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Early retirement as a privilege for the rich? A comparative analysis of Germany and Switzerland

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Early retirement as a privilege for the rich? A comparative analysis of Germany and Switzerland

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ABSTRACT

This contribution analyses early retirement in Germany and Switzerland with a focus on financial resources. Using data from CH-SILC linked to administrative records and the German SOEP, we distinguish three different financial resources: namely, pre-retirement labour income, net worth and pension entitlements. High labour income reduces the probability for early retirement. In contrast, high pension entitlements are associated with early retirement. Private wealth also plays an important role in early retirement, but differs with regard to the relevance of the asset components between the two countries. Although the pension system moderates the influence of financial resources on retirement behaviour, the direction of the effects is consistent across the countries once pension entitlements are accounted for.

1. Introduction

The effects of early retirement are the subject of much debate in the research on pensions. From an individual point of view, retiring early may improve quality of life, particularly for individuals in poor health, with physically demanding jobs, or with low employment prospects after a job loss. From a macro-economic point of view, early retirement is very costly and amplifies problems with aging of a population. As a consequence, welfare states have shifted from "pro-retirement" to "pro-work" policies (McNamara, Sano, & Williamson, 2012).

A large body of scientific literature has addressed the causes and consequences of early retirement (see, e.g., the meta-analysis by Topa, Depolo, & Alcover, 2018). Although there is general agreement that financial resources are key in understanding early retirement, their influence at the empirical level remains unclear and has produced mixed evidence. Some studies have found no influence (e.g., Zappalà et al., 2008 and Moreira, Azevedo, & Manso, 2018 for personal income and private pensions; Pienta & Hayward, 2002 for household income), some a positive effect (Baldenweg-Bölle, 1998 and Dorn & Sousa-Poza, 2005 for wages and asset income; Schils, 2008 for wages in the UK; Beehr, Glazer, Nielson, & Farmer, 2000 for wealth) and a few for a negative effect (Brussig & Stegmann, 2006 for wages; Radl, 2007 and 2014 for wages; Schils, 2008 for wages in Germany and the Netherlands). Other studies have found diverging effects among different population groups (Denaeghel, Mortelmans, & Borghgraef, 2011 for personal income; Taylor & Shore, 1995 for satisfaction with pay; Mein et al., 2000 for material problems).

In this contribution, we address three reasons that could be responsible for the inconsistent results. First, measures as different as financial satisfaction, household income, earnings or wealth might not relate to early retirement in the same way. Second, a single measure might not be sufficient to capture the role of a whole financial situation. Because different concepts might operate in opposite directions, it is important to analyse them in a joint model. Third, the relation between financial resources and early retirement might depend on the institutional context.

We use data from Germany and Switzerland, where detailed information on financial resources is available, which is usually not the case for micro data focused on demographic and social aspects. Instead of following a simplified view of financial resources, we distinguish three indicators: employment income before retirement, private wealth and pension entitlements. We discuss the effect of each of these indicators on early retirement from a theoretical perspective and analyse them all together in one framework. Another contribution to the literature is the consideration of partners' financial resources to reflect the linked lives perspective.

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By comparing Germany and Switzerland, we can test whether the influence of financial resources depends on the pension system. Also from the perspective of social inequalities, a better understanding on how institutions influence early retirement is important in the context of pressure to keep individuals in the labour market. The two countries have shown contrasting relation between wages and early retirement in previous research, even if they have many similarities in terms of a well-developed welfare state and a comparable demographic and economic context. Main differences in the pension system are related to the relevance of occupational pensions and flexibility in pension take-up.

For Germany, we use data from the Socio-Economic Panel (SOEP) on income, wealth, and pension entitlements in 2012/2013. For Switzerland, we combine data from the Statistics on Income and Living Conditions (SILC) 2015 with administrative records. To analyse transition to retirement, we compare a group of individuals in early retirement (age 55 to standard retirement age) to a control group of non-retired individuals, excluding individuals who are permanently out of the labour force. Retirement is measured by self-assessment of the respondents. We obtain results by logistic regression models, controlling for other standard predictors of early retirement.

