retirement, especially in view of early retirement (Roberts, et al., 2010). The impact of health on the timing of retirement is as well connected to the continuity theory. Accordingly, poor health can be considered as discontinuity within the working sphere. As individuals seek to maintain stability, they are likely to choose retirement over employment (von Bonsdorff & Ilmarinen, 2012). Analysing self-ratings of health versus objective instruments to measure health, Dwyer & Mitchell (1999) found that poor health influences retirement plans more than economic variables (Dwyer & Mitchell, 1999). Even though poor health has been identified to be an important influential factor for early retirement, individuals with good health also choose to retire instead of prolonging their working life (Büsch, et al., 2014). According to Feldman (1994), poor health and work ability can be reasons to retire early, however, it might not impact the personal attitudes towards work. Because of that, early retirement has also been observed for people with good health, who would like to spend more time with family and pursue leisure activities (Feldman, 1994).

Levels of education are said to have an impact on the timing of retirement. Whereas lower education is associated with early retirement (Siegrist, et al., 2006), higher education is related to a later exit from the labour force. The postponement of retirement could be explained by a later career onset due to schooling or by the connection to more attractive jobs and working conditions (Peiro, et al., 2012). Even though human capital investment in terms of education usually pays off in the long run, pension entitlements are often bound to years of contribution to the pension system. Longer time spent on education means consequently that the time to contribute to the pension system has to be made up in later life (Micheel, et al., 2010). Furthermore, to pass on knowledge among higher educated workers is a major reason to take up post-retirement activities next to personal development and gain recognition (Maxin & Deller, 2011). Over-education does not appear to have an impact on early retirement decisions. Rubb (2009) suggests that over-education in later career stages may not be reflective to skills mismatch if workers engage in a bridge job between their career job and complete labour force withdrawal (Rubb, 2009).

2.1.2 Work-related factors

Self-employment is often associated with a higher affinity towards late retirement, especially compared to civil servants. This is, on the one hand, because self-employed workers often have less access to public early retirement schemes and, on the other hand, because they enjoy more work autonomy (Radl, 2012). Being in full control of working hours in self-employment, however, often means working for a higher number of hours as well as no paid sick days or vacation, which makes health more of an concern for self-employed workers compared to other employment groups (Andersson, 2008). In addition, a study by Kautonen et al. (2012) investigates the effect of job satisfaction on the intended retirement age and

compares self-employed workers and employed workers in white-collar professions. The results suggest that job satisfaction is a significant determinant for both employees and self-employed to retire later. Whereas, job satisfaction appears to have a greater influence on the intention to work longer for self-employed respondents, who rated their own health as good, different levels of health do not seem to change the influence on retirement intentions for employed respondents (Kautonen, et al., 2012).

Blue-collar workers have been addressed by some studies due to a high degree of manual labour. Compared to white-collar workers, blue-collar workers usually face more physically straining working conditions, which, in turn, leads to earlier retirement ages (Radl, 2012). This is, however, not always a voluntary decision as pointed out by Solem et al. (2014). According to their results, blue-collar worker are more likely to retire earlier than they had decided as they have fewer opportunities to stay in employment due to their health and qualifications (Solem, et al., 2014). In line with that, another study by Büsch et al. (2010) found that white-collar workers are more likely to be employed after the age of 65 than blue-collar workers (Büsch, et al., 2010).

Work ability is an important factor to prevent labour force withdrawal. It is influenced by the person-environment fit and builds upon the intersection between older workers and their jobs characteristics (Fisher, et al., 2016). Orientation towards retirement often goes hand in hand with the perceived ability to cope with the demands of the job. According to P-E theory, physical and mental strain of the job can lead to early retirement, if older workers have a decreasing capacity to handle it. But also motivational aspects and attitudes towards work are essential parts of work ability according to Ilmarinen (2005). A discouraging nature of work and lacking support, especially on the part of managers, are important factors to maintain work ability. (Ilmarinen, 2005). In their study, Nilsson et al. (2011) differentiates between "want" to work and "can" work. They found that the mental and physical working environment, work pace as well as the opportunity to develop skills were associated with the ability of workers ('can') to stay in employment after reaching the retirement age. The motivation ('want') to continue working was associated with the management attitude towards older workers as well as the working time and the perception of work as an important part of life. The most important factors to stop working before reaching the age of 65 were reported to be economic incentives (Nilsson, et al., 2011).

Job satisfaction and the situation at the workplace are cited to be driving factors for retirement decision (Schnalzenberger et al., 2008; Topa et al., 2009). The question is whether job satisfaction is also relevant to prolong one's career life is addressed more and more often in literature. Wang & Shultz (2010) pointed out that work satisfaction and attachment with one's career job are important drivers to continue working, even compared to financial reasons (Wang & Shultz, 2010). Davies & Cartwright (2011) also support the assumption that personal factors are strong predictors of preferences to later retirement. In contrast to Wang & Shultz (2010), however, they found that job satisfaction was significant but negatively related to retiring later than the normal retirement age. One reason why the influence of job satisfaction differs across studies could lie in interpersonal differences. This is because self-rated job satisfaction represents the evaluations of objective working conditions by individuals. This evaluation is subject to interpersonal differences of personality, emotions,

and cognitive processes, which can create a bias in evaluation objective working conditions (Poggi, 2010).

2.1.3 Socioeconomic and institutional factors

Age discrimination and negative age stereotypes still hinder older workers to continue working at higher ages (Radl, 2012). In 2000, the EU introduced a framework for equal treatment in employment, which is also specifically directed to age discrimination (Council Directive 2000/78/EC). In the following years, age was included into the discrimination law in many European countries, e.g. 2008 in Sweden. Posthuma & Campion (2009) point out that age stereotypes are different from prejudice as they can be unconscious and subtle. However, they impact labour market opportunities for older workers and seems to be especially prevalent in the hiring process, selection for trainings and layoffs (Posthuma & Campion, 2009).

Social norms still influence a large part of Europeans to prefer an early exit from the labour force as pointed out by Radl (2012). Social norms do not only differ between countries but also within industries, occupations and local workplaces. In line with the life-course theory, age norms and the orientation on classical work biographies influence retirement decision-making. According to Radl (2012), differences between socio-economic groups are still prevalent when it comes to retirement. He stresses that in Western European countries, an individual's class is strongly correlated to the timing of retirement. It means that, compared to the service class and self-employed workers, individuals with working class professions show a more pronounced orientation towards early retirement. Age cultures also differ across Western European societies. While late retirement is largely favoured in Norway, French generally prefer to withdraw early with a retirement age of respectively 66 and 60 years old (Radl, 2012).

Pensionable ages and age norms are strongly related to each other. Institutional settings, which may facilitate the timing of retirement (early, on-time, late) are important to look at when comparing different countries. Compared to Nordic countries where labour participation at higher ages is relatively common, other European countries have difficulties to engage older workers in the labour market, especially female workers (Komp, et al., 2010). These gaps might reflect different pension legislations of countries with regards to the age of pension entitlement, early retirement windows, flexible transitions into retirement and special regulations for unemployed or disabled persons (Hamblin, 2013). Most of the European countries have increased the official retirement age in the past few years, however, there is still an observable difference between countries. For instance, Denmark is planning to connect the retirement age to life expectancy in order to create sustainable retirement schemes. Other countries such as Finland, Sweden, or Norway have abolished the fixed statutory retirement age and introduced a flexible age span to retire. The United Kingdom only has a lower limit of the retirement age, which means that there is no threshold that automatically terminates working contracts (Sievert, et al., 2013).

To show the disparities across Europe between the statutory retirement age and the mean age of actual labour force withdrawal, the OECD estimated numbers on average effective and

normal retirement ages from the European and National Labour Force Surveys (see table 1) (OECD, 2014). It's interesting to point out that some countries such as Switzerland have a high effective and official retirement age in contrast to other countries, e.g. France, in which effective and normal retirement takes place around 60 for both sexes. This shows that, overall, there is no evidence that higher or lower ages would lead to a greater or smaller gap between effective and normal retirement age. Consequently, statutory retirement ages per se do not give an insight into the decision of older workers to continue working or to retire (Blair, 2014). For instance, early retirement incentives in form of implicit taxes on working longer might influence the labour supply of older workers (Börsch-Supan, 2012). However, a big share of older retirees also face involuntary retirement, i.e. retiring earlier than preferred. Involuntary retirement is connected to late-career job loss, unemployment or health issues that facilitate an early exit. According to Steiber & Kohli (2015), even though raising the statutory retirement age, as it has been done by pension reforms in many countries, decreases the probability of involuntary retirement, it is still more prevalent than involuntary work, i.e. retiring later than preferred (Steiber & Kohli, 2015).

Table 1: Average effective vs. Normal age of retirement, 2009-2014 (OECD,2014)

	Male			Female		
Country/Ret. Age	*Effective*[a]	*Normal*[b]	*Gap*	*Effective*[a]	*Normal*[b]	*Gap*
Switzerland	66.1	65.0	1.1	64.5	64.0	0.5
Sweden	65.2	65.0	0.2	64.2	65.0	-0.8
Estonia	63.7	63.0	0.7	62.9	62.0	0.9
Czech Republic	63.3	62.7	0.7	60.5	61.2	-0.8
Denmark	63.0	65.0	-2.0	60.6	65.0	-4.4
Netherlands	62.9	65.2	-2.3	61.9	65.2	-3.3
Germany	62.7	65.0	-2.3	62.7	65.0	-2.3
Slovenia	62.3	58.7	3.6	59.5	58.3	1.2
Austria	62.2	65.0	-2.8	60.2	60.0	0.2
Spain	62.2	65.0	-2.8	63.1	65.0	-1.9
Italy	61.4	62.5	-1.1	61.1	62.0	-0.9
Belgium	60.0	60.0	0.0	59.3	60.0	-0.7
France	59.4	61.2	-1.8	59.8	61.2	-1.4

a) The average effective age of retirement is defined as the average age of exit from the labour force during a 5-year period. Labour force (net) exits are estimated by taking the difference in the participation rate for each 5-year age group (40 and over) at the beginning of the period and the rate for the corresponding age group aged 5-years older at the end of the period. The official age corresponds to the age at which a pension can be received irrespective of whether a worker has a long insurance record of years of contributions. b) The normal retirement age is the age at which an individual can retire in 2014 without any reduction to their pension having had a full career from age 20.

Regime types might explain trends of labour departure in a better way, particularly in view of the labour participation of women. The regime typology by Esping-Andersen's (1990) specifies different types of welfare states: *Conservative, Liberal,* and *Social-Democratic* welfare states.

He clustered them according to three key criteria:

- the *degree of de-commodification*, which means "the degree to which individuals, or families, can uphold a socially acceptable standard of living independently of market

participation" (Esping-Andersen, 1990). It is measured by old-age pension, sickness, benefits or unemployment benefits, parental leave etc.,

- the *pattern of social stratification*, which refers to the structure of inequality across countries,
- the *relative ratio between state and market in the formation of pension regimes*, which is measured by the expenditures on public and private occupational pension schemes.

Liberal welfare states are countries with low levels of de-commodification, whereas high levels of de-commodification are observed in social-democratic welfare states. According the Esping-Andersen (1990), liberal welfare states are characterised by individualism as it strengthens the market and work-ethic norms. Countries clustered in this model, such as the United States, Canada, and Switzerland, provide modest universal transfers and social-insurance. Entitlement rules for benefits are strict and often associated with a stigma (Esping-Andersen, 1990).

Conservative welfare states, such as Austria, France, and Germany have a strong corporatist orientation. The market is regarded as the provider for the welfare state, which acts as a compensator only if the capacity of the family is exhausted. It is typically shaped by the church and therefore characterized by the preservation family hood, which is often connected to less labour force participation of women. Attachment to class and status play a role as well as private insurance and occupational benefits (Esping-Andersen, 1990).

In *Social-democratic welfare states*, rights are not very attached to economic performance. Typical examples are Scandinavian countries such as Denmark and Sweden. Social democrats promote equality and high standards for everyone in contrast to other regimes which only cover for minimum needs. Compared to the conservative model, social-democratic welfare states take over some responsibilities or roles of the family in providing social service before their capacity is exhausted. The idea is that if everyone benefits, everyone will feel obliged to pay (Esping-Andersen, 1990).

