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Working Pensioners in Europe

Demographics, health, economic situation and the role of pension systems

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Working Pensioners in Europe

Demographics, health, economic situation and the role of pension systems

Nicolas Goll*

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Abstract:

Over the past decades, combining pension benefits with work income has been made more accessible for pensioners in many European countries. The literature on working pensioners choosing a flexible transition into retirement is to date relatively sparse. This article adds to the few cross-country studies and explicitly investigates the role of pension systems in facilitating or hampering flexible retirement. By using data from the Survey of Health, Ageing and Retirement in Europe (SHARE), this paper studies the within-country variation by analyzing variable sets, which influence whether individuals choose to combine pension income with work income at the end of their working career. The results suggest that demographic variables as well as health variables, economic variables and the pension system may be important factors. To investigate the cross-country variation, I apply counterfactual simulations. The counterfactual simulations indicate that economic differences and differences in pension systems may be responsible for the variation in working pensioner proportions between countries.

Zusammenfassung:

In den letzten Jahrzehnten wurde es in vielen europäischen Ländern RentnerInnen vereinfacht, Rentenleistungen mit Erwerbseinkommen zu kombinieren. Dadurch wurde ihnen ein flexibler Renteneintritt erleichtert. Insgesamt gibt es zu erwerbstätigen Rentnern, die sich für einen flexiblen Renteneintritt entscheiden, bislang wenig Erkenntnisse. Das gilt insbesondere für Studien mit einem länderübergreifenden Blickwinkel. Dieses Papier untersucht mithilfe von Daten des Survey of Health, Ageing and Retirement in Europe (SHARE) Variablen, die eine Erwerbstätigkeit unter Rentenbeziehern in 13 europäischen Ländern beeinflussen können. Die Untersuchung bezieht explizit die Rolle der Rentensysteme mit in die Analyse ein und überprüft, ob wichtige Merkmale des Rentensystems einen flexiblen Renteneintritt erleichtern oder erschweren. Danach wird analysiert, welche Variablen die länderübergreifende Variation erklären können. Die Ergebnisse deuten darauf hin, dass sowohl sozio-demografische Merkmale als auch die individuelle Gesundheit, ökonomische Aspekte und das Rentensystem wichtige Gründe sind, warum sich Individuen dazu entscheiden, am Ende ihrer Berufslaufbahn ihre Rentenbezüge mit Erwerbseinkommen zu kombinieren. Die Variation zwischen den Ländern könnte hauptsächlich aus ökonomischen Unterschieden und Unterschieden in den Rentensystemen herrühren.

Keywords: Demographic change, retirement policies, working pensioners, flexible retirement

JEL Classifications: H55, J26

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1. INTRODUCTION

Declining birth rates and increasing life expectancy have caused population aging in many countries around the world. In many European countries, those dynamics will continue well into the twenty-first century and will thereby change the age structure within the affected countries substantially (OECD 2015). This development puts enormous pressure on old-age provision and has caused a long-lasting debate on how to make the old-age provision systems more sustainable (Börsch-Supan and Schnabel 1998, Gruber and Wise 1999, 2004, Börsch-Supan and Coile 2019).

In order to ease the burden of aging societies, a common objective has been to better tap into the pool of older workers. However, one option of harnessing older workers, namely through increasing eligibility ages for drawing pension benefits, is not a very popular policy. Therefore, many governments have enacted flexible retirement options that allow workers to gradually reduce work effort with increasing age. The idea of flexible retirement is to insert a transition period with reduced work effort between the phases of full-time employment and full retirement and to thereby increase older workers' labor supply. The income loss resulting from the work reduction is supposed to be compensated by drawing (partial) pension benefits or by other compensatory sources (e.g. governmental subsidies, unemployment insurance funds, occupational pension funds etc. See Appendix to Börsch-Supan et al. (2018) for country-specific sources to compensate the income loss).

Assuming that the relative preference for leisure increases when individuals get older, standard labor market theory predicts that in the absence of constraints workers will gradually reduce work effort with increasing age. In other words, individuals will remain in the labor market until it becomes too costly for them to work (see Börsch-Supan et al. 2018). Previous literature confirms that workers actually want greater flexibility and would prefer to reduce their working hours towards their retirement (Gielen 2009, Büsch et al. 2010, Dorbritz and Micheel 2010, Cihlar et al. 2014).

On the other hand, recent empirical research (OECD 2017) shows that take-up rates of flexible retirement schemes are still relatively low even though many countries in the European Union have made it easier for pensioners to combine pension benefits with earnings from employment over the past decade (OECD 2017, Eurofound 2012). Such simplifications included the introduction of partial retirement schemes, which allow a combination of part-time work and pension benefits, as well as relaxing constraints like mandatory retirement regulations, earnings tests, which limit the additional earnings for recipients of public pension benefits, and minimum hours constraints. While earnings tests effectively mean a maximum hours constraint, minimum hours constraints are

imposed by the employers. In reality, employers often seem to have an aversion towards part-time employment (Gustman and Steinmeier 1986, Hutchens and Grace-Martin 2006, Hutchens 2010).

The aim of this study is to investigate this mismatch between what workers wish and standard labor market theory predicts on the one side, and low take-up rates of flexible retirement schemes on the other side. For this purpose, I will proceed in two main steps: First, I will focus on individual factors that are likely part of the explanation why individuals actually decide to become working pensioners, i.e., to combine pension benefits with work income. Second, I will investigate which of those factors may be responsible for variation across countries.

Overall, there is not much research on this issue. Previous research is fragmented across different single-country studies (e.g. Graf et al. 2011 for evidence on Austria, Huber et al. 2013 for evidence on Germany, Ilmakunnas and Ilmakunnas 2006 for evidence on Finland, and Brinch et al. 2015 for evidence on Norway). The few existing cross-country studies mainly focus on different motivational aspects in the working pensioners' decision to continue working as well as on the sociodemographic composition of the group of working pensioners: OECD (2017) finds that workers' and employers' enthusiasm varies across countries. With respect to the individual, the attractiveness of combining work and receiving a pension varies across socio-economic groups and is subject to changing expectations and preferences, financial incentives and individual health. Eurofound's (2012) main findings are that the typical working pensioner is still relatively young, male, highly educated, and living in an urban area or has a mortgage. Although employment rates of female and medium-educated pensioners are beginning to increase, there is still a considerable proportion of pensioners who are willing to work but cannot find the right job.

Dingemans et al. (2017) explore potential determinants of working beyond retirement age which is referred to as "bridge employment". Individual determinants, such as age, education, pension income and health, as well as family factors, e.g., marital status and whether the respondents undertake informal care tasks, appear to have importance why individuals choose bridge employment. In addition, broader normative and economic societal factors at the country level, such as the presence of a favorable environment and expenditure on pensions appear to also be relevant. Dingemans and Henkens (2019) examine differences in life satisfaction between full retirees and working retirees in Europe. Their results indicate a positive relationship between working after retirement and life satisfaction for retirees with low pension income without a partner. Furthermore, working after retirement seems to be most important for life satisfaction in relatively poor countries. Dingemans and Möhring (2019) examine the role of individual work histories as predictor for working while receiving a pension. Their results indicate that the larger the share of part-time work

or self-employment over the working career, the higher the likelihood to work while receiving pension benefits. Those with high occupational status and flexible careers, measured by the number of job changes experienced, are particularly likely to be in paid work while receiving pension benefits. In terms of gender, the authors find that divorced women are especially likely to work while receiving a pension, but only if they did not marry again. The authors conclude that inequalities that develop over the life course continue to play a role for the decision to be in paid work while receiving a pension. The last three studies mentioned use data from the Survey of Health, Ageing and Retirement in Europe (SHARE), as does this study.

To the best of my knowledge, this study is among the first which explicitly focus on the role that different pension systems might play by shaping the incentive structures in the decision of whether to become a working pensioner or not. I add to the existing literature by employing an internationally comparative view on variables that may play a crucial role why individuals receive employment income while pension benefit receipt. In addition, I study the variation across countries by explicitly integrating the pension system into the analysis. The pension system is described by a set of variables consisting of eligibility ages for (1) normal and (2) early retirement, (3) actuarial deduction rates for early retirement, (4) a specific "start of the retirement window" if flexible retirement schemes allow an earlier take-up, whether pension schemes comprise of (5) earnings tests, and (6) the replacement rate which shows the level of pension benefits relative to earnings from employment.

The remainder of the paper is as follows: Section 2 provides theoretical background and connects the theory to institutional details across countries. After a description of the data in Section 3, the empirical analysis in Section 4 proceeds in two parts. First, I study the within-country variation by analyzing variable sets which influence whether individuals have earnings from employment while pension receipt and therefore qualify as working pensioners (Part I). By applying counterfactual simulations, I subsequently investigate the cross-country variation (Part II). Section 5 concludes that working pensioners are not a very broad phenomenon in Europe. There are, however, substantial differences across countries. The study indicates that economic differences and pension systems likely are driving factors for the cross-country variation.

2. ECONOMIC THEORY AND INSTITUTIONAL DETAILS

The theoretical literature has emphasized constraints that may hinder individuals from combining pension benefits with income from work at the end of their working career. Those constraints hamper both combining pension benefits and work income without institutional arrangement and take-up rates of institutionalized flexible retirement schemes (e.g. partial retirement schemes etc.). I primarily draw on the theoretical background developed in Börsch-Supan et al. 2018. There, constraints have been discussed which may be part of the explanation of the mismatch between individuals' preferences for a reduction of work effort with increasing age and the low take-up rates of flexible retirement schemes. These theoretical thoughts serve to inspire the choice of institutional variables included in the later empirical analysis in this study.

