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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*

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 article studies the within-country determinants of working pensioners and finds that demographic variables as well as health variables, economic variables and the pension system are important determinants why individuals choose to combine pension income with work income at the end of their working career. I apply counterfactual simulations to investigate cross-country variation. These counterfactual simulations reveal that variation in working pensioner proportions between countries can be explained by economic differences and differences in pension systems.

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) die Determinanten von Erwerbstätigkeit unter Rentenbeziehern in 13 europäischen Ländern. 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 Hauptergebnisse sind, 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 kann hauptsächlich durch ökonomische Unterschiede und durch Unterschiede in den Rentensystemen erklärt werden.

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).

The aim of this study is to find explanations for 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 seem to determine whether individuals actually decide to become working pensioners, i.e., to combine pension benefits with work income. Second, I will investigate which of those factors explain 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 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, are found highly important in explaining bridge employment. In addition, broader normative and economic societal determinants at the country level, such as the presence of a favorable environment and expenditure on pensions are also 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, none of the existing cross-country studies has explicitly focused 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. For that reason, I add to the existing literature by employing an internationally comparative view on the determinants of being a working pensioner and 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 determinants of being a working pensioner (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. Economic differences and pension systems play an important role in explaining the said variation.

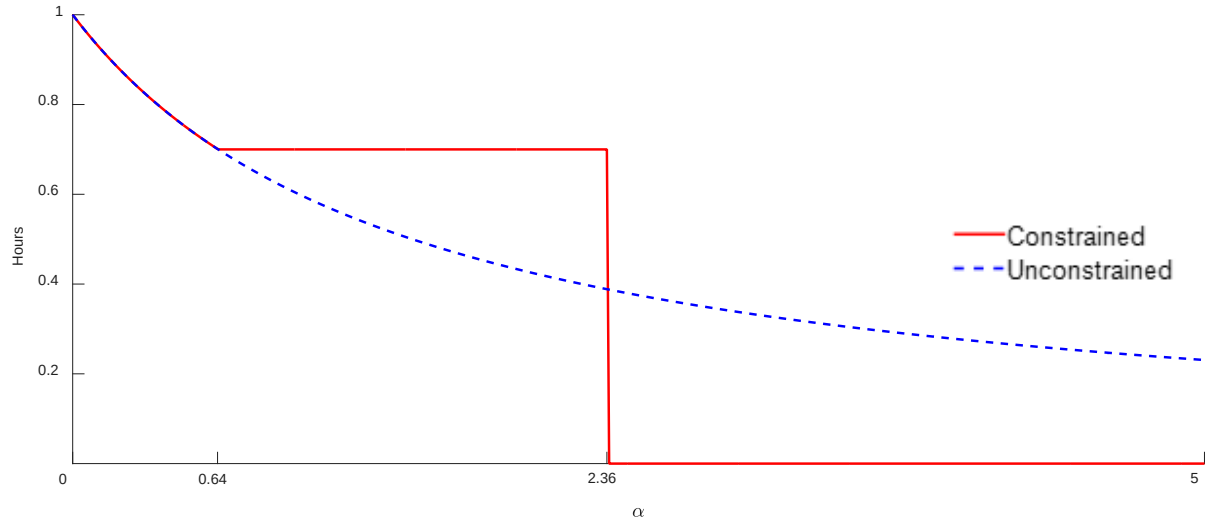
2. ECONOMIC THEORY AND INSTITUTIONAL DETAILS

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.). In the following, I discuss such constraints that have been analyzed theoretically, 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. Those theoretical results serve to inspire the choice of institutional variables included in the later empirical analysis.

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] What those minimum hours constraints imply for the flexible transition phase from full time employment to full retirement, is shown in the model of Börsch-Supan et al. (2018): The model assumes that individuals value consumption (c) and leisure $(1-l)$ according to a additively separable utility function ($u = ln(c) + \alpha\, ln(1-l)$) where l denotes working hours. α is the key behavioral parameter in the model and represents the importance of leisure relative to consumption during the transition period from full time employment to full retirement. In the baseline version of the model, the assumption is that α increases monotonically with age and is the same for all workers of a given age. Furthermore, α may not only reflect preferences but also other circumstances, for example the need to take care of a relative, or the influence of health on the utility of consumption and the disutility of work.

[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.