Even though it is possible to cluster countries according to these characteristics, there is not a single clear case. Some countries may be predominantly liberal or social-democratic, however they can incorporate other impulses. Esping-Andersen's distinction has been reconsidered by many researchers in past decades. Apart from Italy, his analysis did not include Southern European or Central and Eastern European countries. The social policy regimes distinguished by Leibfried (1992) are similar to those from Esping-Andersen except that he included the late democratising countries Spain, Portugal, and Greece as so-called Latin Rim countries, which he characterises as rudimentary welfare regimes (Leibfried, 1992). In contrast to the Latin Rim countries, female labour force participation has more tradition in Central and Eastern European countries (Ebbinghaus, 2012). The influence of the prevalent regime type in a country can facilitate or hinder female labour participation. Even though their engagement in the labour market differs between countries, women generally face more challenges to combine the professional world and family needs than men (Nilsson, et al., 2011).

2.2 Previous Research

Together with the theoretical background about influential factors on retirement decisions, the following relevant studies dealing with the differences in retirement rates across European countries form the backbone of the empirical part of this thesis. The analysis will examine the differences in retirement rates across European countries. Specifically, the effect of work-related characteristics versus institutional influences will be analysed in order to explain the observed retirement patterns. For this reason, corresponding studies have been considered in choosing a suitable approach for the empirical analysis in this thesis.

Börsch-Supan et al. (2009) investigated the influence of pensions and social security institutions on retirement pattern in Europe. The use of SHARE data allowed them to compare thirteen European countries and their prevalent retirement patterns in their analysis. The authors found that institutions play a significant role in explaining cross-national differences in the probability to retire – more than demographic characteristics. Focussing on health in their study, they conclude that even though health is an important determinant for early retirement within a country, it does not contribute to a sufficient explanation of cross-country variations. In specific, the generosity of the pension system is a crucial factor that influences the variance between countries in view of the distribution and age pattern of labour force participation. Börsch-Supan et al. (2009) point out that countries with lower statutory retirement ages, such as Austria or France, show a tendency to earlier retirement. In countries with higher retirement ages, for instance in Sweden and Denmark, however, substitute effects in terms of other exit routs into retirement come into play. In Denmark and the Netherlands the claim for disability benefits are more prevalent with some 15 percent of the individuals compared to about 3 percent in Austria. This is because the level of disability required to be entitled for these benefits differs between countries. Nonetheless, unused labour capacity is more prevalent in countries such as Austria, Italy, and France where a high share of healthy individuals are not in the labour market. In other words, the authors conclude that an increase in social-security wealth is associated with an increase in the probability to retire (Börsch-Supan, et al., 2009).

As the influence of health on retirement has been extensively studied, the addition of working condition and factors of work quality were chosen to be in the centre of analysis in this thesis. Schnalzenberger et al., (2008) also used SHARE data to examine the withdrawal of the labour market between 2004 and 2006. Looking at subjective job satisfaction in the age group 55-65, they found that respondents who are not satisfied with their work were twice more likely to retire within two years compared to those who were satisfied and strongly satisfied with their job. They found that the effect of job dissatisfaction is more pronounces for men (odds ratio of 4.2) than for women (odds ratio of 2.3) (Schnalzenberger, et al., 2008). Whereas the study of 2008 focusses on actual behaviour, in their more recent study, Schnalzenberger et al., (2014), uses SHARE data to examine both, retirement intentions as well as decisions of employed workers. Distinguishing between intention and behaviour is relevant against the background that both are not interchangeable as emphasised by (Beehr, 1986). Schnaltzenberger et al. (2014) state that even though there are strong positive correlations between low job satisfaction and the intention to retire as early as possible, institutional or

other constraints often prevent actual labour force withdrawal, especially for men. Whereas no significant effect for men was found for job satisfaction and employment probability, women who have a low job satisfaction are more likely to stop working across Europe. The only significant results for women, however, were obtained in Southern European countries (France and Italy). Important to mention is, however, that this study does not only consider retirement but also partly retired, unemployed, and sick/disabled as different forms of labour force withdrawal (Schnalzenberger, et al., 2014).

Finally, the decision to approach the topic of this thesis from a gender perspective is based on the observation that many studies report different factors influencing the decision to continue working or retire for men and women. Micheel et al. (2010) state that men with restricted autonomy on the job retire earlier than women with comparable occupational positions, whereas social contacts at work are more associated to remain in employment among women (Micheel, et al., 2010). In the study by Büsch at al. (2010), work ability was positively correlated with a higher willingness to continue working for women but not for men. On the other hand, work motivation was the strongest driver for continued employment for men (Büsch, et al., 2010). Research on retirement behaviour used to have a stronger focus on men as the main bread-winner. Women of the baby-boomer generation tended to leave work under the 'marriage bar' or when they had children. Therefore, gender differences in retirement decisions have often been addressed regarding disrupted careers, part-time work, or lower incomes (Loretto & Vickerstaff, 2015). Research from the perspective of professional women that are engaged in their career shows that career attachment and work-related characteristics are also a relevant aspect for women to choose employment over retirement but they might differ for men (Finch, 2014). This underlines the relevance of differentiating the results between men and women in each country.

3 Data and Methods

In chapter three, the approach of the empirical analysis is presented. The dataset and variables to analyse the research question are described and the used methods are explained.

3.1 Data and Variables

The data used in this thesis has been obtained from the Survey of Health, Ageing and Retirement (SHARE) database. SHARE is a cross-national panel survey that provides micro-level data on the living situation of individuals aged 50 years and older in Europe. Since 2004, five waves have been collected, of which four are panel waves and one contains retrospective information (Malter & Börsch-Supan, 2013). The use of this secondary data allows researchers to conduct analyses on a large sample of individuals, which increases the reliability of results.

For this quantitative analysis of retirement decisions, the two subsequent waves 4 and 5, conducted in 2010/11 and 2013 respectively, have been selected. As wave 3, or SHARELIFE, contains retrospective information of the respondent's life events in the past, it is not suitable for this study. The purpose of using wave 4 and 5 is not only to work with the most recent data sets but also to keep the sample attrition between waves as low as possible. Survey data often suffers from attrition due to unit non-response, which occurs when no contact to the respondents could be established or there is no willingness for cooperation from their side. Sample selection bias caused by attrition can impact the representativeness of the dataset and consequently the results (Malter & Börsch-Supan, 2013). Apart from considering this for the analysis, this study did not explicitly check whether the individuals who dropped out after wave 4 differ from those who remained in the sample with respect to the factors included in the model.

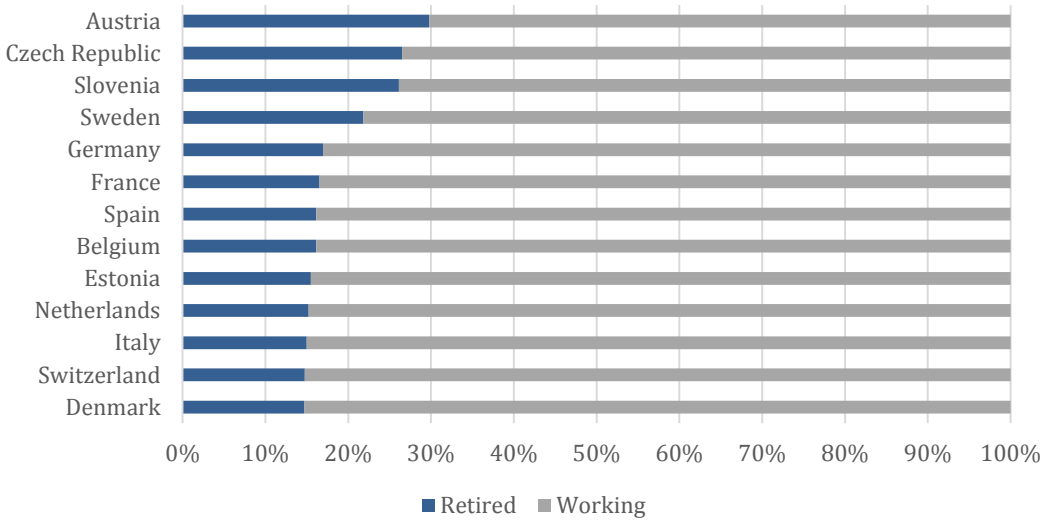
In survey data, respondents report their employment status themselves, which makes it easier to distinguish between working and retired people. In contrast to that, register data commonly uses a threshold of income sources to define the age of retirement, such as when pension income exceeds labour income or when labour-related income falls below a certain threshold. Even though self-reported retirement is a very straightforward measurement, it is subject to measurement error. For instance, retirees can still receive income from employment even though they are entitled for pension benefits and, vice versa, individuals who state themselves as 'employed' can already receive pension. Both of these occurrences could be considered as partial retirement.

Since this study aims to analyse the retirement decisions of individuals aged 55 to 67 across Europe. For a panel data analysis it needs to be ensured that only the respondents within this

age range and who provide information for both waves are included in the sample. In order to examine the change of the employment status from wave 4 to 5, individuals who reported themselves as working (employed and self-employed) in wave 4 have been selected. The dependent variable in this study is the self-reported employment status in wave 5 considering only 'retired' or 'working'. Other forms of labour force withdrawal such as 'unemployed', 'permanently sick or disabled', 'homemaker' or 'other' are not taken into account. In order to explain the changes in the respondent's employment status, explanatory variables retrieved from wave 4 are added to the model.

In wave 4, 15,774 respondents reported themselves as working, out of which 10,811 could be followed to wave 5. Only considering individuals within the set age range who kept on working or retired in wave 5 reduces the sample respectively. Besides, some observations for the variables included to the model are missing, which further reduces the sample. Assuming that these observations are randomly missing, the study is conducted with 6,770 individuals, of which 5,535 kept working from wave 4 to wave 5 and 1,235 retired between the two waves. These numbers include respondents from 13 different European countries: Austria, Belgium, Czech Republic, Denmark, Estonia, France, Germany, Italy, Netherlands, Slovenia, Spain, Sweden, and Switzerland. Figure 1 displays the differences in the retirement rate between these European countries. The share of individuals who retired ranges from around 30 percent in Austria, Czech Republic and Slovenia to approximately 15 percent in Switzerland and Denmark. On average almost 20 percent of the respondents retired from wave 4 to wave 5.

Figure 1: Employment status by country in wave 5 (in percent)



In line with the theoretical background presented earlier, a set of covariates has been chosen. *Age* is included in the analysis and constructed by deducting the month and year of birth from the month and year of the interview. The *square of age* is included to capture the age pattern. As mentioned earlier, the age limits are set from 55 to 67 years and therefore directly below and above the statutory retirement ages for men and women across Europe. In order to ensure a valid cross-country comparison, this study takes use of a generated variable for *education* according to the International Standard Classification of Education (ISCED). Using standard

coding is a more accurate measure for international comparison than years of education (UNESCO, 2006). The education variable is transformed into a dummy which takes 1 if the respondent has tertiary education and 0 if he or she has completed lower levels of education. Furthermore, a dummy for the type of employment was created that takes 1 if the respondent is *self-employed* and 0 for employees and civil servants. Health is measured with the US version of *self-perceived health* that is comparable to the US Health and Retirement Study (HRS) and clusters health on a five-point scale: excellent, very good, good, fair, and poor. The generated variables is provided as a dummy that takes 1 if self-perceived health is rated as 'less than very good'. As people's health is often not directly observable, the use of self-assessed health is common in surveys. Important to bear in mind is that subjective health can be overestimated if individuals use poor health as justification for retiring early. This so-called 'justification hypothesis' describes the bias of people who dislike their work to exaggerate health issues in order to justify the decision to retire. Although some studies suggest that self-reported health measures are reliable, the results ought to be treated carefully (Dwyer & Mitchell, 1999).