This paper is structured as follows: In Chapter 2, we review the literature on factors determining early retirement decisions and derive our hypotheses on the relationship between financial resources and early retirement. In Chapter 3, we describe the two countries' pension systems to account for institutional differences. Chapter 4 presents the data and methods used for the empirical analyses, which are performed in Chapter 5. We conclude in Chapter 6.

2. Determinants of early retirement

Retirement is one of the central transitions that segment the life course. Retirement is not necessarily a discrete event, but a process that typically involves exit from paid work and the receipt of old-age pensions and can take many different pathways, such as bridge employment between one's career jobs and complete labour force withdrawal, unemployment or disability spells (Kohli, Rein, Guillemard, & van Gunsteren, 1991; Shultz & Wang, 2011). Changing employment patterns across the life course contribute to increasing diversity in the timing of retirement (Raymo, Warren, Sweeney, Hauser, & Ho, 2011). This change is reflected, for instance, in a growing number of older persons who combine work in paid jobs with receipt of pension income (OECD, 2017, p.53).

The timing of retirement is influenced by many factors, which can be grouped into push, pull, and individual factors (see e.g. Ebbinghaus & Radl, 2015). Push factors refer to (dis)incentives to work, such as working conditions, workplace culture, downsizing, and economic crises. They are often associated with involuntary retirement, which currently affects approximately every third retiree in Europe (Ebbinghaus & Radl, 2015). Pull factors at the macro level consist primarily of welfare state incentives and explain mainly voluntary early retirement. Finally, many individual-level push and pull factors have been shown to impact retirement timing. According to a meta-study by Topa et al. (2018), age, health problems, and financial resources are the main factors that explain early retirement. Other relevant determinants for early retirement are a retired partner (Henkens & van Solinge, 2002; Jones, Rice, & Roberts, 2010), grandchildren (De Preter, Van Looy, & Mortelmans, 2013) or family members who need care, which all increase the probability of early retirement. Other factors, that come with financial obligations, such as dependent children, family problems, divorce or widowhood, have been shown to keep people in employment (Bütler, Huguenin, & Teppa, 2004).

The life course perspective on early retirement conceptualises retirement as an adjustment process that depends on earlier life experiences and decisions, and emphasizes the interdependence of family life, working life, and the community, the importance of the context in time and space, as well as the linked lives perspective (Dingemans & Möhring, 2019; Gettings & Anderson, 2018). This approach is a useful framework to interpret the role of financial resources, which are the focus of this contribution. Finances are seen as a major individual constraint on retirement and a limitation on human agency (Elder & Johnson, 2003). Stated simply, people only choose to retire early if they can afford to do so. At the same time, financial resources are an outcome of an individual's (work) history and are influenced by socio-economic factors such as education or social class and institutional context (Fig. 1).

Many studies confirm the central role of financial resources in early retirement (Mein et al., 2000; Pienta & Hayward, 2002; Topa et al., 2018). However, there is no discussion on how financial resources should be measured or on the direction of the effect. The measurement of financial resources is mostly imposed by data availability. Sociology-oriented surveys often include a measure of personal or household income and do not distinguish between earnings, pensions, transfers and capital income. These measures appear to have no effect on retirement timing (Balthasar, Bieri, Grau, Künzi, & Et Guggisberg, 2003; Moreira et al., 2018; Pienta & Hayward, 2002; Schils, 2008, for Germany and the UK; Hank, 2004; Taylor & Shore, 1995; Zappalà et al., 2008). Only for specific subgroups does a high income appear to increase early retirement (Denaeghel et al., 2011; Mein et al., 2000) or show a nonlinear pattern (Drobnič, 2002). Distinguishing retirement paths reveals that low-income households are most strongly affected by involuntary retirement, while individuals in the middle of the income