One constraint are minimum hours constraints. According to the very early work of Gustman and Steinmeier (1983), employers like to impose a minimum number of working hours since part-time jobs and flexible hours involve additional fixed costs of work.[1] Hutchens and Grace-Martin (2006) study how and why firms differ in their willingness to permit flexible ("phased") retirement. They model a profit-maximizing firm and conclude that, first, a minimum hours constraint can be profit-maximizing. Second, they state that differences in technology may be the reason why some firms impose a minimum hours constraint while others do not.

What minimum hours constraints imply for a flexible transition phase from full time employment to full retirement, is shown in the model of Börsch-Supan et al. (2018): In the absence of constraints, their model predicts that workers gradually reduce their working hours with increasing age when their preferences for leisure increase. This corresponds to the standard labor market theory case. However, employers often do not offer the free choice of working hours. In reality, employers often impose a minimum hours constraint which might be half-time or even higher. This means that employees can reduce their working hours only slightly until they reach the employer-imposed constraint. After that, the minimum hours constraint requires that employees work more hours than they would have preferred without constraints for some time up to the age at which their loss in preferred leisure is so large that they retire fully. The existence of minimum hours constraints therefore restricts the flexibility employees have in their labor supply decisions.

[1] According to Hurd (1996), team production is another reason why minimum hours constraints exist. Functioning team production requires that most workers are present in the workplace at the same time. See Hurd (1996) and Gustman and Steinmeier (1983) for other possible reasons.

Besides minimum hours constraints imposed by the employers, the pension systems in many countries comprise of earnings tests. Table 1 shows details on earnings tests in the countries under consideration. Earnings tests limit the amount of income individuals can generate while receiving pension benefits. Thus, earnings tests effectively mean a constraint on the maximum number of working hours an individual can work. In many countries, earnings test regulations differ before and after the statutory eligibility age: Earnings tests often apply before the statutory eligibility age and usually are lifted after the statutory eligibility age (e.g. Austria, Belgium, Czech Republic, Estonia, Germany, Italy, Poland, and Slovenia). Table 1 also shows that the maximum permissible earnings are relatively low and, in some cases (e.g. Austria, Belgium, and Germany), substantially below the equivalent of a half-time job.

Hutchens and Grace-Martin (2006) mention that the existence of earnings tests may influence a firm's flexible retirement policy. Börsch-Supan et al. (2016) show that the combination of earnings tests and early retirement incentives can create distinct patterns of labor force exit and pension claiming age. It can lead to very early pension claiming if maximum hours constraints are abolished in the environment of non-actuarial adjustment factors for early retirement.

Early retirement is the practice of claiming (early) pension benefits before an individual reaches the statutory eligibility age and can be claimed after attaining the earliest eligibility age.[2] Adjustment factors (i.e. deductions) typically lead to reduced early retirement benefits relative to the benefits available at the statutory eligibility age. Non-actuarial adjustment factors mean that actual adjustment factors for early retirement – as they are written in the law – are lower than actuarially fair. Adjustment factors, which are lower than actuarially fair, make pension benefits more generous and is the case in most of the countries considered in this study (see Queisser and Whitehouse 2006, OECD 2015). Both country-specific earliest eligibility ages and actual deduction rates, as they are legislated, are also shown in Table 1. The generosity of pension systems, especially in the years before the statutory eligibility age, has a crucial effect on the retirement decision of individuals: The more generous (early) pension benefits are, the higher the incentives to retire early (see e.g. Gruber and Wise 2004).

These constraints (i.e. earnings tests, minimum hours constraints, eligibility ages, non-actuarial adjustment factors) taken together could, at least partially, explain why reported preferences for a reduction of working hours with increasing age do not match the take-up rates of flexible retirement schemes. Thus, they will be part in the empirical analysis that follows. Even though the literature

[2] This paper follows the nomenclature given in the glossary of Börsch-Supan and Coile (2019).

has shown that the role of employers surely plays a role in demanding labor supply of (older) individuals, the focus of the following empirical analysis is on the supply side and on the role of pension systems.

Table 1: Overview of institutional details concerning flexible retirement options and earnings tests

	Statutory Eligibility Age[3] (SEA) for public pensions	Earliest Eligibility Age[4] (EEA) for public pensions	Flexible retirement option outside the public pension scheme[5]	Start of the flexible retirement window[6]	Earnings Tests[7] (i.e. limit of additional earnings for recipients of public pension benefits)	Actuarial deductions per year[8], in %	Gross replacement rate[9], in %	Mandatory retirement[10]
Austria	65 (men), 60 (women)	62 (men), 57 (women)	employer-employee agreement on a working time reduction of between 40% and 60%, subsidized by governmental subsidies	55 (men), 50 (women)	*Before SEA*: when earnings are above a ceiling of 405.98€ per month, the pension is fully withdrawn; *After SEA*: no limit	4.2	76.6	Mandatory retirement age for certain groups (e.g. 70 for notaries)
Belgium	65 (men), 65 (women)	60.5 (men), 60.5 (women)	employer-employee agreement on a reduction of working hours by 20% or 50% for employees aged 50 and older (time credit system), subsidized by governmental subsidies	50 (men), 50 (women)	*Before SEA*: when annual earnings are above 7,793€ (single) or 11,689€ (dependent child), the pension is reduced by the amount that exceeds the limit. If annual earnings are 25% above the limit, the pension is fully withdrawn for as long as the additional income is higher than the ceiling; *After SEA*: no limit	0	41.0	Mandatory retirement age is 65 for most civil servants
Czech Republic	62.8 (men), 61.4 (women)	60 (men), 60 (women)	-	60 (men), 60 (women)	*Before SEA*: only earnings lower than CZK 2,500 per month are allowed; *After SEA*: no limit	5.6	51.3	None

[3] The statutory eligibility age (SEA) is defined as the age at which workers are eligible for full pension benefits independent of any other qualification. 2013 regulation.
[4] The earliest eligibility age is defined as the age at which early retirement is possible, mostly with reduced benefits. 2013 regulation.
[5] I consider only non-public-pension institutions that individuals may perceive as occupational institutions and are available before having reached the earliest eligibility age for public pension benefits. The reason for this choice is that the working pensioner definition is based on whether an individual receives either public pension benefits or occupational pension benefits/occupational early retirement benefits.
[6] Through the flexible retirement option outside the public pension scheme, the flexible retirement window may start earlier than the earliest eligibility age. If there are flexible retirement schemes outside the public pension system (if column "Flexible retirement option outside the pension system" is available), the start of the flexible retirement window is that of the flexible retirement option outside the public pension system. Otherwise, it is determined by the earliest eligibility age for public pension receipt. 2013 regulation.
[7] Earnings tests limit additional earnings for recipients of public pension benefits.
[8] Actuarial deductions are a factor used to adjust the pension payments if the worker opts for early retirement.
[9] The gross replacement rate stem from the OECD's database and is defined as gross pension entitlements from mandatory public and private pension schemes divided by gross pre-retirement earnings (see OECD 2014).
[10] The information about the mandatory retirement regulations are widely those of 2016.

Denmark	65 (men), 65 (women)	60 (men), 60 (women)	-	60 (men), 60 (women)	*Before SEA*: partial early retirement pension for workers aged between 60 and 65 who continue to work between 12 and 30 hours a week; weekly hours must be reduced by at least seven hours a week or at least one quarter of total hours worked in an average week. *After SEA*: the full basic pension (795€ per month or 9,540€ per year which is equivalent to around 17% of average earnings) is reduced at a rate of 30% against earned income, if work income exceeds 40,518€ per year (approx. ¾ of average earnings)	0	78.5	Mandatory retirement age is 70 for public servants; for certain groups via collective agreement
Estonia	63 (men), 62.5 (women)	60 (men), 59.5 (women)	-	60 (men), 59.5 (women)	*Before SEA:* workers already receiving early retirement pension who decide to start working again will not receive the early retirement pension starting from the first date following the month of re-employment. Pension receipt will start after retiring fully or attaining the old-age pension age; *After SEA:* no limit. Exceptions apply to old-age pension under favorable conditions and superannuated pension: accumulation impossible if pensioner continues working in occupation that entitled him to one of these pension types. Otherwise accumulation is possible.	4.8	52.2	None
France	65 (men), 65 (women)	61.2 (men), 61.2 (women)	reduction of working hours by an average of 50% over a five year gradual retirement period based on employer-employee agreement, subsidized by governmental subsidies	55 (men), 55 (women)	*Before SEA:* workers can additionally receive earnings when drawing full public pension benefits. Workers can claim full public pension benefits if they fulfill either both a minimum contributory record (in 2014: 41.25 years for people born in 1953) and the minimum legal pension age (61 years and two months) or the age of 66 years and two months *After SEA:* no limit	2.5	58.8	Mandatory retirement age is 70 for private-sector workers. For public-sector workers, there is a full pension age limit (67 in 2017), with exceptions
Germany	65.2 (men), 65.2 (women)	63 (men), 60 (women)	-	63 (men), 60 (women)	*Before SEA*: for workers with annual earnings up to 6,300€, the full pension is paid; for those with annual earnings above 6,300€, the full pension is reduced by 40% of the additional earnings. *After SEA*: no limit	3.6	42.0	Mandatory retirement age for certain groups (e.g. 75 for professors; 70 for attorneys, notaries; 67 judges, 65 for pilots, mayors)
Greece	67 (men), 67 (women)	62 (men), 62 (women)	-	62 (men), 62 (women)	*Before/after SEA:* Accumulation of pension benefits with earnings from work is possible for pensioners aged 55 or above but there is an earnings test before and after the statutory eligibility age: For pensioners who undertake a job (as employed or self-employed which is subject to compulsory insurance of EFKA), main and supplementary gross pensions are reduced by 60% during the employment period. Income test: Limit on overall net annual income (salaries and pensions) of 6,824€; total annual personal taxable income, 7,961€; and total annual family taxable income, 12,389€.	6.0	53.9	Mandatory retirement age for public sector employees.[11]

[11] Greece is a special case: there is no fixed age at above which employees can be dismissed because of their age, which would be considered a breach of the fundamental right of work written down in the Constitution. Retirement is therefore rather a voluntary decision resulting in negotiated agreements between employers and employees. Mandatory retirement only applies for public sector employees who can retire between age 60 and 65, depending on insurance years and when exactly this is completed (Kremalis 2018).