The key covariates are work-related variables that are related to job quality. This study distinguishes between objective job quality, i.e. *physical strain* of the job, and subjective job quality in terms of *job satisfaction*. The corresponding variables were taken from the employment section of the SHARE questionnaire. In this section, respondents rated the statement "My job is physically demanding" on a four-point scale: strongly agree, agree, disagree, or strongly disagree, out of which a dummy variable was created that takes 1 if the respondents strongly agrees or agrees and 0 if he or she disagrees or strongly disagrees. The same procedure has been conducted for the subjective work-related variable job satisfaction, which is measured by the statement "All things considered I am satisfied with my job" which was also rated on a four-point scale: strongly agree, agree, disagree, or strongly disagree. Table 3 shows the variables used in this studies.

Table 2: Variables for the empirical analysis

Variable	*Type*	*Description*
Employment status (Retired)	Dummy variable	Value 1 if respondents reported themselves as retired, 0 if working
Age	Continuous	Age in wave 5, calculated from year of birth and year of interview
Age, squared	Continuous	Square of age in wave 5
Gender (Female)	Dummy variable	Value 1 if respondent is female, 0 if male
Education (Tertiary education)	Dummy variable	Value 1 if respondent has completed tertiary education, 0 for lower education
Type of employment (Self-employed)	Dummy variable	Value 1 if respondents report themselves as self-employed, 0 if employed
Health, poor (Self-perceived health)	Dummy variable	Value 1 if respondents perceived their health as less than very good (good, fair, and poor), 0 if otherwise (excellent, very good)

Job Quality, objective (Physical strain)	Dummy variable	Value 1 if respondents rate their job as physically demanding (strongly agree, agree), 0 if otherwise (disagree, strongly disagree)
Job Quality, subjective (Job satisfaction)	Dummy variable	Value 1 if respondents are satisfied with their job (strongly agree, agree), 0 if otherwise (disagree, strongly disagree)

3.2 Methods

The following empirical study aims to quantify the contribution of this thesis to explain cross-country differences in retirement and is divided into two parts. The first part is a descriptive analysis to graphically present differences in the retirement rates with reference to the explanatory variables. The second part consists of a decomposition analysis in order to examine whether – and to which extent – country differences are influenced by the characteristics included into this model or by unobservable factors which have not been controlled for. By doing this, the contribution of this thesis to explain cross-country differences in retirement decisions can be quantified.

To conduct the decomposition, an econometric model is first created based on the pooled sample. Since differences across countries are subject of the analysis, country-specific models are estimated for the purpose of comparing countries with each other. As gender differences are expected, the model will be run separately for males and females in each country to explain a possible variability of the results. Moreover, coefficient estimates have to be obtained by the use of a linear or logistic regression.

For this analysis, the decision against a linear model is derived from the fact that using linear models for binary outcomes would lead to probabilities that are greater than 1 or less than 0 as well as to a non-normal distribution of the error term and heteroscedastic residual (Verbeek, 2004). The reason to use a binary logistic model instead of a multinomial model is based on the area of interest. This study aims to examine retirement decisions, and therefore other forms of labour force withdrawal such as unemployment or permanent disability are not considered in the outcome variable. Logistic models are used to estimate the likelihood of belonging to a certain group, depending on the influence of the explanatory variables. Therefore, the dependent variable is not y but the probability that y is 1. In order to interpret the magnitude of the effects, the results are reported in odds-ratio format by taking the exponent of the coefficient. The odds ratio indicates how much more or less likely an individual of a certain characteristic is to achieve the positive outcome, in this case retirement, compared to the reference category. The odds ratio can take values from m 0 to ∞. A value below 1 means a negative effect and above 1 a positive effect. An odds ratio of 1 indicates that the probability of a group to be associated with 1 is equal to the one of the reference group. The standard errors as well as the pseudo R-squared values are presented with the results to indicate the goodness-of-fit (UCLA: Academic Technology Services, 2000).

In this thesis, the Blinder-Oaxaca decomposition technique is used with the purpose to examine mean outcome differences between groups. Popularised by Blinder (1973) and

Oaxaca (1973) the technique is often applied to investigate wage gaps by gender or race. In this study, the mean difference of retirement rates between countries are decomposed in order to check to which extend these differences can be explained by the factors included in this model. The two-fold Blinder-Oaxaca decomposition separates the overall difference into two parts: 'explained' and 'unexplained'. The explained part captures the part of the outcome variations that is attributed to group differences in the predictors and the unexplained part measures the effect of the coefficient change or, in other words, unobserved predictors that have not been controlled for in the model (Jann, 2008). In his article, Jann (2008) describes his approach to conduct a Blinder-Oaxaca decomposition with the statistical software Stata. Following his approach for this analysis, the Stata 14.0 Special Edition is used.

With reference to the two-fold decomposition analysis conducted by Qi et al. (2016), the coefficient estimates were obtained using a binary logistic regression with robust standard errors. The general specification of the econometric model can be expressed as follows:

$$y_i = \propto + Z'_i\beta + \epsilon_i \tag{1}$$

where, y_i is the binary depended variable for each respondent in the sample, which equals 1 if they are retired, and 0 if they are employed in wave 5. Z is a set of covariates including dummy indicators of educational level, type of employment, objective and subjective job quality, self-perceived health, and countries.

Considering differences across countries, the model is estimated for each country separately with the same specification as in (1) excluding the country dummies in Z. The country-model may be written as:

$$y_{i,c} = \propto_c + X'_{i,c}\beta_c + \epsilon_{i,c} \tag{2}$$

where, c denotes each country and X is a set of covariates including dummy indicators of educational level, type of employment, objective and subjective job quality, self-perceived health.

Since this study aims to understand the influence of job quality on retirement decisions in different countries, one country will be set as a reference group. In this sample, Austria shows the highest share of retirees from wave 4 to wave 5 and it is also known to be a country with a relatively low labour participation of older workers. For these reasons, it is chosen to get pair-wise compared with the other countries in the sample. Based on the observed population characteristics $X_{i,c}$ and the obtained estimates for $\alpha, \beta, \alpha_c, \beta_c$, the mean difference between Austria (AU) as reference country and each of the other countries in the outcome variable y_i can be expressed as:

$$dY = E(Y_c) - E(Y_{AU}) = \propto_c - \propto_{AU} + E(X_c)'\beta_c + E(X_{AU})'\beta_{AU} \tag{3}$$

where, AU stands for Austria and c for every other country in the sample, i.e. Belgium, Czech Republic, Denmark, Estonia, France, Germany, Italy, Netherlands, Slovenia, Spain, Sweden, and Switzerland.

For the two-fold decomposition, a non-discriminatory coefficient vector is applied in order to determine the contribution of X. In the following equation, $\propto^*$ and β^* are used as vectors of the constants and coefficients:

$$\begin{aligned} dY = (\propto_c - \propto^*) - (\propto_{AU} - \propto^*) + [E(X_c) - E(X_{AU})]'\beta^* \\ + [E(X_c)'(\beta_c - \beta^*) - E(X_{AU})'(\beta_{AU} - \beta^*)] \end{aligned} \tag{4}$$

The term $[E(X_c) - E(X_{AU})]'\beta^*$ represents the difference of the outcome variable that can be attributed to the explained part, i.e. the changing mean value in the covariates. The subsequent term $[E(X_c)'(\beta_c - \beta^*) - E(X_{AU})'(\beta_{AU} - \beta^*)]$ is the sum of the unexplained difference in the retirement rate due to coefficient change. The explained part of the two-fold decomposition can be interpreted as the influence of population composition to the overall mean differences across countries, whereas the unexplained part refers to the effect of non-compositional change (Qi, et al., 2016). Non-compositional change can refer to country specific institutional influence, which comprises the prevalent labour market regulations, e.g. in view of the age of entitlement for pension benefits, labour market demands, pure preferences from employers as well as different cultural norms. The formula can be simplified to:

$$dY = dX + dB \tag{5}$$

where, dX is the impact of compositional change and dB the influence of country-specific institutional influences on the difference dY between Austria and analogue country.

It is important to mention that even though dB is referred to as country-specific institutional influence, it captures the complete residual effect and therefore a vast amount of aspects, which cannot be entirely distinguished from each other. This is a clear limitation of this decomposition analysis. Furthermore, one might argue that the outcome variable might not be exogenously defined, since this study does not distinguish partial retired respondents, i.e. individuals who classify themselves as retired but who receive income from paid work. The fact that in some countries individuals may be allowed to work while receiving pension benefits or the possibility that individuals pursue a kind of bridge employment between their career job and complete labour force withdrawal, could cause misleading results (Börsch-Supan, et al., 2009).

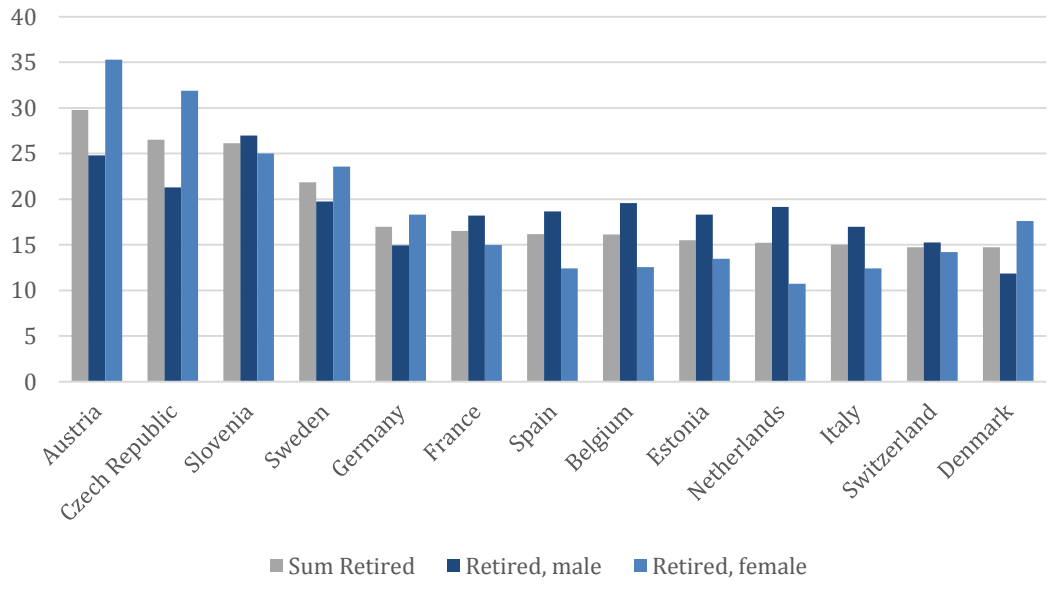
4 Empirical Analysis

Chapter four includes the descriptive statistics. The results from the logistic regression and decomposition analysis are presented and discussed in relation to the theoretical background.

4.1 Descriptive Statistics

In order to provide an overview about the data used for the empirical analysis, descriptive statistics of the covariates are included in this section. Figure 2 depicts the employment status (retired versus working) for men and women in wave 5, who reported themselves as working in wave 4. The figure shows differences in the share of retirees across the examined countries, however, the proportion of men and women who retired is relatively even.

Figure 2: Employment status by gender and country in wave 5 (in percent)



The relationship between employment and age is known to be non-linear as workers are more likely to retire after they reach the age of 60 years. Chronical age is often a proxy for a declining health status, which influences the work ability of older workers (Fisher, et al., 2016). Institutional factors also have an effect on this relationship due to statutory retirement ages. This is also mirrored when looking at the age distribution among the retired respondents in different countries. In Austria the average age of the retired respondents is 58.9, which is rather low compared to Sweden with 65.5 years (see table 3). The remaining covariates are displayed in the following figures 4 to 12 for both, the total and retired population in each country.