Figure 1: Number of hours worked within the transition period



Source: See Börsch-Supan et al. (2018).

In the absence of constraints, the model predicts that workers gradually reduce their working hours with increasing age when their preferences for leisure increase. This is the standard labor market theory case and is depicted by the dashed blue line in Figure 1. α is depicted on the x-axis. The importance of leisure relative to consumption increases when moving to the right as does the age of the individuals. Workers stay in employment until it is too costly for them to go to work. 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. This is depicted in Figure 1 where the solid red line and the dashed blue line overlap. After that, they 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 model further assumes that the social partners have acknowledged this mechanism and have chosen this age as the statutory eligibility age, the age at which workers are eligible for full pension benefits regardless of any other qualification. It thus effectively makes this age a mandatory retirement age. The assumption is based on the situation that in many sectors in European countries the statutory eligibility age is effectively a mandatory retirement age.[2] This is usually not fixed by law but negotiated between social partners

[2] For mandatory retirement regulations see the Annex in Börsch-Supan et al. (2018).

and put into labor contracts. Unions traditionally supported early retirement policies and justified this with declining health and, misleadingly so, freeing up jobs for younger workers.[3]

Gustman and Steinmeier's (2004) results for the US seem to be in line with the theoretical results. They estimate how effective firms' policies to encourage longer careers are in influencing workers' retirement decisions among married men from the first six waves of the Health and Retirement Study (HRS). Older workers would rather continue to work part-time but typically only have the choice between full-time work and full-time retirement. Gustman and Steinmeier (1984, 1986, 2004) find that the common minimum hours constraint leads to earlier retirement than if there was no restriction of working hours.

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.

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.[4] 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

[3] See Börsch-Supan (2013) for a set of myths about individual and population aging that are not backed and often contradicted by evidence.

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

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 2002).

The model in Börsch-Supan et al. (2018) has shown that the effect of flexibility reforms on labor supply is *ex ante* not straightforward. From a theoretical point of view, flexibility reforms have ambiguous effects on labor supply. The actual effect is therefore an empirical question. The conclusion of Börsch-Supan et al. (2018) is that the flexibility reforms enacted so far in nine OECD countries have failed to increase old-age labor supply and delineate several alternative options to achieve this aim.

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 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[5] (SEA) for public pensions	Earliest Eligibility Age[6] (EEA) for public pensions	Start of the flexible retirement window[7]	Earnings Tests[8] (i.e. limit of additional earnings for recipients of public pension benefits)	Actuarial deductions per year[9], in %	Gross replacement rate[10], in %	Mandatory retirement[11]
Austria	65 (men), 60 (women)	62 (men), 57 (women)	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)	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
Denmark	65 (men), 65 (women)	60 (men), 60 (women)	60 (men), 60 (women)	*Before SEA*: no public pension receipt possible, therefore no conflict between public pension benefits and additional income; *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)	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

[5] 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.
[6] The earliest eligibility age is defined as the age at which early retirement is possible, mostly with reduced benefits. 2013 regulation.
[7] The flexible retirement window may start earlier than the earliest eligibility age if flexible retirement schemes are available through systems other than the public pension scheme. For the concrete design of such schemes see the Annex in Börsch-Supan et al. (2018). 2013 regulation.
[8] Earnings tests limit additional earnings for recipients of public pension benefits.
[9] Actuarial deductions are a factor used to adjust the pension payments if the worker opts for early retirement.
[10] The gross replacement rate shows the level of pension benefits relative to earnings from employment.
[11] The information about the mandatory retirement regulations are widely those of 2016.

Germany	65.2 (men), 65.2 (women)	63 (men), 63 (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.[12]
Italy	66.3 (men), 63.3 (women)	62 (men), 63.3 (women)	62 (men), 61 (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	42.4	None
Spain	67 (men), 67 (women)	61 (men), 61 (women)	60 (men), 60 (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	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) and Appendix to 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).

[12] 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).

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.