Italy	66.3 (men), 63.3 (women)	63.3 (men), 63.3 (women)	-	63.3 (men), 63.3 (women)	*Before SEA*: early retirement pensions can be combined with self-employment or project work only and not with income from dependent employment. Limits to combining pensions with other sources of income established by previous rules remain for disability allowances, pensions for survivors, pensions for workers under certain workfare measures, minimum income measures, and the pensions of employees who transit from full-time into part-time work; *After SEA*: no limit	2.9	71.2	Deferment possible up to the age of 70 years and 3 months (adjusted according to life expectancy).
Slovenia	65 (men), 63 (women)	58 (men), 57.8 (women)	-	58 (men), 57.8 (women)	*Before SEA*: except in case of partial pension, if an insured person enters into an employment relationship or engages in self-employed activities or fulfils any other condition to participate in insurance, the pension is not paid. *After SEA*: no limit	3.6	42.2 (men), 44.4 (women)	None
Spain	67 (men), 67 (women)	61 (men), 61 (women)	-	61 (men), 61 (women)	*Before SEA:* Partial retirement is possible from age of 61 years, with a new employee. It requires an agreement between the employee and the employer to reduce the total number of working hours and the salary between 25 and 75 per cent. Simultaneously, the employer is required to hire another person to replace the retiring employee partially via the replacement contract. *After SEA:* Since March 2013, it is possible for individuals above the statutory eligibility age to combine retirement benefit receipt and work. However, in these cases the amount of the pension benefit is reduced by 50%.	8	73.9	Deferment possible up to age 70 if the insured has at least 15 years of contributions including at least two years of contributions in the last 15 years.
Sweden	65 (men), 65 (women)	61 (men), 61 (women)	-	61 (men), 61 (women)	No limit	4.7	55.6	None
Switzer-land	65 (men), 64 (women)	63 (men), 62 (women)	-	63 (men), 62 (women)	*Before SEA*: allowed, without reduction of the pension and irrespective of the wage amount; *After SEA*: no limit. No contributions are paid after age 65 under the public pension scheme.	4.5	55.2 (men), 54.3 (women)	Public pension can be deferred for up to 5 years, occupational pension benefits until age 70.

Sources: Bloemen et al. (2014), Börsch-Supan and Coile (2019), Börsch-Supan et al. 2018, Devisscher and Sanders (2008), Graf et al. (2011), Lindecke et al. (2007), MISSOC (2013), OECD (2013a), OECD (2014), OECD (2015), OECD (2017), Queisser and Whitehouse (2006), Reday-Mulvey (2000), Social Security Administration (2012-2013), SPLASH-database (2012), SPLASH-database (2019).

3. DATA AND VARIABLES

3.1 SHARE data and other data

The individual level data required for the empirical analysis come from SHARE (see Börsch-Supan et al. 2013). SHARE is a multidisciplinary and cross-national panel database of micro data on health, socio-economic status and social and family networks of individuals aged 50 or older. SHARE is a representative survey and was conducted for the first time for eleven European countries in 2004. Since then, the scope of the survey has expanded in biennial survey waves; it now covers more than 140,000 individuals in 28 countries. This study uses data from Wave 6 collected in 2015 and integrates 13 countries in the analysis (see Footnote 16 below for the rationale behind the country selection).

Additionally, I use information to describe the pension system and macro data to control for the economic situation. Information on gross domestic product (GDP, per capita), labor force participation rates (LFPR, age 55–64) and the replacement rate (RR, gross) stem from the OECD's database (see OECD 2013b, OECD 2013c, and OECD 2014).[12] To describe the pension system, I use information from various sources given in the list of sources to Table 1.

3.2 Variables and sample selection

Dependent variable. The dependent variable in the current study is an indicator variable which equals one if an individual is characterized as working pensioner and zero otherwise. A working pensioner is identified by focusing on the income sources of older individuals reported in SHARE Wave 6. Hence, the group of pensioners comprises those who report receiving income from (1) a public old-age pension, (2) income from a public early retirement or pre-retirement pension, or (3) report receiving occupational pension benefits/occupational early retirement benefits in the last year. Accordingly, the group of workers are those individuals who report (1) having received wages, salaries or other earnings from dependent employment or (2) any income from self-employment or work for a family business in the last year. Pensioners who at the same time meet the definition of a worker are classified as working pensioner. Due to data restrictions, I was not able to establish specific thresholds on earnings or weekly hours of working pensioners, respectively. The same

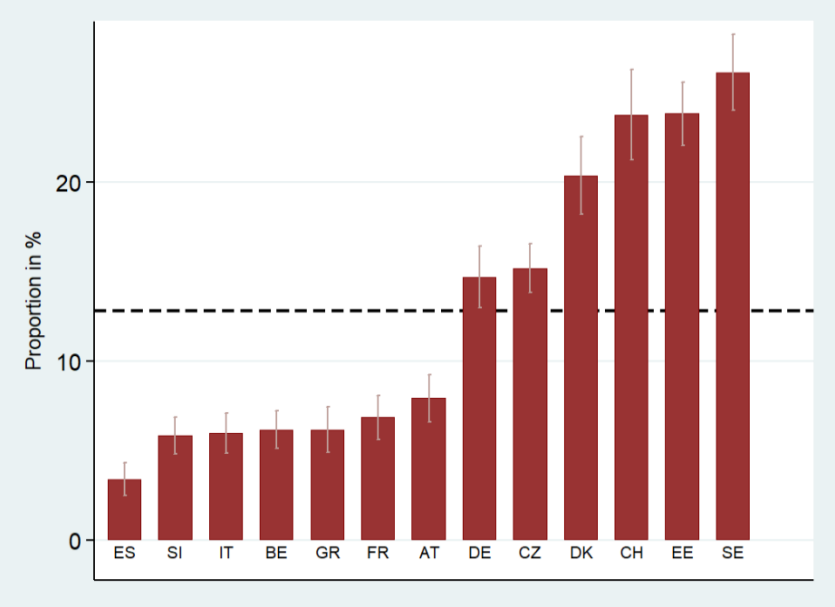
[12] Table A.1 shows numbers for GDP and LFPR (age 55–64) by countries.

holds true for the length working pensioners simultaneously receive both earnings from employment and pension benefits. In many cases, this period may only be a rather short transition phase while in other cases it may last longer. The investigation of how long working pensioners actually stay in the transition period remains open for future research. In addition, I focus on public pension benefits and occupational pension benefits only. In the single countries other labor market institutions may play a role in the context of working pensioners as well. The examination of other labor market institutions should be the objective of future research to obtain a better understanding.

At first glance, the simple definition of working pensioners seems straightforward and has been applied in previous literature. However, the yearly character of the SHARE employment data might lead to mismeasurement. Since all questions relevant to the definition of working pensioners refer to the year preceding the interview, the following problem could arise: If somebody has been in full employment in the first part of the year, e.g. from January until June, and has started to claim pension benefits at some point later that year, e.g. in July, she indicates both income from work and pension income for the last year in the interview. However, the two sorts of income may well have been received in consecutive periods rather than simultaneously. The latter is required to meet the definition of a working pensioner. My definition adjusts for this potential mismeasurement problem by classifying all individuals who retired in 2014 and 2015 and do not report having worked continuously since the last interview not as working pensioners but as pensioners.[13] This approach leads to conservative estimates for the number of working pensioners which tend to underestimate the number of working pensioners and simultaneously overstate the number of pensioners.

[13] Figure A.1 graphically shows the potential mismeasurement to provide a more intuitive depiction of the problem.

Figure 1: Working pensioner proportion across countries



Source: Own calculations.

Applying the definition of working pensioners to the data yields varying proportions of working pensioners on all pensioners across countries for the age group 50-75. The average proportion across countries is 12.8% and is displayed with the dotted line in Figure 1. However, it is also apparent that there is substantial variation across countries. There are countries with relatively high proportions such as Estonia, Sweden, Denmark or Switzerland, and countries with relatively lower proportions such as Spain, Slovenia, and Italy.[14] The aim of the empirical analysis is to find out which variables may play a role for, first, the within-country variation and second, the between-country variation.

I use the following **explanatory variables** on individual-level and country-level, summarized to four sets of variables: demographics, health variables, economic and financial variables as well as variables describing the pension system.

[14] Dingemans and Henkens (2019) use SHARE data as well and define working pensioners as individuals participating in paid work while simultaneously receiving public or occupational pension benefits. Their sample is restricted to the age group 60-75. Even if the authors do not account for the potential mismeasurement and include a different set of countries in their analysis, they find enormous variation across countries with the highest proportions in Estonia, Sweden, Switzerland and Denmark, and the lowest proportions in Slovenia, Spain, Poland and Italy. With the exemption of Poland, countries with the highest and lowest proportions are the same here as in their study. Poland is not part of the analysis in this study, see Footnote 16in this section.

Demographics. I use age (centered), gender, education and marital status to describe the individual's demographic characteristics. Education is based on the ISCED-1997-classification. *Low education* corresponds to ISCED 0-2, *medium education* to ISCED 3-4 and *high education* to ISCED 5-6. The current marital status is split into the categories married, divorced, widowed or single. I additionally include a variable to reflect whether the respondent's partner is in the labor force or not.