Table 3: Average age of respondents by country

	Austria	*Germany*	*Sweden*	*Netherlands*	*Spain*	*Italy*	*France*	*Denmark*	*Switzerland*	*Belgium*	*Czech Rep.*	*Slovenia*	*Estonia*
Average age, pooled	58.9	60.5	62.3	59.9	59.9	59.2	58.6	59.9	60.1	58.7	58.8	57.7	61.0
Average age, retired	60.9	63.8	65.5	64.3	63.4	62.7	61.4	63.6	64.2	62.3	61.5	59.5	64.8

Figure 3: Total population with tertiary education by gender and country in wave 4 (in %)

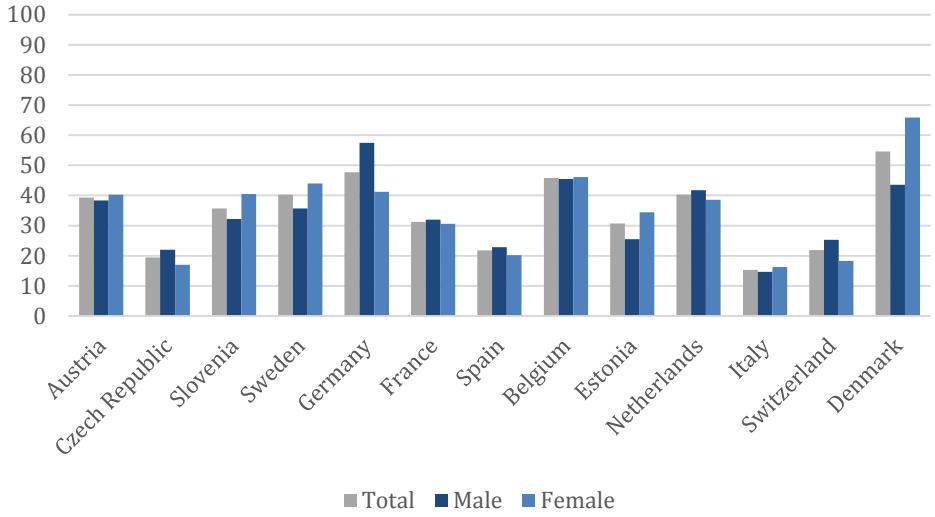


Figure 4: Retired population with tertiary education by gender and country in wave 4 (in %)

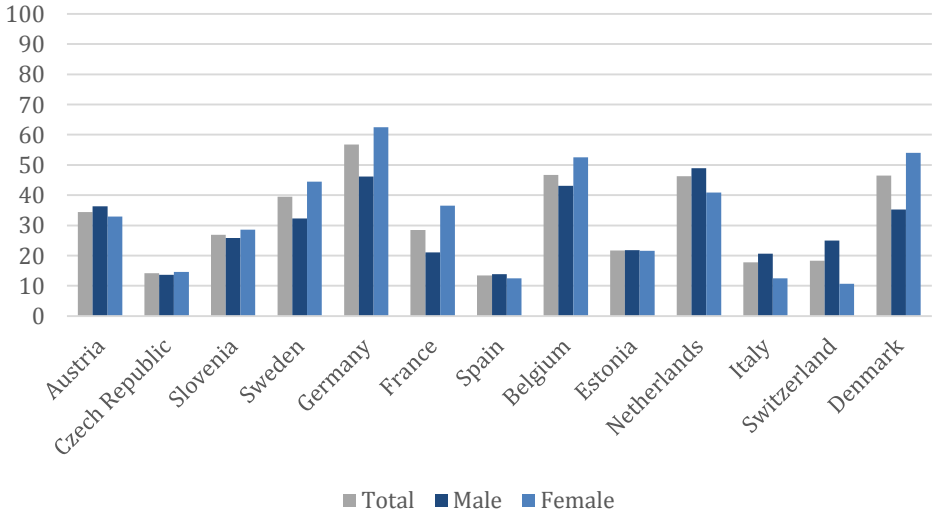


Figure 5: Total self-employed population by gender and country in wave 4 (in percent)

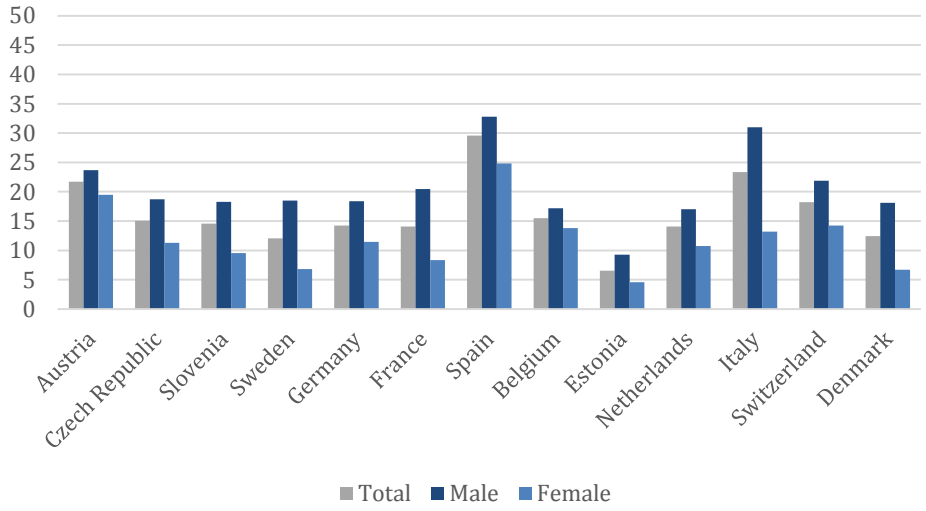


Figure 6: Retired self-employed population by gender and country in wave 4 (in percent)

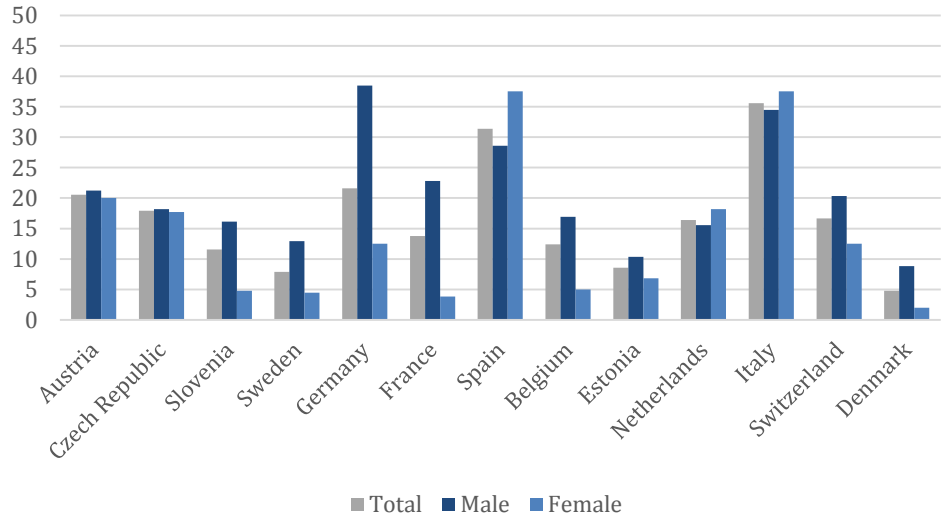


Figure 7:Total population with poor self-perceived health by gender and country in wave 4 (in %)

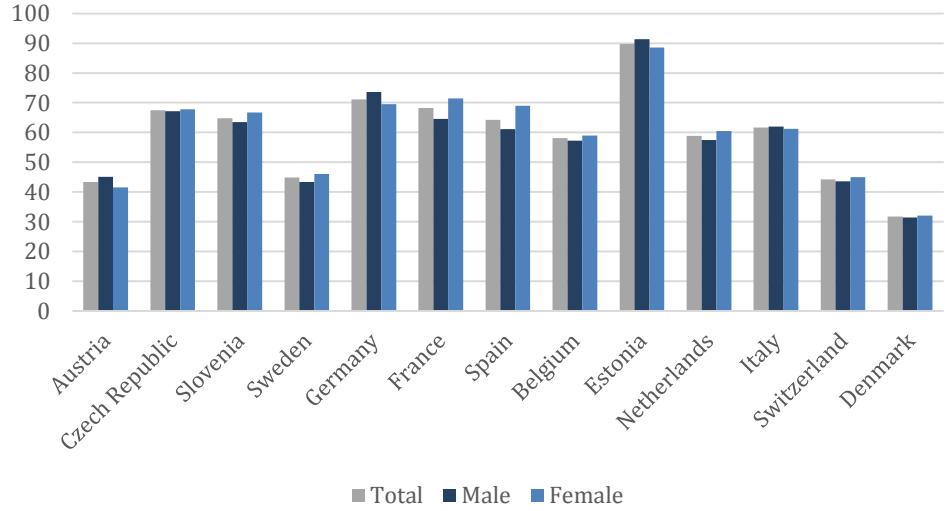


Figure 8: Retired population with poor self-perceived health by gender and country in wave 4 (in %)

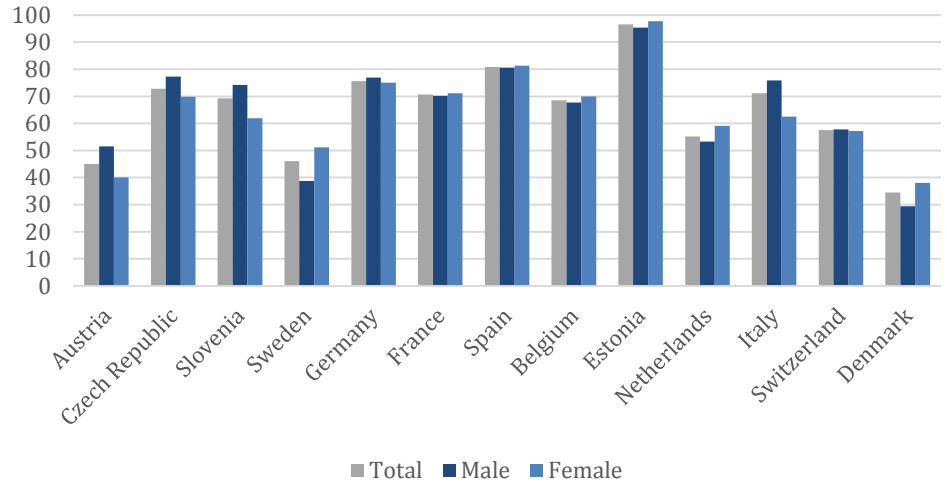


Figure 9: Total population with physical strain on the job by gender and country in wave 4 (in %)

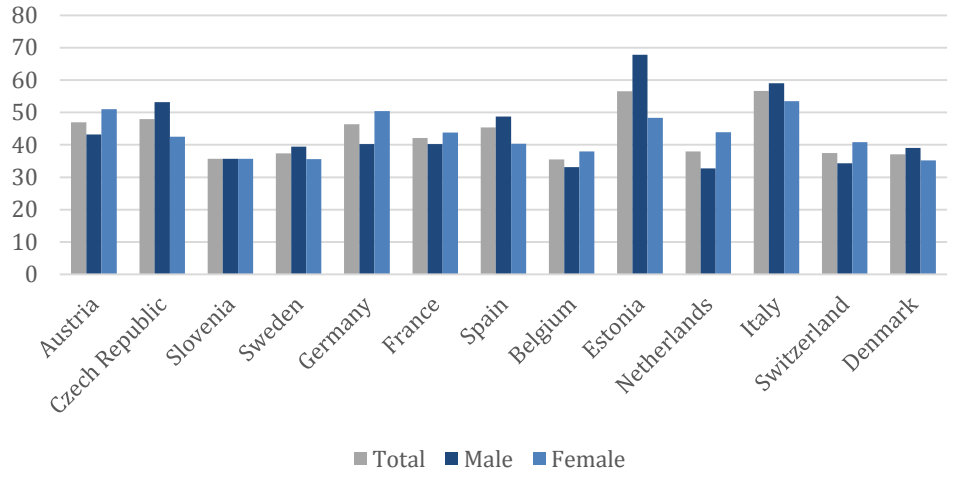


Figure 10: Retired population with physical strain on the job by gender and country in wave 4 (in %.)