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).[13] 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

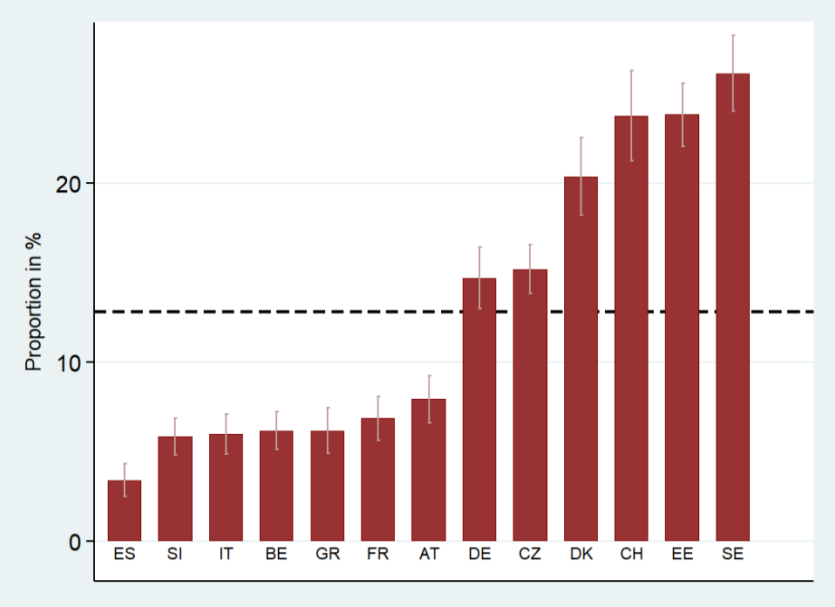
Dependent variable. The dependent variable in the current study is an indicator variable which equals one if an individual is characterized as working pensioner and zero otherwise. A working pensioner is identified by focusing on the income sources of older individuals reported in SHARE Wave 6. Hence, 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 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.

At first glance, this simple definition of working pensioners seems straightforward and has been applied in previous literature. However, the yearly character of the SHARE employment data might

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

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.[14] 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.

Figure 2: 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 (Figure 2). The average proportion across countries is 12.8%. However, it is also apparent that there is substantial variation across countries. There are countries with relatively high proportions such as Estonia, Sweden,

[14] Figure A.1 graphically shows the potential mismeasurement to provide a more intuitive depiction of the problem (see Appendix).

Denmark or Switzerland, and countries with relatively lower proportions such as Spain, Slovenia, and Italy.[15] The aim of my empirical analysis is to find out which determinants explain, 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.

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

[15] 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 17.

(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.[16] 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 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 dimensions stemming from the theoretical literature presented in Section 2 (see Table 1) to describe the pension system. I include the statutory eligibility age at which an individual becomes eligible for full pension benefits, and the earliest eligibility age, when early retirement (mostly with reduced benefits) is possible. Gender differences in eligibility ages are taken into account. Moreover, I control for a potential earlier gender-specific "start of the retirement window" if a flexible retirement scheme is available through a system other than the public pension scheme (see the Annex in Börsch-Supan 2018 for country-specific details on such schemes). 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. I finally include two dummy variables indicating whether individuals have reached

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

the earliest eligibility age and the statutory eligibility age. 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.[17] 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.[18]

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.

[17] 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 does not 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.

[18] 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 what drives the decision to become a working pensioner, I follow the empirical approach of Börsch-Supan et al. (2017). 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 are the main determinants of why individuals actually decide to become working pensioners (Part I). Section 4.2 proceeds with counterfactual analyses to investigate which variable sets explain the between-country variation (Part II).