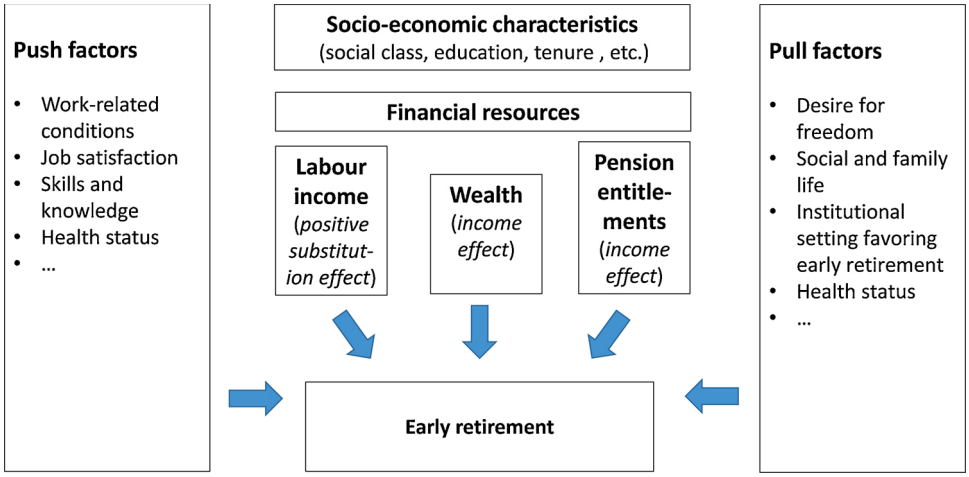

Fig. 1. Factors in early retirement.
Source: Own illustration.

distribution tend more to retire by choice (Dorn & Sousa-Poza, 2010; Visser, Gesthuizen, Kraaykamp, & Wolbers, 2016).

Various studies have used more specific measures for financial resources, such as earnings, wealth or pension entitlements. We present literature and derive hypotheses on these different concepts in turn.

Empirical evidence on the effect of employment income before retirement is limited. Studies on Switzerland tend to find a positive relationship between earnings and early retirement, (Baldenweg-Bölle, 1998; Dorn & Sousa-Poza, 2005), and studies on Germany a negative relationship (Brussig & Stegmann, 2006; Radl, 2007; Schils, 2008). Studies on other countries report both positive (Schils, 2008 for the Netherlands) and negative effects (Schils, 2008, for the UK; Taylor & Shore, 1995, for the USA). The patterns observed for income cannot be explained with different measures for retirement (e.g. pension take-up, labour force participation or self-report) or data sources.

The inconsistent findings on the effect of income on early retirement are sometimes attributed to a trade-off between leisure and income in a way that is analogous to labour supply decisions (e.g. Baldenweg-Bölle, 1998; Denaeghel et al., 2011; Schils, 2008). On the one hand, a higher income increases the opportunity costs of working and therefore makes retirement more expensive. This is referred to as a *substitution effect*. On the other hand, a high income makes early retirement more affordable, which is referred to as the *income effect*. Because the substitution effect and the income effect move in opposite directions, the overall effect of income on early retirement is considered ambiguous.

We believe that it is crucial to distinguish between pre-retirement and post-retirement income. While the substitution effect applies to pre-retirement employment income, the income effect applies to post-retirement financial resources. Assuming that two individuals have the same post-retirement income but different employment income, the person with the higher income has a lower incentive to retire. Considering that continued employment increases the pension entitlements of the high earner more than those of the low earner (Schils, 2008), the effect should become even stronger. Apart from this economic argument, workers with a high income tend to have a higher work orientation because, for example, their job involves more interesting tasks and higher autonomy (Bütler et al., 2004). They might also have fewer factors pushing them toward retirement, such as a low level of employability or physically demanding work. This brings us to our first hypothesis:

H1. The higher a person's employment income, the less likely their early retirement.