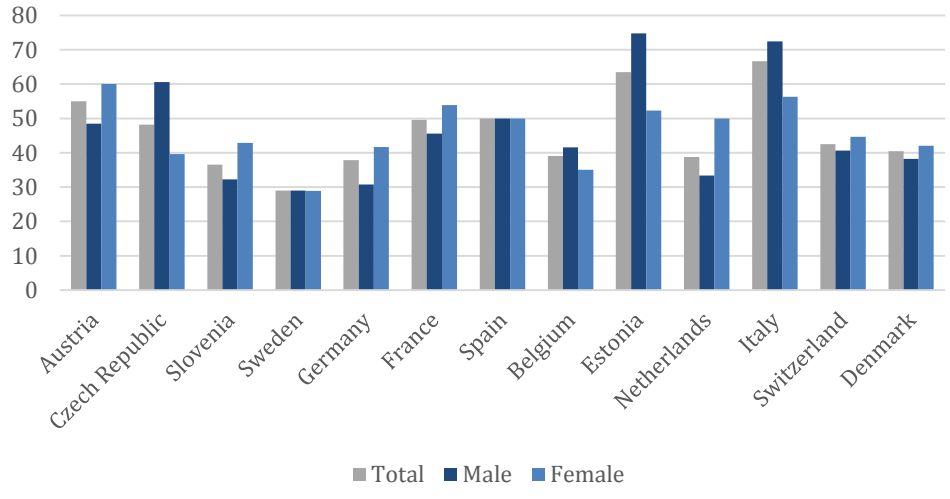


Figure 11: Total population with job satisfaction by gender and country in wave 4 (in %.)

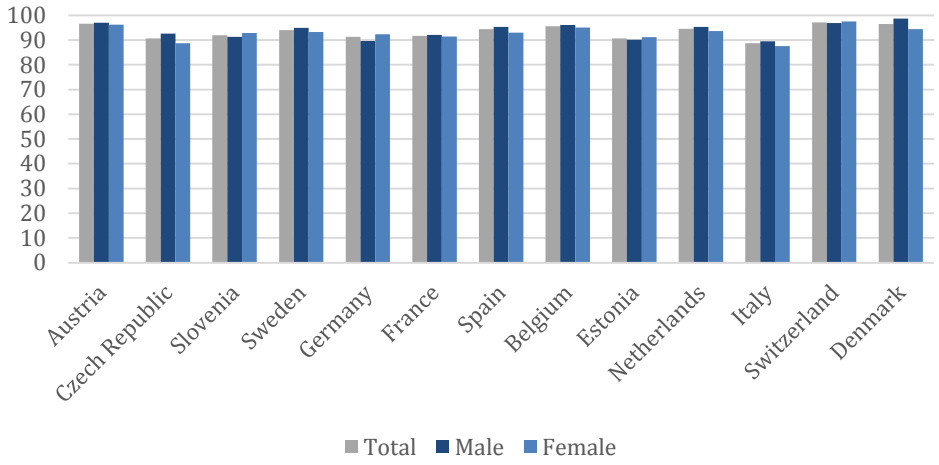
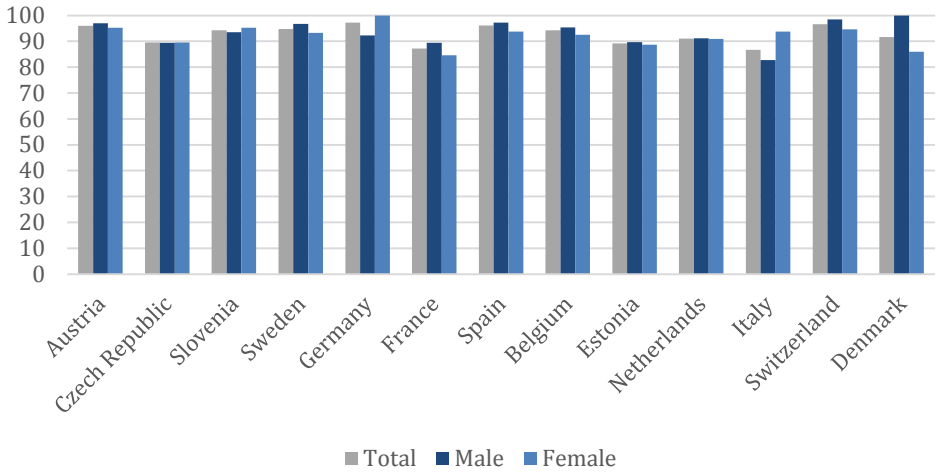


Figure 12: Retired population with job satisfaction by gender and country in wave 4 (in %.)



Looking at the figures, it is apparent that differences in the covariates are greater when comparing countries than when comparing the total population and retired population within each country. The share of respondents who obtained tertiary education ranges from around 20 percent in Czech and Spain to about 60 percent in Germany. Tertiary education is less observed among those retired than in the total population but the proportion of retired women with tertiary education is higher than for men in some countries such as German, Belgium and France. The amount of self-employed respondents is rather similar across countries with around 15 percent, only Spain and Italy stand out with higher number of self-employed individuals of around 30 percent. These countries also show a higher percentage of female retirees that are self-employed compared to other countries, especially Germany with a large amount of male respondents that used to be self-employed. Even though on average women rate their health worse than men in most countries, the share of men with poor health that are retired is greater than of women. The amount of respondents with less than average health ranges from 30 percent in Denmark to up to 90 percent in Estonia. For physical strain on the job the distribution is quite similar but lower in magnitude. Ranging from 30 to up to 60 percent, highest rates for job strain are reported in Italy and Estonia. Whereas male retirees in these two countries reported job strain, it was mainly females for the remaining countries. Job

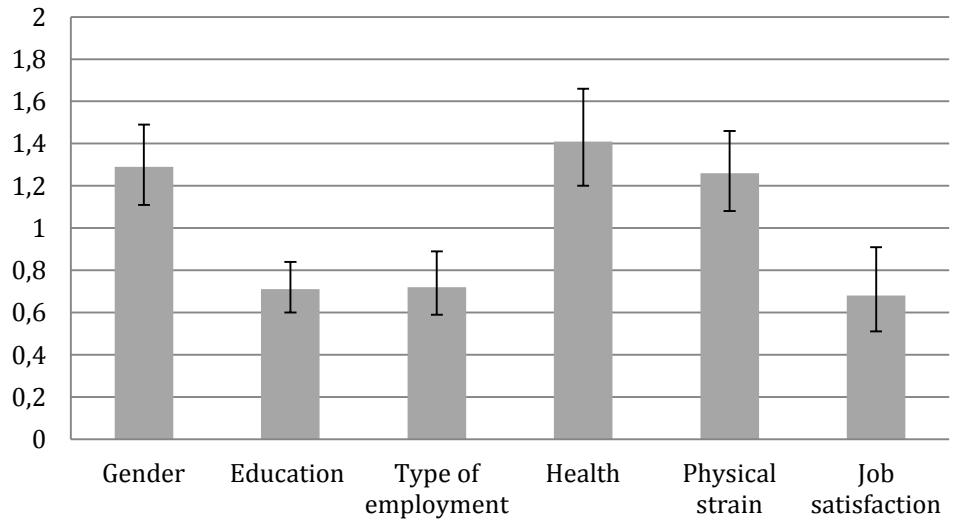
satisfaction is rather high in all countries, out of which the lowest rates among retired individuals can be found in Italy.

4.2 Results

The decomposition analysis is based on the econometric models described in (1) and (2), where the probability of retirement is a function of the covariates in Z for the pooled sample and X for the country-specific estimations. The regression is conducted separately for men and women. In Figures 13 to 14, the results of the logistic regression are displayed in order to check whether the influence of work-related factors on retirement comply with the expectations based on previous theory and research. As depicted below, all coefficients of the dummy variables show the expected signs and are statistically significant in the pooled regression. Figure 3 describes the results for the pooled sample with the confidence intervals:

- *Gender*: women are more likely to retire from wave 4 to wave 5 compared to men (odds ratio of 1.29)
- *Education*: respondents who have obtained a tertiary education are less likely to retire than the ones with a lower educational level (odds ratio of 0.71)
- *Type of employment*: self-employed respondents are less likely to retire than employed workers (odds ratio of 0.72)
- *Health*: respondents who perceive their health as good or less than good are less likely to retire than the ones who reported to have excellent, very good, or good health (odds ratio of 1.51
- *Objective Job Quality:* Respondents with physically demanding jobs are more likely to retire than those who do not report physical strain at work (odds ratio of 1.26)
- *Subjective Job Quality:* Respondents who are satisfied with their jobs are less likely to retire compared to those who are not satisfied at work (odds ratio of 0.68)

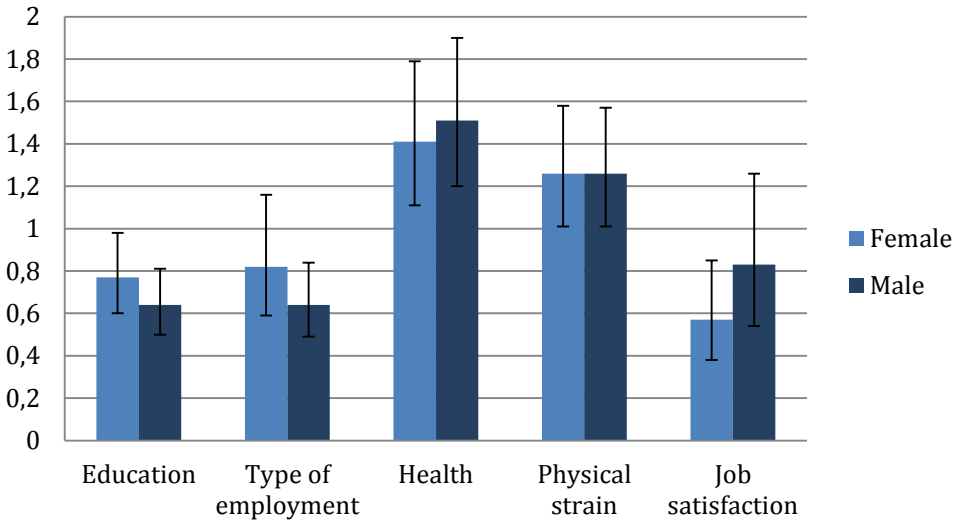
Figure 13: Explanatory variables and the odds of retirement



The results are presented in an odds-ratio format and can be interpreted as follows: an odds ratio of 1 means that retirement is equally likely in both groups. Consequently, an odds ratio smaller/greater than 1 indicates that retirement is less/more likely in the first group.

In view of the gender-specific outcomes, the results shows the same direction of influence from the explanatory variables but different magnitures (see Figure 14). The differences are most obvious for the subjective job quality variable 'job satisfaction', which apprears to have a stronger influence for women than for men. With an odds ratio of 0.57, women who are satisfied with their job are almost half as likely to retire from wave 4 to wave 5 than women who are not satisfied. For men in this sample, the educational level and type of employment is more pronounced. With an odds ratio of both 0.64, men with tertiary education and those who reported themselves as self-employed are less likely to retire than their counterparts. The differences are more pronounced for men than for women. The corresponding table with the results of the pooled and gender-specific logistic regression are provided in Appendix A

Figure 14: Explanatory variables and the odds of retirement by gender



When comparing the thirteen European countries, differences among the sexes become apparent, especially for women, for whom the results are more heterogeneous across the countries. For females, education only showed significant results in Austria, Germany and Slovenia. Whereas in Austria and Slovenia women with tertiary education are less than half as likely to retire between wave 4 and wave 5, highly educated women in Germany show a much higher probability to retire than their counterparts with lower education (odds ratio: 5.23). The type of employment also shows contradictory results for Germany and Italy, which both respondet with significant results. Whereas in Germany self-employed women are less likely to retire than employed women, in Italy the probability of self-employed women to withdrawal from the labour market is much higher than for their employed counterparts (odds ratio: 0.17 and 11.8). Compared to that, factors related to health and work ability showed rather clear results. Poor self-perceived health is associated with a higher probability to retire for women in Denmark and Estonia (odds ratio: 2.10 and 5.33). In both, Austria and France women who have a physically demanding job show a higher likelihood to retire than women who do not report physical strain at work (odds ratio: 2.19 and 2.29). Job satisfaction only shows significant results in Denmark and is associated with a lower probability of retirement

for satisfied women (odds ratio: 0.11). No significant results were obtained for women in Sweden, the Netherlands, the Czech Republic, and Belgium.