4.1 Part I: within-country variation

4.1.1 Regression analysis

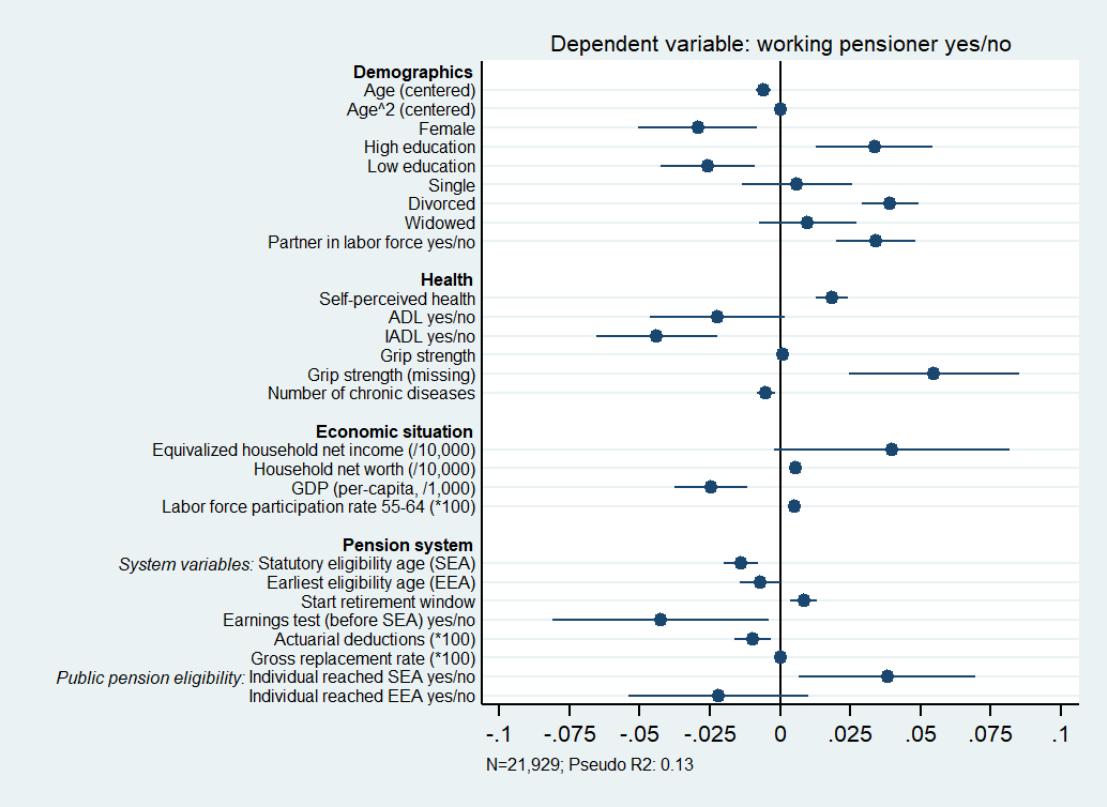
What determines being a working pensioner? To address this question, I estimate a regression model based on the pooled sample of all countries. Since the dependent variable of interest – working pensioner – is binary, I estimate the following model by probit estimation:

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

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 earliest 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 3. The model explains 13% of the total variation.[19]

Figure 3: 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.

[19] 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. Regression results listed in tabular form are shown in Table A.3.

The probability of being a working pensioner significantly increases 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 determinant. 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.

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: 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 eight variables described above with effects going in different directions. While a higher statutory eligibility age lowers the probability of being a working pensioner, the opposite is the case for the start of the retirement window. The earliest eligibility age as well has a negative effect but is statistically significant only on the ten percent level. The positive effect of the start of the retirement window might stem from the incorporation of occupational pension benefits as qualifying feature in the working pensioner definition. Some individuals become eligible for occupational pension benefits or flexible retirement schemes based on agreements between employer and employee (e.g., Austria) at the start of the retirement window. Moreover, people may receive severance payments or other benefits from their employer, which some individuals might report as occupational benefits since the variable broadly captures occupational benefits. On the other side, the earliest eligibility age may provide a pathway to full retirement when individuals become eligible for public pension benefits. Public pension benefits are usually higher compared to occupational pension benefits and allow full labor force withdrawal for some individuals. The indicator variable for whether an earnings test applies before the statutory eligibility age has a significant negative effect. This indicates that earnings tests, which effectively mean a constraint on the maximum number of working hours the individuals can work, actually keep individuals from combining pension benefits and work income. Pension systems with earnings tests seem to be less flexible. A higher number of actuarial deductions for early retirement lowers