We suspect that previous studies failed to find support for Hypothesis 1 because they did not control for pension entitlements. Due to the correlation between employment income and pension entitlements, an omission of pension entitlements may yield an omitted variable bias. Moreover, the focus on total individual or household income might be a bad proxy to capture such an effect.

In contrast to income, previous literature shows a clear relation between wealth and early retirement. Assets help a person afford to retire early. Empirical literature provides broad evidence that net worth increases the probability of early retirement (Beehr et al., 2000; Dorn & Sousa-Poza, 2005; Mein et al., 2000; Pienta & Hayward, 2002; Raymo et al., 2011). Moreover, high private wealth might allow workers to bridge the period between withdrawal from employment and receipt of retirement pensions (see also Berkel & Börsch-Supan, 2004; Bloemen, 2011). We expect that non-housing wealth is particularly relevant in this respect, because it can be easily liquidated. Finally, Drobnič (2002) highlights that home ownership favours early retirement thanks to lower housing costs compared to those associated with rentals. In this case, home ownership is more relevant than the value of the home itself. For wealth, we derive the following hypotheses:

H2a. Homeowners have a higher probability of retiring early than renters do.

H2b. The higher a person's non-property wealth, the more likely their early retirement.

A similar argument to that for wealth applies to post-retirement income. The attractiveness of retirement increases with the expected level of public and occupational pensions (Bütler, 2009). Workers with low pension entitlements need to continue working to increase their future pensions. Pension entitlements are strongly determined by individuals' work biographies. In particular, non-standard or precarious work patterns involving part-time work, unemployment spells, and multiple job changes limit the accumulation of pension benefits (Bennett & Möhring, 2015; Visser et al., 2016). Similarly, we think that differences by social class (Radl, 2014; Visser et al., 2016) and educational levels (Hofäcker, Schröder, Li, & Flynn, 2016) are likely to lower the probability of early retirement because they limit the accumulation of pension entitlements.

Empirical evidence on the role of pension entitlements is scarce, simply because this information is usually lacking in the data. For Switzerland, studies have found contrasting results, some showing no relationship (Balthasar et al., 2003) or even a negative effect (Baldenweg-Bölle, 1998). The inconsistent evidence is most likely due to data limitations. However, related literature on pension take-up has pointed to an important role of pension entitlements. Data from pension institutions in both Switzerland (Bütler et al., 2004) and Germany (Brussig & Stegmann, 2006; Radl, 2007) show a positive relationship between entitlements and early pension take-up. For pension entitlements, we formulate the following hypothesis:

H3. The higher a person's pension entitlements, the more likely their early retirement.

The linked-lives perspective also relates to financial resources (Henkens, 1999). Like net worth, capital income, and retirement pensions, a partner's income contributes to overall post-retirement household income. Drobnič (2002) has demonstrated that a high share of an individual's contribution to a household's labour income reduces the likelihood of early retirement. Similarly, we expect that high income of a partner helps to make early retirement affordable and therefore more likely.

H4. Among partnered individuals, the likelihood of early retirement increases with a partner's financial resources.

3. Institutional setting

The hypotheses on financial resources presented here should hold in different countries. At the same time, cultural and institutional contexts

Table 1
Pensions by pension scheme in Germany and Switzerland (retired at the age of 65 or older) in 2015.

Pension scheme	Mean gross pension [a]	Share of recipients [b]	Share in aggregate pension
Germany	EUR/month	(in %)	(in %)
Statutory	960	90	74
Civil servants	2,873	6	14
Liberal professions	2,270	1	2
Farmers	410	3	1
Occupational (private sector)	511	15	6
Occupational (public sector (VBL))	291	11	3
Switzerland	CHF / month		
Statutory	1,883	99	n.a.
Occupational	2,577	49	n.a.