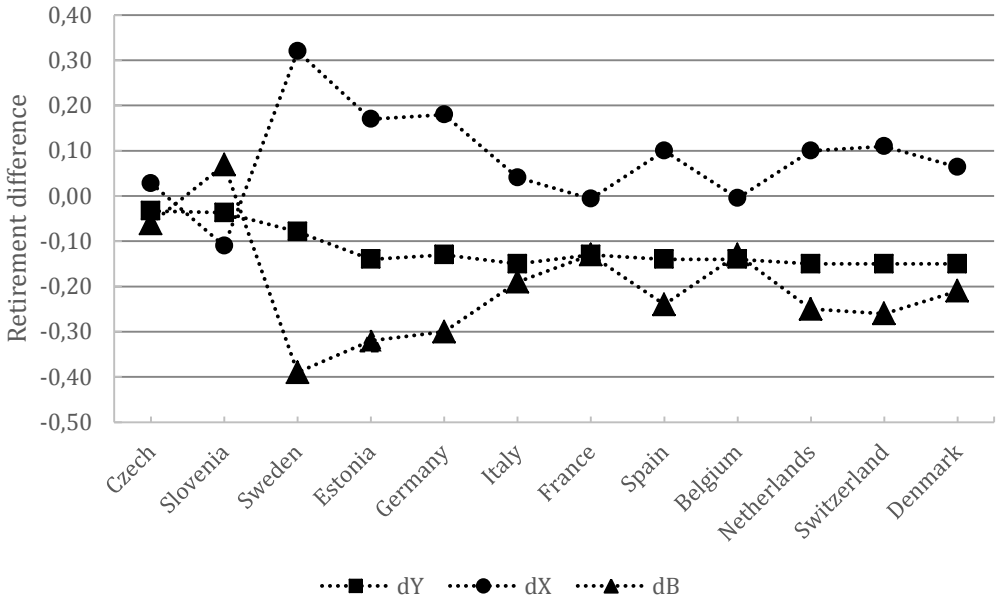
For men, the obtained significant results are more homogeneous in the cross-country comparisons. Educational level is significant in Sweden, France, the Czech Republic, and Slovenia and shows relatively little variance between these countries. The results indicate that men with tertiary education are less likely to retire than men who have obtained lower educational levels (odds ratio: 0.22, 0.31, 0.20, and 0.17). Self-employed men in the Netherlands and Switzerland also show a smaller probability to retire than their employed counterparts (odds ratio: 0.23 and 0.39). In contrast to women, physical strain at work did not show significant results in relation to retirement for any of the countries. Self-perceived health, however shows significance for the countries Spain, Belgium and Slovenia (odds ratio: 3.43, 1.95, and 3.84). Only men in the Netherlands responded to job satisfaction in this sample and are much less likely to retire than men who are not satisfied with their job (odds ratio: 0.078). Austria, Germany, Denmark, and Estonia did not show any significance for men in this sample. Comprehensive tables with the gender-specific results for each country are provided in Appendix B.

The results of the logistic regression show that the independent variables in the model are associated with the probability to retire. In the next section, the differences in the mean retirement rates between the countries are analysed in order to examine to what extent the model can explain variations in the retirement decisions between individuals from different countries. For this purpose, the obtained estimates from the logistic regression are used for the Blinder-Oaxaca decomposition analysis. The results are graphically presented in the following figures number 15 to 17 and table 4 on page 28 contain the detailed results of all countries. Austria acts as reference country since it shows the highest retirement rate in this sample. The differences of the retirement rates between the countries (dY) is decomposed into a characteristics effect (dX) and a coefficient effect (dB) as presented in equation (5). This shows the extent to which the difference can be explained by variations in population characteristics (dX) or by other unobserved factors that are not included in our model (dB). The dY estimates indicated by squared labels begins close to 0 and continues with a downward trend as the countries have been arranged in descending order in terms of the retirement rates. The estimates of dX are labelled with a dot and dB with a triangle.

The Czech Republic shows the second highest retirement rates in this sample with approximately 26.5 percent compared to 29.8 percent in Austria, which leads to a relative small difference between the retirement rates of approximately -3.3 percent. Adjusting Austria to the population characteristics of the Czech Republic in terms of education, type of employment, health, physical strain, and job satisfaction, would actually lead to an increase of the retirement rate for Austria by about 2.8 percent as depicted by the positive values of dX in figure 15. However, the unexplained factors (dB) are the main drivers for the observed negative difference and would lead to a decrease in the retirement rate of 6 percent if there were no differences in the population characteristics between Austria and the Czech Republic. For Slovenia the results show the opposite. The difference between the retirement probabilities is also rather small with a rate of 26.1 percent in Slovenia, which amounts to a negative difference of about -3.7 percent. In contrast to the Czech Republic, however, Austria's retirement rate would be reduced by -11 percent, if Austria had the same population

characteristics as Slovenia. Out of the overall difference, 6.9 percent is explained by coefficient change and therefore by factors that are not included in the model. Other countries whose population characteristics would also lead to a decrease of Austria's retirement rate are France and Belgium, visible on the graph as the two lowest points of dX after Slovenia. The rest of the countries show patterns similar to the Czech Republic as adjusting Austria to their endowments would lead to an increase in Austria's retirement rate and is only balanced out by unobserved factors that lead to the negative total difference. Sweden stands out with relatively high numbers. If the influence of the unobserved factors were equal, the effect of Sweden's population characteristics would lead to an increase of the retirement rate by around 30 percent in Austria. However, the total difference of the probability to retire is mainly driven by unobserved factors as coefficient change would lead to an actual decrease of about 40 percent. The influence of coefficient change is especially strong in Sweden, Estonia and Spain suggesting that the effect of unobserved factors of these countries would lead to a decrease of the probability to retire among Austrian women by respectively 43 percent, 40 percent, or 35 percent.

Figure 15: Composition of the mean differences in retirement probability, pooled



The gendered analysis displayed in figures 16 to 17, shows similar results indicating that the differences in the retirement probabilities are mainly driven by unexplained factors that have not been controlled for in the model. One interesting aspect of looking at gender differences in the results is that they give information about how the sexes influence the magnitude of the total difference observed in the pooled results. The average differences between the reference group Austria and the other countries vary around -6 percent for men and on average -18 percent for women. Therefore, the total mean difference of -13 percent between Austria and the other countries is, to a large extent, influenced by the high differences among females across Europe. Countries that show the least differences to Austria are the Czech Republic for women and France for men. It is important to note that Slovenia has a higher retirement rate for men than Austria, i.e. there is a positive difference of about 2 percent as displayed in

figure 7. Regardless of that, coefficient change would increase the retirement probability in Austria. In order to understand which elements of the model contribute the most to the explained part of the retirement differences, the covariates can be further decomposed.

Figure 16: Composition of the mean differences in retirement probability, females

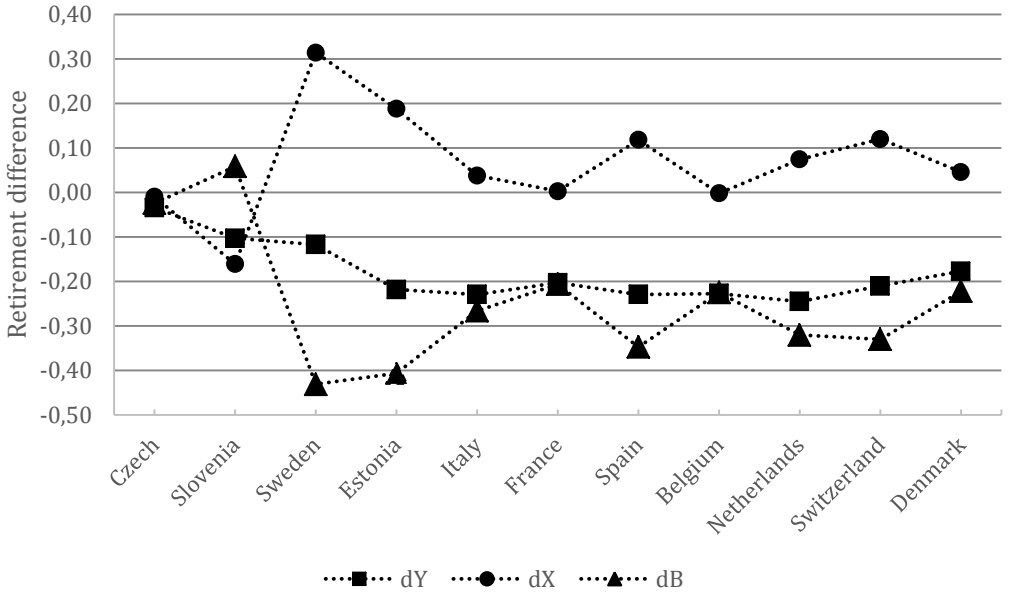


Figure 17: Composition of the mean differences in retirement probability, males

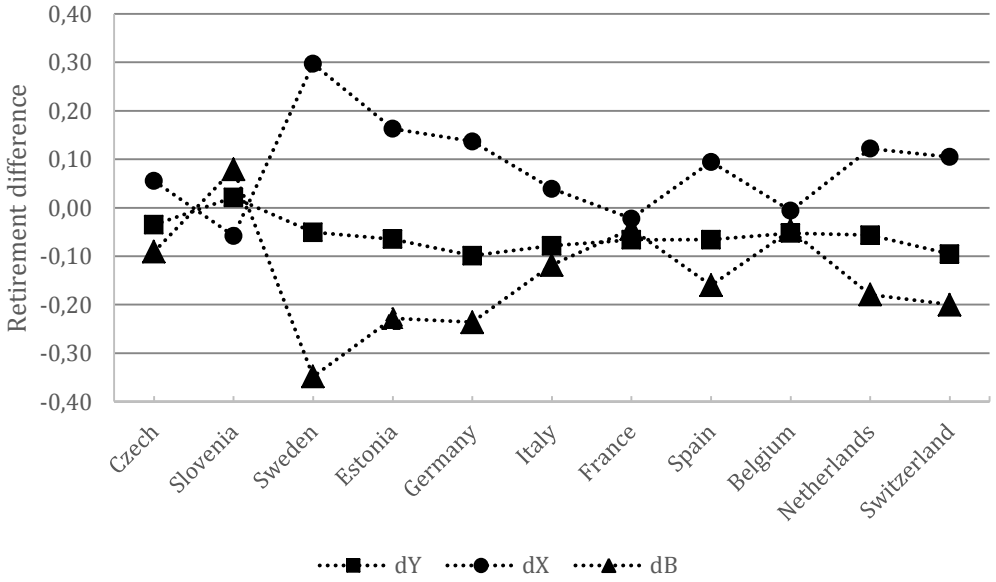


Table 4: Results of the Blinder-Oaxaca decomposition

	Austria	*Czech Rep.*	*Slovenia*	*Sweden*	*Estonia*	*Germany*[a]	*Italy*	*France*	*Spain*	*Belgium*	*Netherlands*	*Switzerland*	*Denmark*[b]
							Pooled						
Y	0.298***	0.265***	0.261***	0.218***	0.155***	0.170***	0.150***	0.165***	0.159***	0.161***	0.152***	0.150***	0.147***
dY	ref.	-0.033	-0.037	-0.08**	-0.143***	-0.128***	-0.148***	-0.133***	-0.139***	-0.136***	-0.146***	-0.148***	-0.151***
dX	ref.	0.028	-0.106***	0.315***	0.174***	0.175***	0.041*	-0.0061	0.104***	-0.0046	0.102***	0.109***	0.064***
dB	ref.	-0.061*	0.069*	-0.395***	-0.317***	-0.303***	-0.189***	-0.127***	-0.243***	-0.135***	-0.248***	-0.259***	-0.215***
							Female						
Y	0.353***	0.319***	0.250***	0.236***	0.135***		0.124***	0.150***	0.124***	0.125***	0.107***	0.142***	0.176***
dY	ref.	-0.0338	-0.103	-0.117**	-0.218***		-0.229***	-0.203***	-0.229***	-0.227***	-0.245***	-0.210***	-0.177***
dX	ref.	-0.00937	-0.161***	0.314***	0.188***		0.0378	0.00285	0.118***	-0.00191	0.0744*	0.120***	0.0457
dB	ref.	-0.0244	0.0585	-0.431***	-0.406***		-0.266***	-0.206***	-0.347***	-0.225***	-0.320***	-0.330***	-0.222***
							Male						
Y	0.248***	0.213***	0.270***	0.197***	0.183***	0.149***	0.170***	0.182***	0.182***	0.196***	0.191***	0.152***	
dY	ref.	-0.0352	0.0214	-0.0507	-0.0650*	-0.0987*	-0.0785*	-0.0660	-0.0658	-0.0523	-0.0566	-0.0957**	
dX	ref.	0.0554*	-0.0580*	0.297***	0.163***	0.137***	0.0391	-0.0224	0.0946***	-0.00615	0.122***	0.105***	
dB	ref.	-0.0906**	0.0795	-0.348***	-0.228***	-0.236***	-0.118**	-0.0436	-0.160***	-0.0462	-0.179***	-0.200***	

a) Germany is not included as there is no data on job satisfaction for female respondents
b) Denmark is not included as there is no data on job satisfaction for male respondents