Health. Health plays an important role in the decision to exit the labor market and to start claiming pension benefits. To describe the individuals' health status, I use several dimensions: First, I employ the interviewee's self-reported health status which is a categorical variable on a five-point scale from poor (1) to excellent (5). The self-reported health status is one of the most commonly used measures in public health surveys; it captures various physical, emotional, and social aspects of health and has been found to predict mortality (e.g. Idler and Benyamini 1997, Jylhä 2009). Self-reported health may, however, suffer from justification bias (Bound 1991, Sen 2002), meaning retired pensioners report a worsening of the individual health status to justify retirement. Therefore, I include additional objective health measures. Grip strength (in kg) is the most objective measurement of health. The test is performed during the interview. It reflects the overall muscle status of the respondent and has been linked to mortality in previous research (e.g. Gale et al. 2007). Functional health is measured by whether the respondent reports having limitations to performing (instrumental) activities of daily living (ADL and IADL). Finally, I also include the number of chronic diseases. Individuals report zero to up to twelve chronic diseases.

Economic and financial situation. I include variables on both the individual level (equivalized household net income and household net worth) and the country level (per-capita GDP and the labor force participation rate of the age group 55–64) to capture the economic and financial situation. The information on household net income comes from the SHARE module on household income. Respondents are asked about the overall income (after taxes and contributions) that the entire household has in an average month. In order to reflect differences in a household's size and composition, I divide this number by the weighted sum of household members.[15] Household net worth stems from the imputed dataset and is the sum of net financial assets (i.e. the sum of bank accounts, bonds, stocks, mutual funds, savings for long-term invests, minus financial liabilities) and

[15] The weighting factor is equal one for the first adult and 0.5 for each subsequent person.

household real assets. The latter is the total value of the household's main residence (adjusted for the percentage of house owned), value of the own business (adjusted for the share of own business), value of cars, value of other real estate minus mortgage on main residence. The variable thus broadly captures the households' net worth. Both household net income and household net worth are adjusted for purchasing power parity to allow cross-country comparisons.

Pension system. I use different variables to describe the pension system. I include the statutory eligibility age at which an individual becomes eligible for full public pension benefits. Moreover, I control for an earlier "start of the retirement window" (SRW): On the one hand, this variable comprises the earliest eligibility age, when public pension benefit receipt is possible (mostly with reduced benefits). On the other hand, the SWR contains the eligibility age for non-public-pension institutions if flexible retirement options outside the public pension system are available (see Table 1). However, I consider only non-public-pension institutions that individuals may perceive as occupational institutions. The reason for this choice is that the working pensioner definition in this study is based on the receipt of public pension benefits and occupational pension/occupational early retirement benefits. If there is no broad non-public-pension institution available, the SRW is the earliest eligibility age for the receipt of public pension benefits. Gender differences in eligibility ages are taken into account. A dummy variable indicating whether earnings tests apply before the statutory eligibility age is included as well. Earnings test limit the income individuals are allowed to earn while receiving pension benefits and these tests apply in most of the countries before the statutory eligibility age. I additionally integrate the level of actuarial deduction rates, which apply if individuals claim pension benefits before reaching the statutory eligibility age (usually for each year of early retirement), and the gross replacement rate which captures the level of pension benefits relative to earnings from employment. Values for the gross replacement rate stem from the OECD's database. The gross replacement rate is defined as gross pension entitlements from mandatory public and private pension schemes divided by gross pre-retirement earnings (see OECD 2014). I finally include two dummy variables indicating whether individuals have reached the earliest eligibility age and the statutory eligibility age for public pension benefit receipt. Since earliest and statutory eligibility age are usually cohort- and gender-specific due to their incremental increase in many countries, the construction of the two dummies uses detailed information on cohort- and gender-specific eligibility ages from Bucher-Koenen et al. (2019).

Sample selection. The final sample comprises 13 countries, namely Austria, Germany, Sweden, Spain, Italy, France, Denmark, Greece, Switzerland, Belgium, Czech Republic, Slovenia, and Estonia.[16] The sample is restricted to the age group 50-75. In addition, the sample solely includes working pensioners and pensioners only receiving public or occupational pension benefits without simultaneously qualifying as working pensioner. The analytical sample consists of 21,929 observations out of which 2,815 are working pensioners.[17]

Table 2 presents summary statistics of the individual-specific controls for the group of working pensioners (WP=1) and the group of non-working pensioners (WP=0) as currently delimited.

[16] From the sum of countries part of SHARE's wave 6, I exclude five countries from the analysis for the following reasons: In Portugal the early retirement pathway was closed between 2012 and 2014 due to the financial crisis; Poland also doesn't offer an early retirement pathway in the general pension system (OECD 2013a). Therefore, important information such as EEA, SRW and actuarial adjustments are not available. For Croatia, there is no comparable gross replacement rate available at the OECD database. Israel's pension system follows an entirely different logic (National Insurance Institute of Israel 2019). With only N=32, Luxembourg's number of working pensioners is too small to include in the comparison.

[17] Table A.2 shows the number of cases, the gender composition and the average age for the working pensioner group and the group of pensioners by single countries.

Table 2: Summary statistics

	Categories	Share of total sample	WP = 1	WP = 0
Age	50–59	3.53%	17.21%	82.79%
	60–64	18.58%	13.60%	86.40%
	65–69	38.15%	14.40%	85.60%
	70–75	39.74%	10.59%	89.41%
Gender	Male	48.40%	14.22%	85.78%
	Female	51.60%	11.54%	88.46%
Education	Low	32.17%	7.95%	92.05%
	Medium	41.47%	13.68%	86.32%
	High	23.67%	18.90%	81.10%
Marital status	Married/Partner	74.64%	12.53%	87.47%
	Single	5.06%	11.99%	88.01%
	Widowed/Divorced	20.22%	14.19%	85.81%
Partner in labor force	No	90.88%	11.87%	88.13%
	Yes	9.12%	22.46%	77.54%
Self-reported health	Poor	8.01%	5.47%	94.53%
	Fair	28.15%	11.01%	88.99%
	Good	39.43%	12.54%	87.46%
	Very good	17.89%	16.65%	83.35%
	Excellent	6.52%	21.13%	78.87%
Number of limitations (IADL)	0	87.28%	13.81%	86.19%
	1	7.39%	8.15%	91.85%
	2	2.02%	5.86%	94.14%
	>3	2.38%	2.29%	97.71%
Number of limitations (ADL)	0	91.57%	13.40%	86.60%
	1	4.71%	8.91%	91.09%
	2	1.73%	5.26%	94.74%
	>3	1.99%	2.75%	97.25%
Grip strength	0–20	7.17%	7.18%	92.82%
	20–50	58.42%	11.47%	88.53%
	40–60	27.43%	17.66%	82.34%
	>60	0.88%	13.92%	86.08%
Number of chronic diseases	0	20.41%	16.89%	83.11%
	1	29.30%	14.44%	85.56%
	2	23.19%	11.70%	88.30%
	3	14.33%	9.96%	90.04%
	>4	12.77%	7.96%	92.04%
			Average (in €)	
Equivalized household net income			2,259	1,802
Household net worth			362,348	243,561

Source: Own calculations.

4. EMPIRICAL ANALYSIS

To investigate the variables that may drive the decision to become a working pensioner, I follow the empirical approach of Börsch-Supan et al. (2020). The authors analyze the interrelated role of health and welfare state policies in the decision to take up disability insurance benefits due to work disability. Since their study aims at investigating the potential causes for reporting a work disability and/or receiving disability benefits within and between countries, their approach is particularly suitable to the research interests of this analysis.

The paper continues as follows: In Section 4.1., I study the within-country variation to find out which variables could play a role in the decision why individuals are working pensioners (Part I). Section 4.2. proceeds with counterfactual analyses to investigate which variables (or better: variable sets) may be responsible for the between-country variation (Part II).

4.1 Part I: within-country variation

4.1.1 Regression analysis

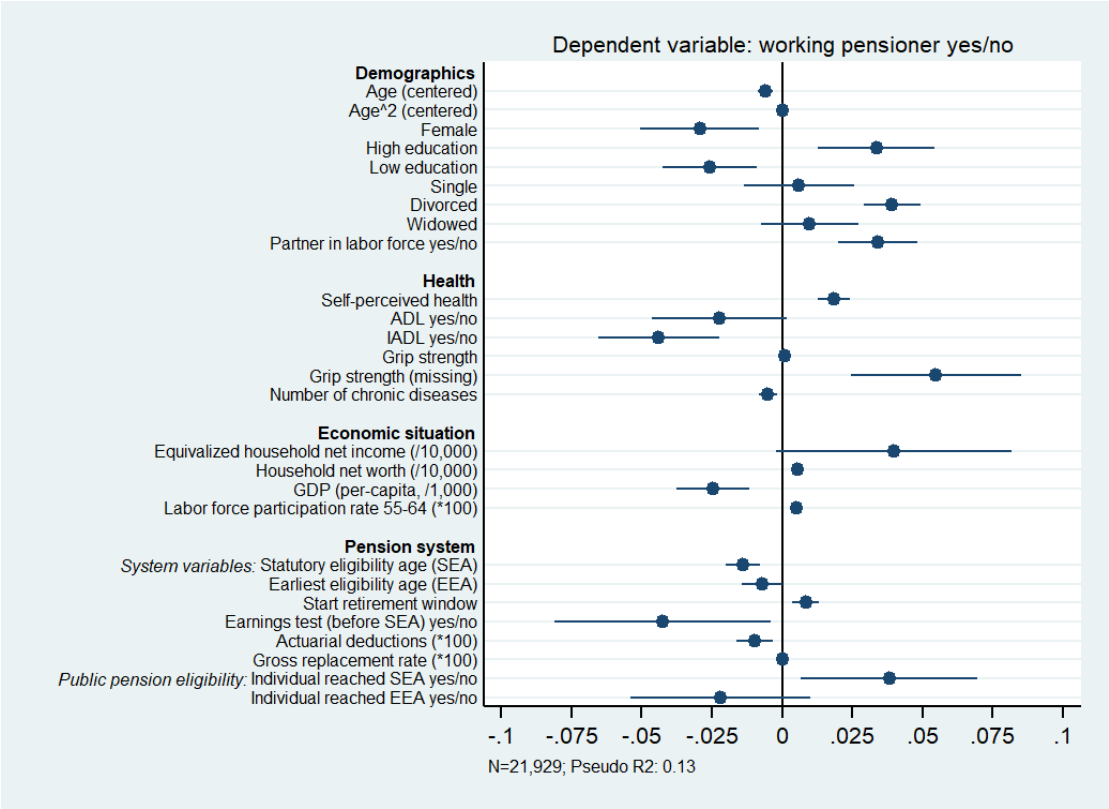
What can determine being a working pensioner? To address this question, I estimate a regression model based on the pooled sample of all countries. Since the dependent variable of interest – working pensioner – is binary, I estimate the following model by probit estimation:

$$WP_{i,c} = \alpha + \boldsymbol{Dem}_{i,c}{}'\boldsymbol{\beta} + \boldsymbol{Health}_{i,c}{}'\boldsymbol{\gamma} + \boldsymbol{Econ}_{i,c}{}'\boldsymbol{\delta} + \boldsymbol{Pen}_{i,c}{}'\boldsymbol{\theta} + \varepsilon_{i,c} \qquad (1)$$

where i indexes individuals and c countries. $WP_{i,c}$ denotes an indicator that takes the value one if an individual meets the definition of a working pensioner and zero otherwise. The vector $\boldsymbol{Dem}_{i,c}$ contains the set of individual level demographic characteristics age, gender, education, marital status as well as the partner's labor force status as described above. In the vector $\boldsymbol{Health}_{i,c}$ the selected variables from SHARE describing an individual's health are included (self-perceived health, ADL, IADL, grip strength as well as the number of chronic diseases). Variables concerning the economic situation of the respondent or the country that she or he lives in are collected in the vector $\boldsymbol{Econ}_{i,c}$. The variables describing the individual's economic situation are her or his equivalized household net income and the household net worth. Per-capita GDP as well as the labor force participation rate of the age group 55-64 are included to describe the economic situation of the respondent's country. Finally, the vector $\boldsymbol{Pen}_{i,c}$ comprises all individual or country-specific variables describing the pension system and the individual's status within that system. On the

country level those variables are the statutory eligibility age, the start of the retirement window, the presence of earnings tests before the statutory eligibility age as well as actuarial deductions and the gross replacement rate. The variables describing the individual's status in the pension system comprise a dummy indicating whether the respondent has reached the statutory eligibility age and one indicating whether the respondent has reached the earliest eligibility age. Regression results (i.e. marginal effects) are displayed in Figure 2.

Figure 2: Determinants of being a working pensioner



Note: Marginal effects of probit estimation. Clustered standard errors by country. Household income and worth adjusted for purchasing power parity. Based on SHARE including the following countries: AT, DE, SE, ES, IT, FR, DN, GR, CH, BE, CZ, SI, EE.

Source: Own calculations.

The model explains 13% of the total variation.[18] To examine which role probit estimation plays for the estimation results, I also show the results based on a linear regression model in the Appendix

[18] Regression results listed in tabular form are shown in Table A.3. As a robustness check, I run regressions with country-fixed effects instead of the country-specific variables. The results for the other sets of variables remain stable in size and sign Table A.4.

(graphically in Figure A.2 and in tabular form in Table A.5). The results remain stable when applying a linear regression model.

The probability of being a working pensioner significantly decreases with age. However, the effect is very small. Women are less likely to work while receiving a pension. This can be explained by a lower labor market participation of women in general. Moreover, there is a clear education gradient: The summary statistics in Table 2 have shown that in the group of low-educated individuals only approximately 8% are working pensioners, while among the high-educated individuals almost 19% work while receiving a pension. This correlation translates to the regression results: High-educated individuals are more likely to retire flexibly and pensioners with low education are less likely to simultaneously receive employment income. This may be explained by different occupational types. Jobs in the low-education sector are more often physically demanding. Individuals suffering from a physically demanding job might be forced to retire fully. Marital status as well plays a role for the decision to combine pension income and work income. While being single and widowed compared to married individuals does not have an effect, divorced individuals are more likely to be a working pensioner. This could result from financial needs. Divorced individuals might have experienced a negative income shock due to the divorce which they try to compensate with additional earnings through receiving a pension. These findings are in line with the results established by Dingemans and Möhring (2019). They found that divorced women are especially likely to be a working pensioner if they did not marry again. In contrast, singles are accustomed to their income position and widowed individuals may be eligible for survivor benefits. If the partner still is in the labor force, working while receiving a pension gets significantly more likely.

As expected, health is an important variable set. The self-reported health status has a positive impact on the likelihood of being a working pensioner, i.e., the higher the self-rated heath status, the higher the probability to become a working pensioner. This finding matches the summary statistics in Table 2. The better the health categories, the higher the proportions of working pensioners. Reporting at least one limitation with (instrumental) activities of daily living decreases the probability. However, the vast majority in the sample do not report any limitations with (instrumental) activities of daily living (see Table 2). The probability of working while receiving a pension decreases also with the number of self-reported chronic diseases. This corresponds to the descriptive results in Table 2, where the proportion of working pensioners in the single categories of chronic diseases decreases with increasing number of chronic diseases. The most objective health

measure is the individual's grip strength measured in kilogram. I impute missing values for grip strength by setting them to zero. I add an additional flag variable to control for these imputed values. Grip strength only has a very low but still significant effect. The health variables, however, may suffer from reverse causality: healthier individuals may more likely be working pensioners since their health allows a continuation of employment. At the same time, however, staying active at the labor market can influence individual's health.

In addition to demographic variables and health variables, I include a set of variables capturing the economic and financial situation. T-tests reveal that equivalized household net income (p-value 0.000) and household net worth (p-value 0.000) are significantly higher in the group of working pensioners compared to the group of pensioners. In the regression, both variables have a positive and significant effect on the probability of being a working pensioner. This could hint at two reverse effects and may suffer from endogeneity as well: On the one hand, it might indicate that working pensioners are not mainly motivated by financial motives to keep on working while receiving pension benefits because they live in comparably wealthier households. On the other hand, this effect could as well work into the opposite direction: Households with working pensioners are wealthier because they supplement their pension benefits with income from work. The integration of the labor force participation rate of the age group 55–64 is supposed to capture the overall employment possibilities of older workers in the labor market. The labor force participation rate also has a positive and significant effect, indicating that countries with a more active 55–64 age group better facilitate flexible transitions into full retirement. Looking at the set of economic variables, only the amount of per-capita GDP has a negative effect.

The pension system is captured by seven variables described above with effects going in different directions. However, the seven variables cannot be interpreted in isolation and can be understood only in conjunction with each other. The start of the flexible retirement window and the existence of earnings tests before the statutory eligibility age interact with each other. In addition, these variables interact with the actuarial deductions for early retirement and whether these adjustment factors are actuarial fair. Taken as a whole, the results suggest that the interactions before the statutory eligibility age may rather hamper the combination of pension benefits and earnings from employment. Against this, the comparably higher degree of flexibility past the statutory eligibility age in many countries may rather ease the combination of employment income and pension benefits receipt. It may be surprising that the gross replacement rate does not have significant influence. The

reason for this results most likely stems from the fact that the gross replacement rate only varies by country (in some cases additionally by gender). Thus, this number may suffer from high collinearity and should not be interpreted in too much detail. It remains open for future research actually which features of the pension systems are the driving forces in supporting or hampering the combination of employment income receipt and pension benefit receipt. Likely a combination of features plays a crucial role.

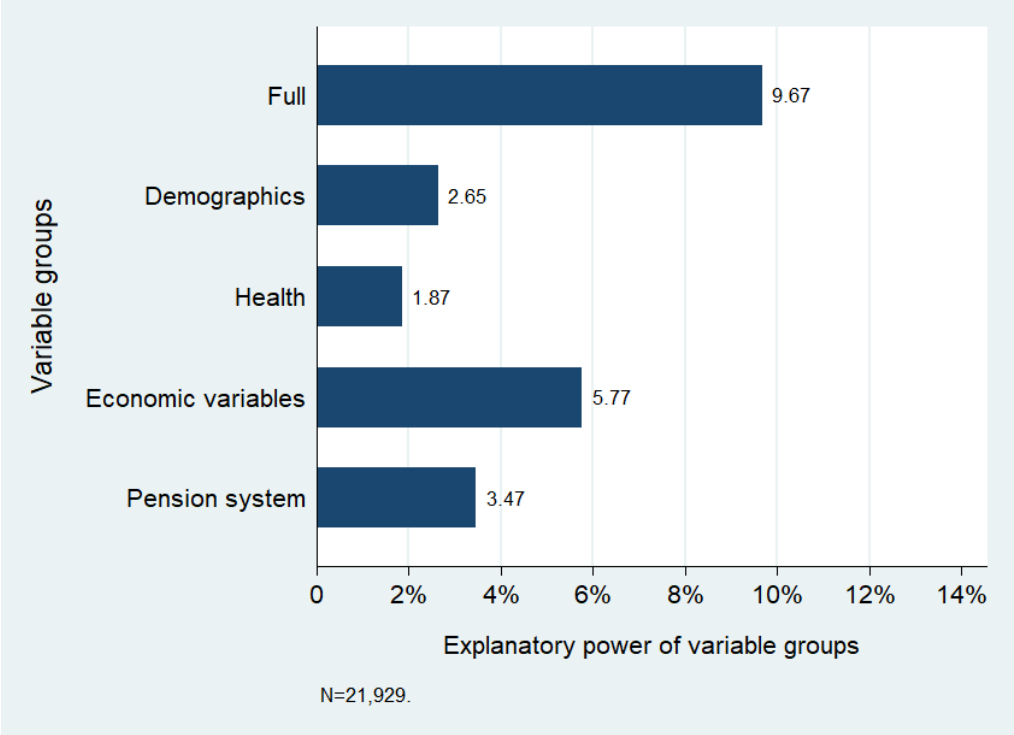
Overall, the regression analysis indicates that demographic variables as well as health variables, economic variables and the pension system may be important factors why pensioners simultaneously receive pension benefits and earnings from employment. Whether these sets of variables do as well play a role in the investigation of the variation across countries will be examined in Part II.