Note: [a] Without survivors' pensions. [b] Relative to all retired individuals 65 years old or older (in Germany) or above the statutory retirement age (Switzerland). Shares add up to more than 100 % because individuals may receive multiple pensions.
Source: BMAS (2016: p.79), own calculations from FSO-SILC 2015.

play an important role. For instance, Germany used to be considered to have what is termed an early-exit culture for retirement (Hult & Edlund, 2008) with frequent involuntary retirement (Radl, 2014). Pension systems constitute a context for individual decisions that may moderate the impact of individual factors and shape norms of aging (). In particular, social norms regarding retirement age show a close relationship with the effective age of retirement (Radl, 2014). However, this context cannot be captured simply by common country-level indicators for a pension system: empirical studies have failed to explain differences between countries with income replacement rates, private pension entitlements or anticipated post-retirement comfort (Moreira et al., 2018; Radl, 2014; Taylor & Shore, 1995; but see Henkens, 1999 for positive effect of replacement rates). To be able to interpret the empirical models in Switzerland and Germany, we shortly describe the institutional frameworks and early retirement in these countries.

In both countries, the pension system has three pillars with statutory pension insurance, occupational pension schemes and private voluntary insurance plans. Table 1 gives an overview of the different pension types and levels in 2015.[1]

The first pillar in Germany is segmented across occupations with employees, civil servants, farmers and people in liberal professions having different pension schemes. Covering 90 percent of the retired population, the statutory pension insurance is by far the most important scheme. Following the equivalence principle, there is a close relationship between the sum of earnings subject to compulsory insurance up to a cap and pensions after retirement. On average, the gross monthly pension amounts to EUR 960. The first pillar pensions of civil servants (6 % of the retired) and people in liberal professions (1 % of the retired) are substantially higher, but these groups do not have a second pillar.

Second-pillar pensions in Germany are voluntary for companies and covered about 57 percent of all employees in 2015 (Bundesministerium für Arbeit und Soziales (BMAS), 2016). The average values of occupational pensions are substantially lower than in the first pillar and amount to about EUR 510 in the private sector and EUR 290 in the public sector. This difference is partly driven by a higher share of female earners in the public sector, who have lower average wages than men do.

In 2012 (reference year of the data analysis), the statutory retirement age in Germany, was 65 years and one month. First-pillar pensions can be claimed beginning at the age of 63, but the pension is reduced by 3.6 percent for each year pensioners fall short of the statutory retirement age.[2] The share of early take-up of statutory pensions amounts to 23 percent (30 % in East Germany, 21 % in West Germany, Deutsche Rentenversicherung Bund (DRV), 2019). Receipt of an occupational or private pension is usually bound to the receipt of a statutory pension.

The first pillar in the Swiss pension system (*old age and survivors' insurance*, OASI) is compulsory for everyone living or working in Switzerland, and almost all retirees in Switzerland enjoy pensions from the OASI.[3] The mean monthly pension of the OASI amount to CHF 1,883 (Table 1). The first pillar in Switzerland is highly redistributive and has higher average pensions compared to Germany, because contributions on earnings apply without a cap (see Kuhn, 2020 for details).

In Switzerland, second pillar pension schemes have, since 1985, been compulsory for employees who earn more than a specified minimum wage (CHF 21,330 in 2019). In 2004, 81.2 percent of the total workforce were covered by this scheme (Bütler, 2009). With a mean pension of CHF 2,577 per month and half of the older population receiving an occupational pension, the second pillar has much greater relevance in Switzerland than in Germany. Moreover, it needs to be considered that annuities underestimate the relevance of the second pillar in Switzerland, because it is possible to withdraw funds. At retirement, individuals can choose between a lump-sum withdrawal of savings or annuities. In addition, a lump sum can be claimed before retirement if contributors leave Switzerland permanently, become self-employed, or purchase a primary residence. All the lump-sum withdrawals from the pension scheme, are then included in net worth rather than in incomes. Among the new recipients of an old-age benefit from the occupational pension scheme in 2017, 50 percent chose annuities, 32 percent capital, and 19 percent a combination of capital and a yearly pension (Swiss Federal Statistical Office, 2019).