Figures 18 to 19 further decompose the total compositional change dX (indicated in red) into each of the covariates in the model. The purpose is to examine which of the covariates have the highest explanatory power in the results. The influence of age on dX is very noticeable when looking at the figures, which indicates that the different average ages in the countries strongly impact the magnitude of dX. Comparing both sexes, education showed the second strongest effect on dX for women in the Czech Republic. The influence of the other covariates is essentially zero across all countries. However, out of the very small effects of the remaining covariates, tendencies towards gender differences could be detected in the results. Physical strain due to physically demanding jobs showed slightly more effects on dX comparing women from the Czech Republic, Slovenia, Sweden, the Netherlands, and Denmark with women in Austria, whereas job satisfaction appears to have more influence for comparing men in Slovenia, Germany, France, Spain, and Belgium to male Austrians (see Appendix C).

Figure 18: Effect of covariates on total compositional change (dX), females

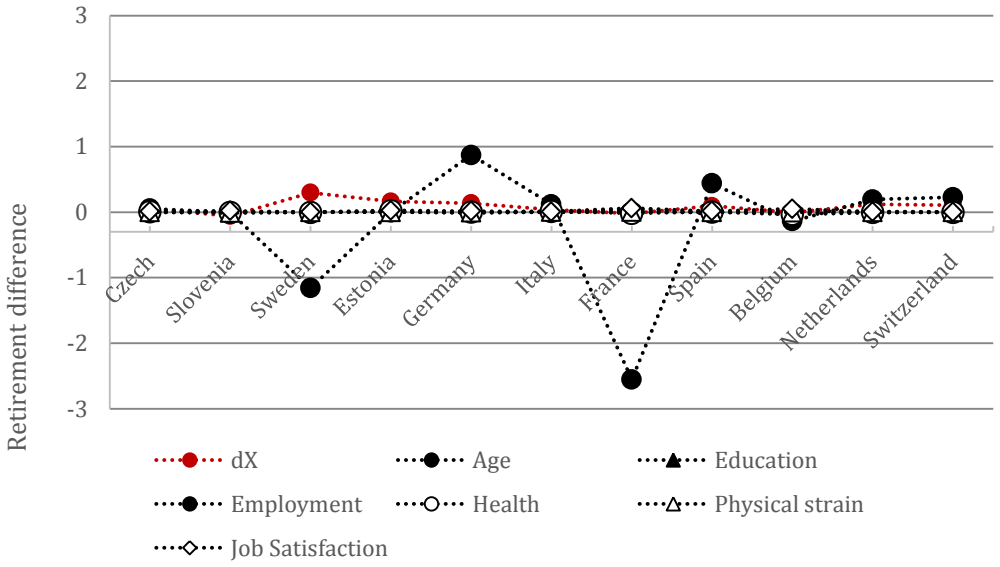
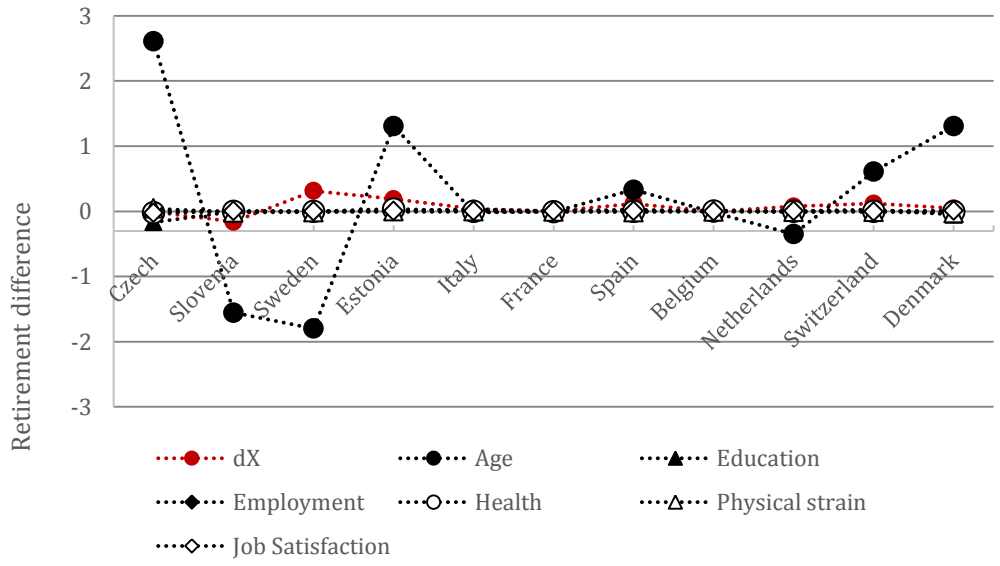


Figure 19: Effect of covariates on total compositional change (dX), males



4.3 Discussion

To summarise the analysis, the logistic regression shows significant results for the variables included in the model. According to theory and previous research, the directions of the effects correspond to the expectations. When comparing these results to the presented literature in this thesis, it is important to look at the outcome variable. Despite the relation between retirement intentions and actual decisions, they are not interchangeable (Beehr, 1963). As people often seem to postpone final retirement decision or may even have unrealistic expectations of retirement, there can be considerable differences between attitude towards retirement and actual decisions (Barnes-Farrell, 2003). Topa et al. (2009) state in their meta-analysis that antecedents predict retirement planning more precisely than retirement decisions, which leads to the conclusion that people might often have little control over their retirement decision and might be pushed into retirement (Topa, et al., 2009).

This could be one possible explanation for the country-specific results of the decomposition, as the observed difference of the retirement rates across countries was to a major part driven by coefficient change. This unexplained part refers to factors that were not included in the model. As just stated, institutional differences impact the decision-making power of individuals and are expected to play an important part. The institutional differences across countries can impact labour market demands but also pure preferences of employers and workers, cultural norms, and obviously regulations such as the age of entitlement to receive pension benefits. Even though the unexplained part dominated the retirement differences, further decomposing the total compositional change (dX) into each of the covariates in the model reveals more details. Within the explained part, differences in age contribute the most. These results are explainable by looking at the descriptive analysis and specifically the differences between mean ages in the country samples. The countries whose population characteristics would have led to a lower retirement rate in Austria, i.e. Slovenia, France, Belgium, and the Czech Republic, are the only countries in this sample with a lower mean age compared to Austria. Whereas Austrian respondents are on average 58.9 years old, the mean age for the other countries is 57.7 in Slovenia, 58.8 in the Czech Republic, 58.7 in Belgium, and 58.6 in France. Compared to that, Sweden has a relatively high mean age of 62.3. Adjusting Austria to the population characteristics of Sweden would lead to a sharp increase in the probability to retire. The key independent variables to measure job quality, however, showed very small effects on the compositional change but slight differences between the sexes. Whereas physical strain seemed more associated with women, job satisfaction was more pronounced among men on a small scale. In the logistic regression conducted in the beginning, health-related variables where the only covariates that showed homogeneous significant results for women in different countries. These results suggest, that the physical ability to work may be more associated with women in retirement decisions.

All in all, the results comply with findings of Börsch-Supan et al. (2009), who emphasise the influence of institutional differences on retirement behaviour in Europe. According to their results, generosity of the social security systems is the major driver behind retirement patterns. And also in this thesis, most of the variation between the retirement rates was explained by unobserved factors that capture different institutional settings across countries.

In terms of the key covariates ‘job satisfaction’ and ‘physical strain on the job’ showed significant results in the logistic regression. The effect of job satisfaction on retirement decisions corresponds with Schnalzenberger et al. (2008), who reported significant results for both sexes but more pronounced effects for men. However, these two measures of job quality showed hardly explanatory power in the Blinder-Oaxaca decomposition. One final note has to be done regarding the differentiation between the intention to retire and actual retirement decisions. As institutional and other constrains often prevent actual labour force withdrawal, results reflecting behaviour must not necessarily depict the free choice of individuals.

5 Conclusion

The main objective of this Master's Thesis in Economic Demography was to analyse the influence of work-related characteristics on retirement decision for women and men in Europe and investigate if, and to which extend, they can explain cross-country differences in retirement rates. By doing this, the influence of work-related factors on retirement decision-making in relation to institutional settings is evaluated. In addition to labour market resources such as health and education, factors concerning work quality were the key variables of this analysis, measured by the extent of physical strain on the job and job satisfaction. By examining retirement rates from thirteen European countries with a gender perspective, the following research questions were addressed:

I. *Do work-related factors influence retirement decisions of workers in Europe?*

II. *Can work-related factors explain cross-country differences in retirement rates?*

III. *Does the influence and explanatory power of work-related factors on retirement decisions differ between the sexes?*

The results of the logistic regression show that the work-related factors included in this study are associated with the probability to retire, which complies with theory and previous research. However, the major part of the disparity in retirement probability across European countries was not driven by work-related but by unobserved factors as shown by the Blinder-Oaxaca decomposition analysis. This leads to the conclusion that work-related characteristics might be crucial elements for the retirement decisions of individuals but they cannot explain retirement variations between states. Recalling earlier discussions, the majority of the unobserved differences might, to a great extent, be driven by institutional aspects such as retirement policies, labour market conditions as well as cultural norms, and other country-specific factors. This is supported by the findings of previous studies that emphasised the importance of institutional determinants on explaining retirement patterns. For instance, prevalent public pension systems can negatively influence the labour supply of older workers by early retirement incentives in the form of implicit taxes on working longer. In line with that, social norms about retirement and gender roles are very apparent when it comes to retirement decisions. In addition, even within the explained variation, age was detected to be the main driver, indicating influences of statutory retirement policies concerning the age of entitlement for pension benefits. As illustrated earlier in the background section, average normal and effective retirement ages differ considerably between countries. Austria is characterized by comparably low retirement ages for both sexes, meaning that transferring population characteristics of other European countries with an older population would generally lead to an increase in retirement. In terms of gender-specific variations, the distinction between men and women could not explain the differences in the retirement probabilities in a better way than the pooled sample. However, the obtained results demonstrate a need for further research for two reasons. Firstly, the results of the logistic

regression for women were very heterogeneous across countries compared to the results for men. In addition, the overall observed difference of the pooled model in the decomposition analysis was to a large extent influenced by the high variations among female Europeans, which increased the overall retirement differences. As women are often regarded as 'unused capacity' due to their involvement in both formal and informal work, more attention to women should be drawn in future research in order to better understand the underlying pattern of gender-specific retirement decisions. Furthermore, even though the largest part of the variations in retirement probabilities was driven by unobserved factors, work-characteristics did show significant results for a vast amount of countries. The obtained country-specific results are especially relevant for large companies in order to get a direction of how to retain their older personnel in times of an upcoming skills shortage. As mentioned early, one consequence of demographic change is a decline in the potential workforce, which, in turn, leads to a raising gap between labour supply and demand in future, particularly in view of skilled labour force. This means, that companies can only remain successful in the future if they stay competitive on the labour market as attractive employers. In consequence, these observed developments gives more value to the needs and requirements of employees of all ages. Companies will have to put more emphasis on retaining their older and experienced labour force and encourage their cooperation with younger workers to create a working environment under the umbrella of generation management. In order to do so, however, there is need of adequate recommendations and good-practice experiences in this matter. Finally, this thesis concludes that companies have an influence on the retirement decision-making of older workers even though the main responsibility in increasing the working life seems to ly in institutional frameworks of European countries. Conclusively, companies alone might not be able to effectively change the retirement behaviour by providing incentive through more appealing work-related factors for their employees when statutory factors seem to outweigh the influence of work-related factors.