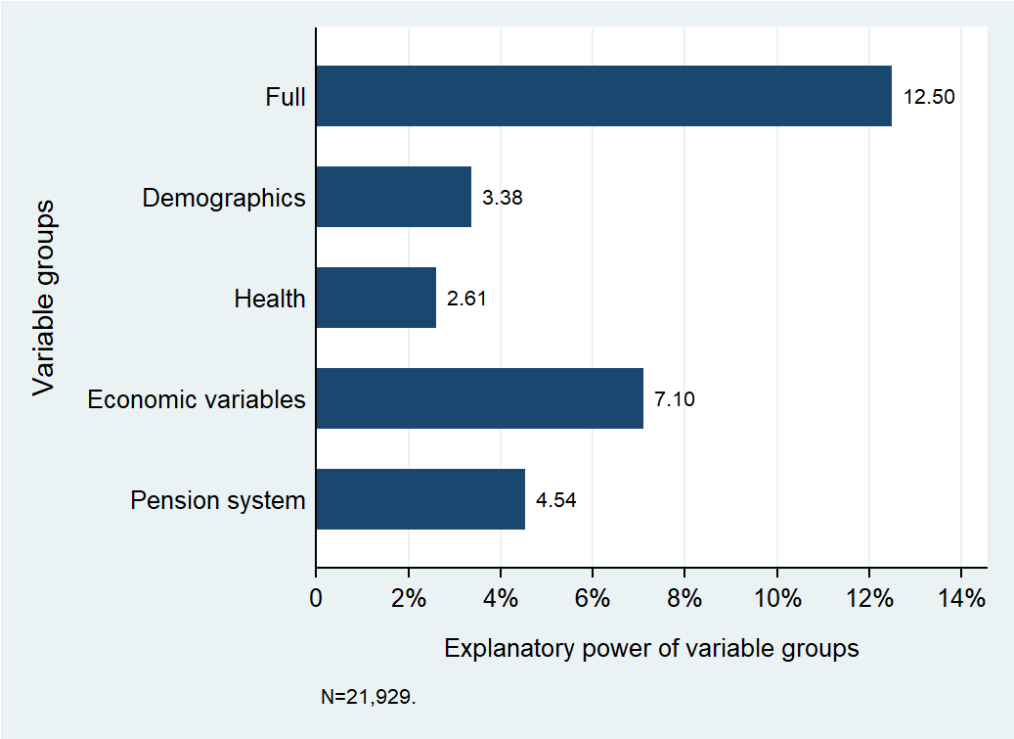
the probability of being a working pensioner as well. The deduction rates in most countries are below actuarially fair deduction rates which makes the pension systems more generous and incentivizes early pension claiming (Queisser and Whitehouse 2006, Gruber and Wise 2002). Higher actuarial deduction rates could mean fewer incentives to claim early retirement benefits in favor of longer full employment careers. The gross replacement rate does not have significant effect. Finally, I include two variables indicating individual eligibility for public pension benefits: one variable indicates whether an individual is eligible for full pension benefits after having reached the statutory eligibility age. The second variable equals one when individuals are eligible for public early retirement benefits. Having reached the statutory eligibility age shows a positive and statistically significant effect that might stem from the fact that most individuals at the latest become eligible for public pension benefits at the statutory eligibility age. Eligibility for full public pension benefits at this age requires usually only a (relatively short) contribution history which is sometime less than the number of years of contributions required in order to claim early retirement benefits. The positive effect on the probability of being a working pensioner therefore might stem from the overall higher eligibility rate for public pension benefits. Eligibility for early pension benefits, however, does not have significant influence. There may be two reverse effects behind which compensate one another: On the one hand, more individuals meet the requirements of the working pension definition at this age step when becoming eligible for early retirement benefits. This may increase the likelihood of being a working pensioner. On the other hand, eligibility for public pension benefits could mean a shift from a flexible transition period with occupational pension benefits to full retirement on early retirement benefits.

Overall, the regression analysis reveals that demographic variables as well as health variables, economics variables and the pension system are important determinants of being a working pensioner. Whether these sets of variables do as well explain 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 to explain the variation in the working pensioner proportions, I perform a variance decomposition analysis of the individual variation in working pensioner proportions. Results are shown in Figure 4. The explanatory power of the full model is 12.5%. 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 4: Variance decomposition for the probability of being a working pensioner



Note: Based on probit estimation.

Source: Own calculations.

Figure 4 shows that demographic variables (3.38%) and health variables (2.61%) roughly contribute to the same amount to the total variation each. The set of variables describing the pension system explains more of the total variation compared to the former two variables sets (4.54%), while the economic variables contribute to a comparably higher extent to the total variation (7.1%).

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 are main causes for cross-country variation.