4.1.2 Variance decomposition

In order to understand the contribution of different sets of variables on the working pensioner proportions, I perform a variance decomposition analysis of the individual variation in working pensioner proportions. The decomposition is based on a linear regression model and the results are shown in Figure 3. The linear specification gives very similar results as the probit model presented before (for the results from the linear specification see Figure A.5 and Table A.2, respectively). The explanatory power of the full model is 9.67%. The full model contains the full set of control variables as in Section 4.1.1., the other models respectively contain the demographic variables, health variables, economics variables or pension system variables only.

Figure 3 shows that demographic variables account for 2.65% and health variables for 1.87% of the total variation. The set of variables describing the pension system accounts for 3.47% of the total variation, while the economic variables contribute to a comparably higher extent to the total variation (5.77%).

Figure 1: Variance decomposition for the probability of being a working pensioner



Note: Based on linear regression model.

Source: Own calculations.

When combining the results from the regression analysis with the variance decomposition analysis, the choice of variables and the conflation to the four sets of variables seems to be a proper choice for the following between-country analysis. The aim of the next section is to investigate whether differences in the variable sets may be responsible for cross-country variation.

4.2 Part II: between-country variation

Why is there large variation in proportions of working pensioners across countries? In order to answer that question, I perform counterfactual simulations. The idea of counterfactual simulations is to set explanatory variables to the average across countries to take account of cross-country differences. Compared to the European average, Italy, for example, has an older population while Denmark has a younger population. In the counterfactual simulations, these demographic differences are taken out by substituting the country-specific demographic variables with the average across countries and predicting country proportions if Italy and Denmark had the same demographics.

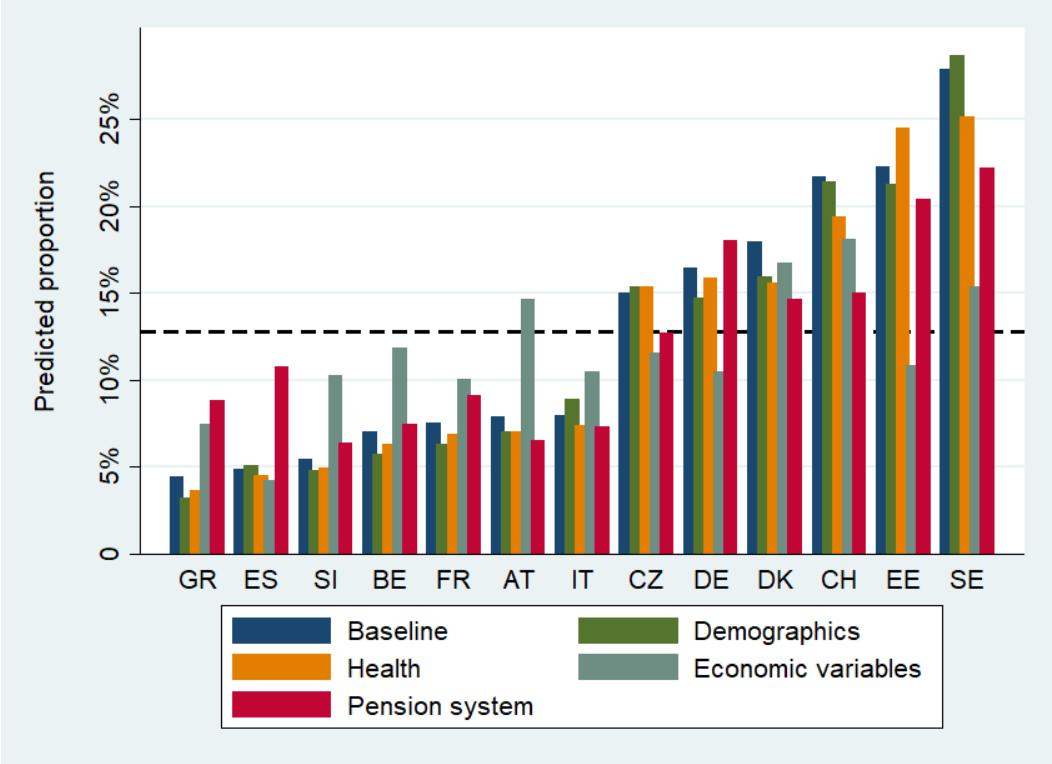
The procedure is as follows: I estimate the same model as given in Equation 1 by probit estimation to predict the working pensioner proportions for each country. For the baseline prediction, I use all variables as they are. The counterfactual simulations are executed with specific sets of variables (i.e. demographics, health, economic variables, pension system) set to the average across all countries. This way, I predict the working pensioner share as if everybody had the same characteristics in a specific set of variables as the average of all countries.[19]

Figure 4 presents the main result of this section by comparing the predicted working pensioner proportions with counterfactual simulation results if the demographic variables, health variables, economic variables and variables describing the pension system are set to the average across all countries. The predicted average working pensioner proportion across all countries, represented by the dotted line, is 12.8%. The countries are sorted by the baseline proportions.

I first take out demographic differences by equalizing age, gender, education, marital status and the partner information. I then predict the working pensioner share as if all countries had the same demographic structure. The results are shown in Figure 4 by comparing the counterfactual simulation with the baseline results. Equalizing the demographic structure does not change much, as indicated by the first and the second bar for each country. Therefore, demographic differences do not appear to be the main cause of the between-country variation.

[19] To verify which role probit estimation plays for the estimation results, I show the counterfactual simulations based on linear regression in Figure A.3 (see the Appendix). The results remain stable when applying a linear regression model.

Figure 2: Counterfactual simulation for working pensioner proportions



Note: Based on probit estimation. Root mean square error: Baseline=56.5%, Demographics=59.1%, Health=54.0%, Economic variables=13.0%, Pension system=26.8%.

Source: Own calculations.

In a second step, I take account of health differences between the countries. Again, I first calculate the average over the different health variables to account for health differences across countries. I then predict the share of working pensioners as if all countries had the same health status. Equalizing health across countries does not make a substantive difference as indicated by the first and third bar for each country. Hence, health differences do not seem to be a main driver of the between-country variation as well. This result is in line with the findings by Börsch-Supan et al. (2009). The authors investigate the role of pension and social security institutions in shaping the European patterns of work and retirement. They found that health is an important determinant of earlier retirement within each country, yet it does not explain the large cross-national variation.

The third step is to account for economic and financial differences by establishing the influence of the economic and financial variables. Equalizing all economic and financial variables generates more changes in the variation of working pensioner shares than equalizing demographics and health as indicated by the first and fourth bar in the graph. The working pensioner shares would be different

in many countries if all countries had the same economic and financial variables. In countries with, for example, a lower than average labor force participation rate for the age group 55–64 (average 56.6%) such as in France (50.7%), Italy (48.9%), Austria (46.9%), Belgium (45.1%) and Slovenia (38.4%), working pensioner shares would be much higher if they had the average economic environment. The opposite holds true for countries with comparably high labor force participation rates such as in Sweden (78.4%) and Germany (69.1%). In these countries, the shares would be lower if they had the same economic environment. At the same time, in Sweden (41,060€) and Germany (33,930€) per-capita GDP is above the average per-capita GDP across all countries (average 29,980€). This may be another contributing factor to the counterfactually lower shares. In Slovenia (17,620€) and Greece (17,040€) in contrast, per-capita GDP is below average. This counterfactually leads to a higher share if Slovenia and Greece had the average economic environment. Overall, economic differences can be recorded as potential source for between-country variation.

The last counterfactual simulation is on equalizing the pension system variables across countries and thus accounts for differences in the pension systems. Once again, working pensioner shares are predicted as if all countries had the same pension system variables. The rightmost bar shows the predicted rates if the system characteristics were identical to the average in all countries. The pattern of working pensioner proportions changes strikingly when equalizing pension systems. The shares counterfactually decrease, e.g., in Sweden and Switzerland. In both countries, no earnings tests apply before the statutory eligibility age, thus allowing an unlimited combination of pension benefits and work income. This makes the pension systems more flexible. The share counterfactually decreases in Estonia as well when using the average pension variables across countries. An earnings test applies before the statutory eligibility age in Estonia. However, the statutory eligibility age is comparably low (63 for men, 62.5 for women, see Table 1). Therefore, individuals are allowed to combine pension income and work income relatively early without any limitations. Reducing flexibility through equalizing system variables in these countries counterfactually has a negative effect on working pensioner shares. In Greece and Spain, for instance, comparably high statutory eligibility ages apply (67 for both men/women). According to the regression analysis in Part I, the higher the statutory eligibility age, the lower the probability of being a working pensioner. Conversely, equalizing the statutory eligibility age with the average across countries (65.3 for males, 64.3 for females) counterfactually yields a higher share. Overall, in most countries counterfactual simulation leads to working pensioner shares that approach the

overall average proportion. This becomes most apparent when comparing Greece (smallest proportion at baseline: 4.8%) and Sweden (highest proportion: 27.7%). The proportions in both countries are much closer to each other and to the overall average value across all countries when counterfactually assuming that both countries have the same pension system variables. More formally, the average deviation from the average across countries (i.e. from the dotted line), measured as the root mean square error (RMSE), clearly decreases from the baseline value (56.5%) to the simulation which counterfactually eliminates cross-country differences in variables describing pension systems (26.8%). This means that differences in the pension systems may also be responsible for cross-country variation.