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Appendix A

Table 5: Logistic estimates of the retirement probability, pooled and gender-specific

Variables	Pooled	Female	Male
Age	12.6***	104.8***	3.70
Age, square	0.98***	0.97***	0.99
Gender (Female)	1.29***		
Education (Tertiary)	0.71***	0.77*	0.64***
Type of employment (Self-employed)	0.72**	0.82	0.64**
Health, poor (Self-perceived health)	1.41***	1.41**	1.51***
Job Quality, objective (Physical strain)	1.26**	1.26*	1.26*
Job Quality, subjective (Job Satisfaction)	0.68**	0.57**	0.83
Country			
Austria	ref.	ref.	ref.
Germany	0.14***	0.082***	0.17***
Sweden	0.10***	0.056***	0.14***
Netherlands	0.15***	0.052***	0.28***
Spain	0.15***	0.049***	0.31***
Italy	0.22***	0.10***	0.37***
France	0.34***	0.15***	0.68
Denmark	0.16***	0.12***	0.16***
Switzerland	0.13***	0.068***	0.19***
Belgium	0.32***	0.12***	0.68
Czech Republic	0.68*	0.85	0.54**
Slovenia	1.48	1.61	1.67
Estonia	0.082***	0.035***	0.16***
N	6770	3409	3361
pseudo R-sq	0.272	0.317	0.260

Significance: * p<0.05, ** p<0.01, *** p<0.001

Appendix B

Table 6: Logit estimates of the retirement probability for each country, females

	Austria	Germany	Sweden	Netherlands	Spain	Italy	France	Denmark	Switzerland	Belgium	Czech Rep.	Slovenia	Estonia
Age	72.7	18336.6	0.00014	1.4e-05**	0.011	8342665.1*	143.3	21107389.3***	14833.8*	88.3	10921114.5***	4660545.5	3342.8**
	(168.8)	(151336.8)	(0.00085)	(7.9e-05)	(0.046)	(64508050.4)	(456.8)	(105889332.9)	(56382.3)	(244.5)	(35346710.0)	(61407671.1)	(8816.7)
Age, squared	0.97	0.93	1.08	1.15**	1.04	0.88*	0.96	0.88**	0.93*	0.97	0.88***	0.89	0.94**
	(0.019)	(0.061)	(0.051)	(0.054)	(0.035)	(0.056)	(0.025)	(0.035)	(0.028)	(0.022)	(0.023)	(0.100)	(0.020)
Education	0.45*	5.23*	0.91	1.67	1.45	0.69	1.76	0.46	0.68	1.18	0.47	0.10*	0.60
(Tertiary)	(0.16)	(3.54)	(0.48)	(1.22)	(1.29)	(0.63)	(0.70)	(0.19)	(0.39)	(0.45)	(0.24)	(0.093)	(0.19)
Type of employment	1.11	0.17*	0.51	0.95	1.79	11.8**	0.23	0.24	0.47	0.23	1.34	0.59	1.71
(Self-employed)	(0.46)	(0.15)	(0.52)	(1.24)	(1.31)	(10.5)	(0.20)	(0.28)	(0.24)	(0.18)	(0.70)	(0.86)	(0.96)
Health, poor	0.98	1.77	0.77	0.74	1.45	1.50	0.95	1.27	2.10*	1.76	1.23	1.20	5.33*
(Self-perceived health)	(0.33)	(1.19)	(0.39)	(0.56)	(1.13)	(1.05)	(0.40)	(0.56)	(0.75)	(0.73)	(0.48)	(0.90)	(4.02)
Job Quality, objective	2.19*	1.64	0.93	3.28	1.74	0.47	2.29*	1.45	0.96	0.77	1.75	1.15	1.10
(Physical strain)	(0.74)	(1.07)	(0.50)	(2.57)	(1.16)	(0.35)	(0.88)	(0.62)	(0.35)	(0.32)	(0.71)	(0.95)	(0.30)
Job Quality, subjective	0.32	1	0.74	0.53	1.05	1.05	0.39	0.11*	0.39	0.60	0.89	10.6	0.58
(Job Satisfaction)	(0.28)	(.)	(0.65)	(0.63)	(1.42)	(1.29)	(0.22)	(0.098)	(0.46)	(0.46)	(0.50)	(21.6)	(0.26)
N	241	121	191	205	129	129	347	284	393	319	301	84	654
pseudo R-sq	0.255	0.391	0.482	0.577	0.314	0.337	0.318	0.405	0.376	0.231	0.443	0.408	0.272

Exponentiated coefficients; Standard errors in parentheses
Significance: * p<0.05, ** p<0.01, *** p<0.001

Table 7: Logit estimates of the retirement probability for each country, males

	Austria	Germany	Sweden	Netherlands	Spain	Italy	France	Denmark	Switzerland	Belgium	Czech Rep.	Slovenia	Estonia
Age	284.0*	895.9	5.2e-09**	1.07	1.48	0.88	71933.6***	1.75	0.29	3.94	6.9e-08**	226308.1*	5.66
	(729.2)	(9488.0)	(3.0e-08)	(4.76)	(5.59)	(2.55)	(223233.0)	(5.10)	(0.69)	(7.90)	(4.0e-07)	(1188371.3)	(9.79)
Age, squared	0.96*	0.95	1.17**	1.01	1.00	1.00	0.92***	1.00	1.01	0.99	1.16**	0.91*	0.99
	(0.020)	(0.080)	(0.059)	(0.036)	(0.031)	(0.024)	(0.023)	(0.023)	(0.020)	(0.016)	(0.056)	(0.039)	(0.014)
Education	0.72	0.19	0.22*	1.22	0.44	1.82	0.31**	0.73	0.80	0.79	0.20*	0.17*	0.82
(Tertiary)	(0.25)	(0.16)	(0.17)	(0.59)	(0.29)	(1.19)	(0.13)	(0.33)	(0.32)	(0.26)	(0.14)	(0.13)	(0.28)
Type of employment	0.73	0.44	0.25	0.23*	0.50	0.83	0.73	0.27	0.39*	0.67	1.17	2.35	1.37
(Self-employed)	(0.29)	(0.45)	(0.22)	(0.15)	(0.28)	(0.42)	(0.31)	(0.18)	(0.16)	(0.28)	(0.67)	(1.88)	(0.60)
Health, poor (Self-perceved health)	1.32	1.04	0.86	1.17	3.43*	1.58	1.25	1.02	1.82	1.95*	1.78	3.84*	1.41
	(0.44)	(0.92)	(0.56)	(0.56)	(1.78)	(0.85)	(0.47)	(0.47)	(0.63)	(0.64)	(0.90)	(2.54)	(0.83)
Job Quality, objective	1.63	0.67	0.74	0.96	1.02	2.65	1.53	0.87	0.87	1.48	1.60	0.86	1.64
(Physical strain)	(0.55)	(0.56)	(0.50)	(0.48)	(0.50)	(1.40)	(0.57)	(0.39)	(0.31)	(0.49)	(0.78)	(0.52)	(0.53)
Job Quality, subjective	1.67	2.57	0.55	0.078*	2.76	0.43	0.65	1	1.87	1.07	0.78	4.06	0.76
(Job Satisfaction)	(1.54)	(3.61)	(0.72)	(0.087)	(3.36)	(0.30)	(0.40)	(.)	(2.46)	(0.80)	(0.57)	(4.40)	(0.34)
N	266	87	157	235	192	171	313	283	420	332	310	115	475
pseudo R-sq	0.243	0.379	0.558	0.443	0.300	0.218	0.278	0.254	0.325	0.158	0.541	0.360	0.194

Exponentiated coefficients; Standard errors in parentheses
Significance: * p<0.05, ** p<0.01, *** p<0.001

Appendix C

Table 8: Effect of total compositional change on retirement differences by covariates, females

	Austria	Czech	Slovenia	Sweden	Estonia	Germany[a]	Italy	France	Spain	Belgium	Netherlands	Switzerland	Denmark
dX	ref.	-0.00937	-0.161***	0.314***	0.188***		0.0378	0.00285	0.118***	-0.00191	0.0744*	0.120***	0.0457
Age	ref.	2.609	-1.554**	-1.797*	1.309***		-0.0146	-0.00599	0.331	-0.0156	-0.350	0.609*	1.308*
Age, squared	ref.	-2.471	1.408**	2.124**	-1.161**		0.0158	0.00690	-0.233	0.0129	0.435	-0.511	-1.192*
Education (Tertiary)	ref.	-0.168	-0.000357	-0.00303	0.00643		0.0313*	0.00205	0.0251*	-0.00190	0.00172	0.0281*	-0.0529
Type of employment (Self-employed)	ref.	0.0210	-0.00000747	-0.0000317	-0.00635		-0.00534	0.00289	0.00248	0.00220	-0.00192	0.00157	0.00450
Job Quality, objective (Physical strain)	ref.	0.0429	-0.0173	-0.0123	-0.00160		0.00232	-0.00500	-0.0143	-0.00394	-0.0110	-0.00735	-0.0276
Job Quality, subjective (Job Satisfaction)	ref.	-0.0218	0.00299	0.00261	0.00576		0.00617	0.00462	0.00396	0.000965	0.00319	-0.00249	0.00795
Health, poor (Self-perceved health)	ref.	-0.0207	-0.000915	0.000281	0.0365		0.00208	-0.00263	0.00255	0.00345	-0.00181	0.00204	-0.00292

a) Germany is not included as there is no data on job satisfaction for female respondents

Table 9: Effect of total compositional change on retirement differences by covariates, males

	Austria	Czech	Slovenia	Sweden	Estonia	Germany[a]	Italy	France	Spain	Belgium	Netherlands	Switzerland	Denmark
dX	ref.	0.0554*	-0.0580*	0.297***	0.163***	0.137***	0.0391	-0.0224	0.0946***	-0.00615	0.122***	0.105***	
Age	ref.	0.0537	-1.023**	-1.158	0.856*	0.872	0.120	-2.554	0.439	-0.137	0.193	0.228	
Age, squared	ref.	-0.0292	0.951*	1.452	-0.747*	-0.730	-0.105	2.422	-0.364	0.113	-0.0790	-0.127	
Education (Tertiary)	ref.	0.0120	0.00856	0.00202	0.00541	-0.0135	0.00399	0.0491	0.0101	-0.0176	-0.000456	0.00582	
Type of employment (Self-employed)	ref.	0.00135	0.000740	0.00486	0.00207	0.00175	-0.00285	0.0117	-0.00633	0.0212	0.00735	0.00177	
Job Quality, objective (Physical strain)	ref.	0.00499	-0.00596	-0.00160	0.0190	-0.00135	0.0115	-0.0165	0.00276	-0.0356	-0.00523	-0.00336	
Job Quality, subjective (Job Satisfaction)	ref.	0.000639	-0.00937	-0.00117	0.00129	-0.00537	0.00357	0.00508	-0.00146	-0.00152	0.00199	-0.0000529	
Health, poor (Self-perceved health)	Ref.	0.0119	0.0195	-0.000620	0.0262	0.0138	0.00779	0.0609	0.0151*	0.0511	0.00463	-0.00111	

b) Denmark is not included as there is no data on job satisfaction for male respondents