4.2 Part II: between-country variation

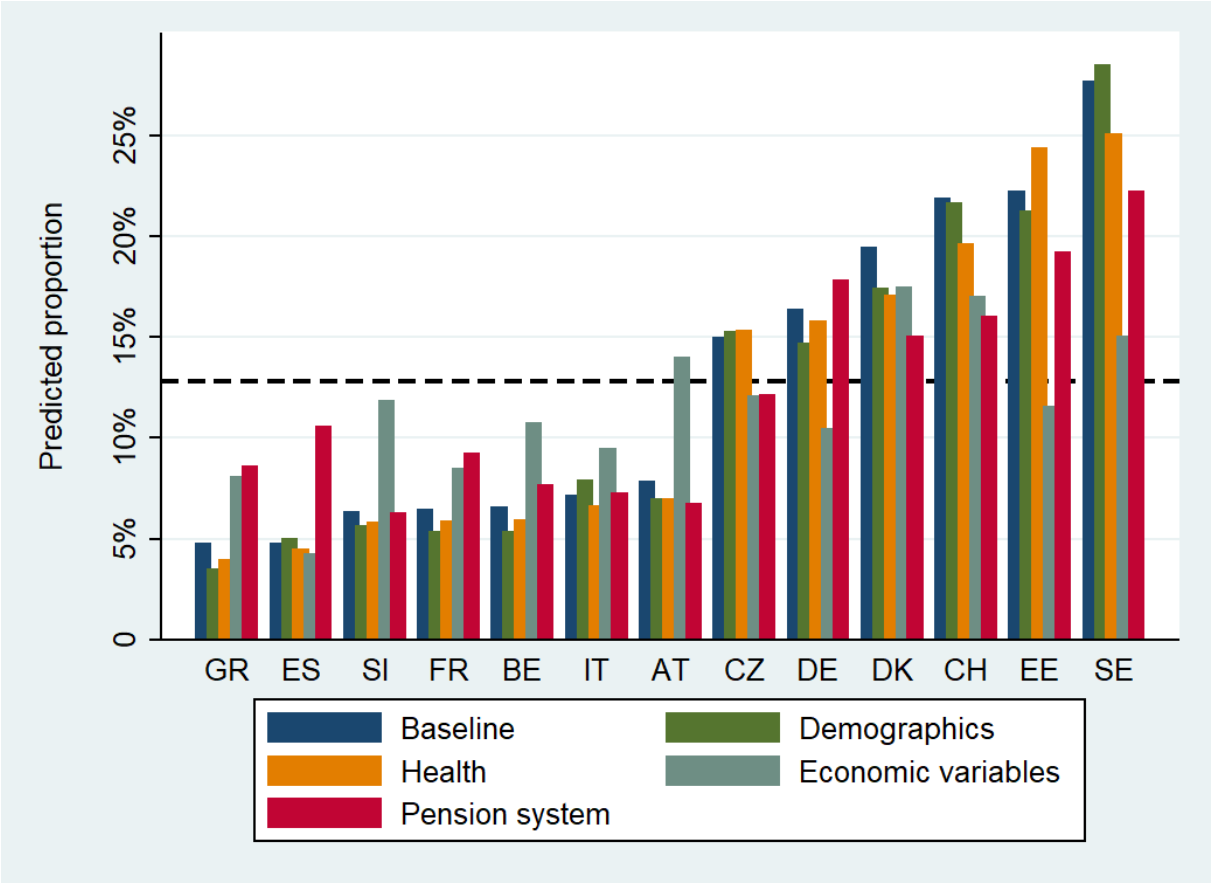
Why is there large variation in proportions of working pensioners across countries? In order to answer that question, I perform counterfactual simulations. The idea of counterfactual simulations is to set explanatory variables to the average across countries to take account of cross-country differences. 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 above in Equation 1 (Section 4.1.1) 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.

Figure 5 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 5 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 can be ruled out as main cause of the between-country variation.

Figure 5: Counterfactual simulation for working pensioner proportions



Note: Based on probit estimation. Root mean square error: Baseline=58.4%, Demographics=60.8%, Health=55.5%, Economic variables=12.6%, Pension system=26.0%.

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 one cause of the 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 (58.4%) to the simulation which counterfactually eliminates cross-country differences in variables describing pension systems (26.9%). This means that the variable set describing the pension system explains a substantial part of the cross-country variation. This in particular holds true in comparison to demographics and health.