Summarizing the results from the counterfactual simulations reveals that economic differences and differences in pension systems likely are driving factors for the variation in working pensioner proportions between countries. Demographic differences and health differences do not appear to be the main causes for cross-country variation. This is supported by the results by Börsch-Supan et al. (2009). They found that institutional differences across countries explain much of the cross-country differences in work and retirement, while differences in health and demographics only play a minor role.

5. SUMMARY AND CONCLUSIONS

Over the past decade, many countries have made it easier for pensioners to combine pension benefits with income from work. However, working pensioners are not a broad phenomenon in Europe, even if survey evidence revealed that substantial shares of individuals prefer a flexible transition into full retirement.

This study aims at a better understanding of this mismatch. The analysis follows a two-step procedure: In a first step, I explore variables that influence why individuals combine pension income and work income at the end of the working career. The regression analysis suggests that demographic variables, health variables, economic variables as well as the pension system may be important factors. The second step of the analysis is to find out which variables may account for the variation in working pensioner proportions across countries. This is realized by performing counterfactual simulations. The purpose of counterfactual analysis is to set explanatory variables to the average across countries to capture cross-country differences. Based on the counterfactual simulations, I predict working pensioner shares that would prevail in each country, if each individual had the same characteristics as the average of all countries. Applying counterfactual simulations indicates that economic differences as well as differences in pension systems may be responsible for cross-country variation. The theoretical literature has emphasized constraints that might hinder individuals from combining pension benefits with income from work at the end of their working career. Some of the constraints are inherent the pension systems. Equalizing theses constraints across countries suggests that differences in the pension systems could be an important source for between-country variation. Future research has to show which features of the pension systems actually are the driving forces.

There has not been much literature with a cross-country focus to date. This article adds to the few cross-country studies and explicitly integrates variables describing the pension systems. Moreover, the definition used in this study measures working pensioners more precisely than it has been done in previous literature.

However, there are still open issues which go beyond the scope of this paper and remain open for future research. One question is why working pensioners actually combine pension benefits with employment income. Next to health limitations and social factors, further motivation might indeed stem from financial reasons. Overall, it may be the case that individuals in different income classes have different motives to have income from employment while receiving a pension. A more

comprehensive analysis of the financial motives in the context of varying pension systems, therefore, could bring new and more insights. Moreover, the cross-sectional character of the data in this article does not allow a complete explanation of the transition process from full employment to either full retirement on a direct way or to a flexible transition phase first. An extension of the investigation to a panel perspective could help to better understand the actual transition choices. In addition, this study does not consider how long working pensioners actually stay in the transition period and how much they earn. This remains open for future research. Moreover, besides public pension benefits and occupational pension benefits other labor market institutions may play a role as well. The examination of other labor market institutions in the context of working pensioners should be the objective of future research to obtain a broader picture.

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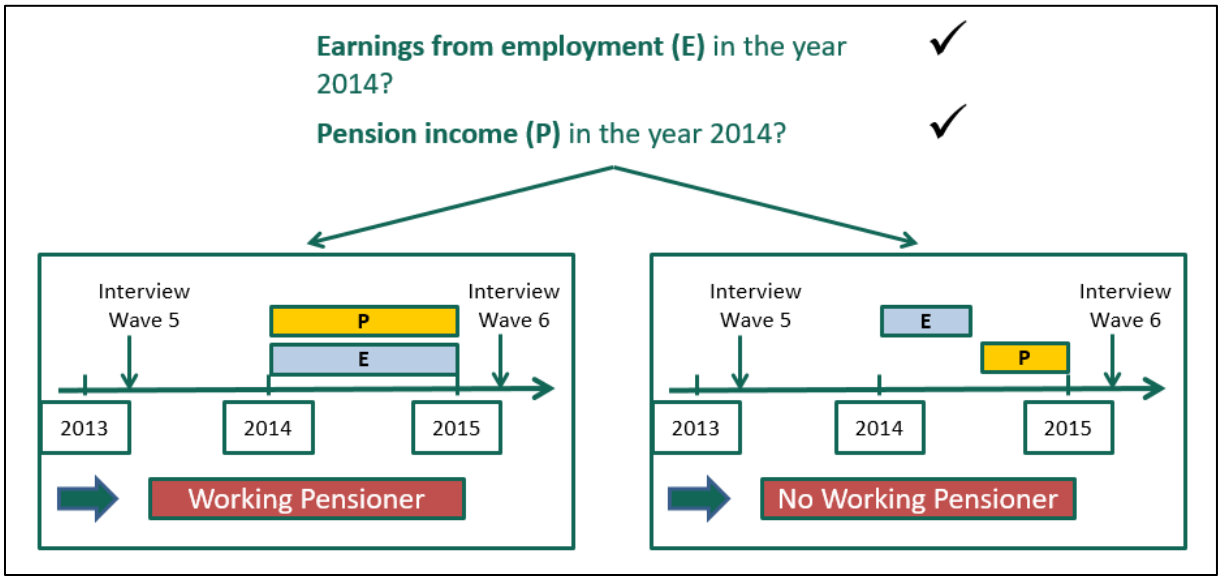
APPENDIX

Figure A.1: Depiction of potential mismeasurement



Source: Own depiction.

Table A.1: Gross domestic product and labor force participation rate of age group 55–64 by countries

	Country												
	ES	**IT**	**SI**	**GR**	**BE**	**FR**	**AT**	**DE**	**CZ**	**DK**	**CH**	**SE**	**EE**
GDP in 1,000€ (per capita)	22,2	25,4	17,6	17,0	33,9	31,3	36,1	33,9	15,3	44,8	57,7	41,0	13,0
Average	29,9												
LFPR in % (age 55–64)	55.4	48.9	38.4	41.1	45.1	50.7	46.9	69.1	56.8	66.4	71.6	78.4	67.6
Average	56.6												

Source: OECD. Detailed sources given in Section 3.1.

Table A.2: Sample size, gender composition and average age by group and country

	Working Pensioner			**Pensioner**		
	N	**Females**	**Age**	**N**	**Females**	**Age**
Austria	128	53%	67.4	1,468	56%	67.8
Germany	236	41%	68.1	1,368	49%	68.7
Sweden	428	45%	69.0	1,198	58%	69.9
Spain	52	35%	68.1	1,443	36%	68.7
Italy	101	35%	67.6	1,594	45%	68.6
France	110	45%	65.0	1,485	54%	67.4
Denmark	265	37%	67.7	1,018	58%	68.5
Greece	80	33%	63.7	1,197	40%	66.7
Switzerland	261	42%	68.2	826	54%	69.3
Belgium	122	30%	65.9	1,833	48%	67.4
Czech Rep.	394	55%	67.2	2,156	63%	68.1
Slovenia	115	48%	65.7	1,859	55%	66.4
Estonia	523	58%	66.7	1,669	59%	68.9

Source: Own calculations.

Table A.3: Potential determining factors of working pensioners. Dependent variable: working pensioner yes/no

VARIABLES	
Demographics:	
Age (centered)	-0.006***
	(0.001)
Age^2 (centered)	0.000
	(0.000)
Female	-0.031***
	(0.011)
High education	0.033***
	(0.010)
Low education	-0.028***
	(0.008)
Single	0.005
	(0.010)
Divorced	0.039***
	(0.005)
Widowed	0.009
	(0.009)
Partner in labor force yes/no	0.034***
	(0.007)
Health:	
Self-perceived health	0.019***
	(0.003)
ADL yes/no	-0.022*
	(0.012)
IADL yes/no	-0.044***
	(0.011)
Grip strength	0.001***
	(0.000)
Grip strength (missing)	0.056***
	(0.016)
Number of chronic diseases	-0.005***
	(0.002)
Economic and financial situation:	
Equivalized household net income (/10,000)	0.040*
	(0.021)
Household net worth (/10,000)	0.005***
	(0.001)
GDP (per-capita, /1,000)	-0.029***
	(0.006)
Labor force participation rate 55–64 (*100)	0.005***
	(0.001)

Pension system:	
Statutory eligibility age (SEA)	-0.016***
	(0.003)
Start of retirement window	0.004
	(0.003)
Earnings test (before SEA) yes/no	-0.053***
	(0.019)
Actuarial deductions (*100)	-0.010**
	(0.004)
Gross replacement rate (*100)	0.000
	(0.000)
Individual reached SEA yes/no	0.034**
	(0.016)
Individual reached EEA yes/no	-0.018
	(0.017)
Observations	21,929
Pseudo R2	0.13

Marginal effects from probit estimation. Standard errors in parentheses, clustered standard errors by country. *** p<0.01, ** p<0.05, * p<0.1. Based on SHARE including the following countries: AT, DE, SE, ES, FR, DN, GR, CH, BE, CZ, SI, EE.

Source: Own calculations.