Summarizing the results from the counterfactual simulations reveals that variation in working pensioner proportions between countries can be explained by economic differences and differences in pension systems. Demographic differences and health differences can be ruled out as main causes for of the variation across countries. Similar results were found by Börsch-Supan et al (2009). Their study 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. The importance of economic differences and differences in pension systems in explaining cross-country differences is the main result in this study as well.

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.

The results of this study help to better understand this mismatch. The analysis follows a two-step procedure: In a first step, I explore the determinants of combining pension income and work income at the end of the working career. The regression analysis reveals that demographic variables, health variables, economic variables as well as the pension system are important determinants of being a working pensioner. The second step of the analysis is to find out which variables explain the variation in working pensioner proportions across countries. This is realized by performing counterfactuals 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 reveals that variation in working pensioner proportions between countries can be explained by economic differences as well as differences in pension systems. 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 explains a substantial part of the cross-country variation.

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

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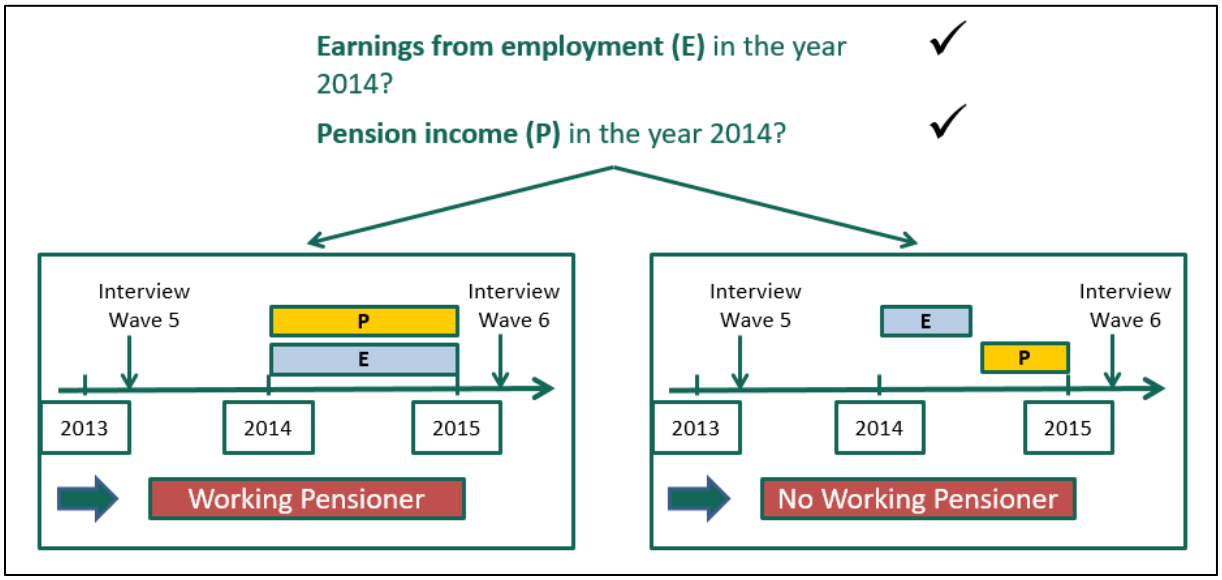
APPENDIX

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: Determinants 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	-0.029***
	(0.011)
High education	0.034***
	(0.011)
Low education	-0.026***
	(0.009)
Single	0.006
	(0.010)
Divorced	0.039***
	(0.005)
Widowed	0.010
	(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)	0.055***
	(0.015)
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)	0.006***
	(0.001)
GDP (per-capita, /1,000)	-0.025***
	(0.007)
Labor force participation rate 55–64 (*100)	0.005***
	(0.000)

Pension system:	
Statutory eligibility age (SEA)	-0.014***
	(0.003)
Earliest eligibility age (EEA)	-0.007*
	(0.004)
Start of retirement window	0.008***
	(0.002)
Earnings test (before SEA) yes/no	-0.042**
	(0.020)
Actuarial deductions (*100)	-0.010***
	(0.003)
Gross replacement rate (*100)	0.000
	(0.000)
Eligible for full pension benefits at SEA yes/no	0.038**
	(0.016)
Eligible for early pension benefits at EEA yes/no	-0.022
	(0.016)
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: Determinants 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	0.034***
	(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)	0.040*
	(0.021)
Household net worth (/10,000)	0.006***
	(0.001)

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	0.11

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.