Table A.4: Potential determining factors of working pensioners. Dependent variable: working pensioner yes/no

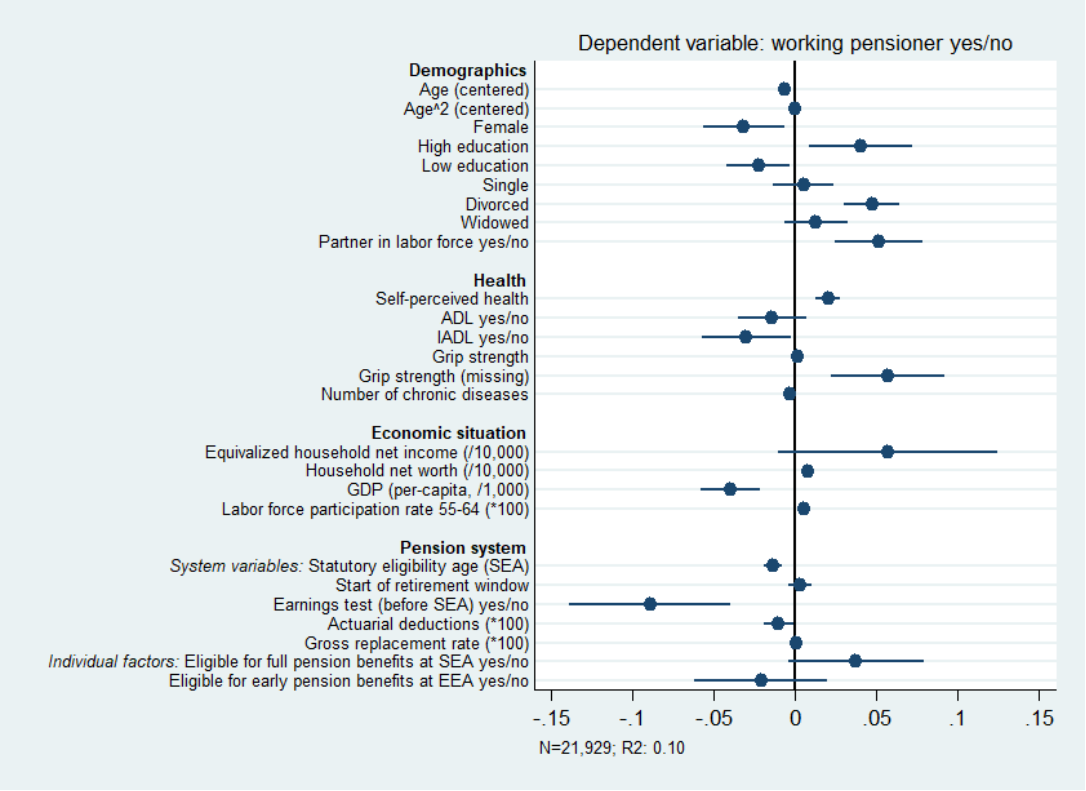
VARIABLES	
Demographics:	
Age (centered)	-0.006***
	(0.001)
Age^2 (centered)	0.000
	(0.000)
Female	-0.022***
	(0.008)
High education	0.034***
	(0.010)
Low education	-0.021**
	(0.009)
Single	0.006
	(0.009)
Divorced	0.038***
	(0.005)
Widowed	0.008
	(0.009)
Partner in labor force yes/no	0.033***
	(0.007)
Health:	
Self-perceived health	0.019***
	(0.003)
ADL yes/no	-0.021*
	(0.012)
IADL yes/no	-0.046***
	(0.010)
Grip strength	0.001**
	(0.000)
Grip strength (missing)	0.052***
	(0.016)
Number of chronic diseases	-0.005***
	(0.002)
Economic and financial situation:	
Equivalized household net income (/10,000)	0.041*
	(0.022)
Household net worth (/10,000)	0.006***
	(0.001)
Individual public pension eligibility:	
Individual reached SEA yes/no	0.038**
	(0.016)
Individual reached EEA yes/no	-0.022
	(0.016)

Country-fixed effects:	
Germany	0.076***
	(0.003)
Sweden	0.148***
	(0.003)
Spain	-0.046***
	(0.008)
Italy	-0.001
	(0.008)
France	-0.023***
	(0.002)
Denmark	0.100***
	(0.003)
Greece	-0.019***
	(0.007)
Switzerland	0.107***
	(0.006)
Belgium	-0.040***
	(0.005)
Czech Republic	0.104***
	(0.004)
Slovenia	-0.012**
	(0.006)
Estonia	0.168***
	(0.005)
Observations	21,929
Pseudo R2	0.13

Marginal effects from probit estimation. Standard errors in parentheses, clustered standard errors by country. *** p<0.01, ** p<0.05, * p<0.1. Based on SHARE including the following countries: AT (reference category), DE, SE, ES, IT, FR, DN, GR, CH, BE, CZ, SI, EE.

Source: Own calculations.

Figure A.2: Potential determining factors of being a working pensioner. Based on linear regression model.



Note: Based on linear regression model. Clustered standard errors by country. Household income and worth adjusted for purchasing power parity. Based on SHARE including the following countries: AT, DE, SE, ES, IT, FR, DN, GR, CH, BE, CZ, SI, EE.

Source: Own calculations.

Table A.5: Potential determining factors of working pensioners. Dependent variable: working pensioner yes/no. Based on linear regression model.

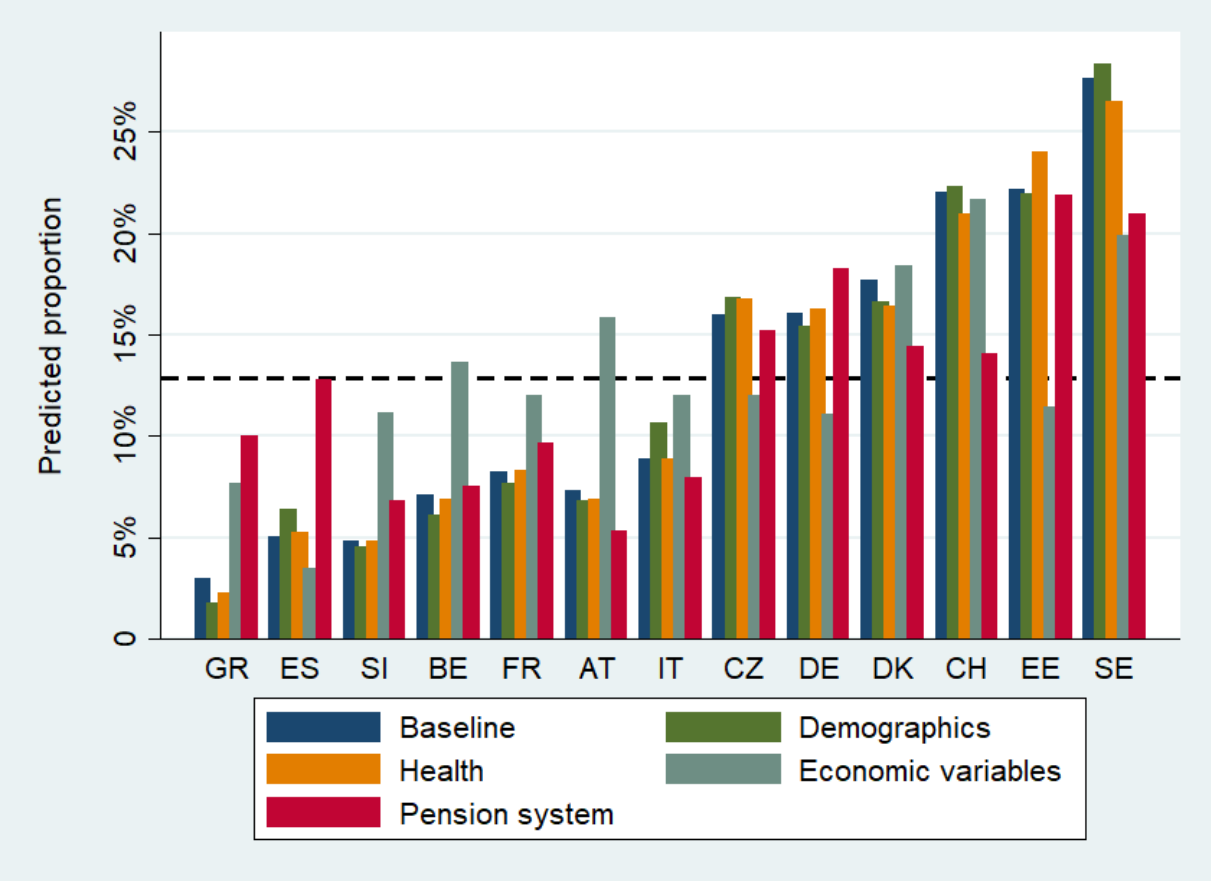
VARIABLES	
Demographics:	
Age (centered)	-0.006***
	(0.001)
Age^2 (centered)	0.000
	(0.000)
Female	-0.032**
	(0.011)
High education	0.040**
	(0.014)
Low education	-0.023**
	(0.009)
Single	0.005
	(0.009)
Divorced	0.047***
	(0.008)
Widowed	0.013
	(0.009)
Partner in labor force yes/no	0.051***
	(0.012)
Health:	
Self-perceived health	0.020***
	(0.003)
ADL yes/no	-0.014
	(0.010)
IADL yes/no	-0.030**
	(0.013)
Grip strength	0.001**
	(0.000)
Grip strength (missing)	0.057***
	(0.016)
Number of chronic diseases	-0.004**
	(0.002)
Economic and financial situation:	
Equivalized household net income (/10,000)	0.057*
	(0.031)
Household net worth (/10,000)	0.008***
	(0.001)
GDP (per-capita, /1,000)	-0.040***
	(0.008)
Labor force participation rate 55–64 (*100)	0.005***
	(0.001)

Pension system:	
Statutory eligibility age (SEA)	-0.014***
	(0.003)
Start of retirement window	0.003
	(0.003)
Earnings test (before SEA) yes/no	-0.089***
	(0.023)
Actuarial deductions (*100)	-0.010**
	(0.004)
Gross replacement rate (*100)	0.001
	(0.001)
Individual reached SEA yes/no	0.038*
	(0.019)
Individual reached EEA yes/no	-0.021
	(0.019)
Constant	0.622***
	(0.190)
Observations	21,929
R-squared	0.096

Standard errors in parentheses, clustered standard errors by country. *** p<0.01, ** p<0.05, * p<0.1. Based on SHARE including the following countries: AT, DE, SE, ES, FR, DN, GR, CH, BE, CZ, SI, EE.

Source: Own calculations.

Figure A.3: Counterfactual simulation for working pensioner proportions. Based on linear regression model.



Note: Based on linear regression model. Root mean square error: Baseline=58.0%, Demographics=61.2%, Health=58.2%, Economic variables=22.4%, Pension system=26.7%.

Source: Own calculations.