The statutory retirement age in Switzerland is 65 years for men and 64 years for women. OASI can be claimed up to three years early, and the reduction of the pension level is 6.8 percent per year, which is higher than in Germany. This is reflected in a share of only 9 percent of early pension take-up (Swiss Federal Statistical Office, 2019) compared to 23 percent in Germany. Most occupational pension schemes in Switzerland allow pension benefits beginning at 58 or 60 years of age. Early take-up of occupational pensions is rather frequent, as 47 percent of pensions and 44 percent of lump-sum withdrawals for old-age are claimed before the statutory retirement age (Swiss Federal Statistical Office, 2019).

Both Germany and Switzerland give incentives for voluntary contributions to private pension schemes. Between Germany and Switzerland, pensions in Switzerland are more widely distributed and have a higher average value. This holds in particular for occupational pensions, but also for statutory pensions, which are strongly redistributive in Switzerland, because contributions on earnings apply without a cap (see Author for details). Moreover, the Swiss system offers more flexibility, especially for people who can afford early retirement, through the possibility of a lump-sum withdrawal and a freer choice of the timing of pension take-up. We derive the following hypothesis:

H5. Pension entitlements are more important for early retirement in Switzerland than in Germany.

4. Methods and data

4.1. Data and sample

For the analysis, we used individual data that include pre-retirement earnings, net worth, and pension entitlements. The German data come from the Socio-Economic Panel (SOEP) study, which has been conducted annually since 1984 (see Goebel et al., 2018). The SOEP is based on random samples and is mainly carried out by face-to-face interviews. Refreshment samples have been added on a regular basis.[4] We used the 2012/2013 wave, which collected information on income, private wealth, and for the first time pension entitlements from the first and second pillar accrued by respondents up to 2012. However, pension entitlements for civil servants had to be simulated.[5] The employment income before retirement was retrieved from earlier panel waves. The survey occurred in a period when the effective retirement age was rising. In 2012, it amounted to 62.1 years for men and 61.7 years for women (OECD, 2020).

For Switzerland, we used data from the 2015 SILC survey, which

[1] We do not report replacement rates as published by the OECD here, as they are restricted to mandatory pensions.

[2] If someone has paid pension insurance contributions for 45 years, they can retire early without any deductions.

[3] The estimates from the SILC data are close to data from the social insurance statistics, where mean pensions amount to CHF 1,857 per month.

[4] Response rates in the first wave vary across samples from 70 percent for East Germans 1990 over 60 percent for West German sample 1984, to only a third for the migrant sample 2013. As in almost all household panel studies, there is selective attrition in SOEP (e.g. young adults, or other difficult to contact persons) which has to be controlled for by weighting (see Siegers, Belcheva, & Silbermann, 2020).

[5] Civil servant pensions primarily depend on the overall tenure and average salaries in the last position held for at least two years. For each year of full-time service, a civil servant collects 0.0179375 replacement points. Entitlements for liberal professions were ignored, firstly, due to the high heterogeneity of that scheme, and secondly, due to the very low incidence in Germany.

includes information on current income and net worth. The survey was conducted by the Swiss Federal Statistical Office and based on a random sample of the population registry (see Swiss Federal Statistical Office, 2017 for details). Data was collected mostly by telephone interviews.[6] Administrative records were linked to obtain information on pre-retirement income and pension entitlements, and the matching rates amounted to 99.7 percent.[7] Most importantly, we relied on the income registry of the federal administration, which has records of working income dating as far back as 1981. Because we exploited the same registry that is used to determine social security pensions, the data quality of this simulation is very high. In addition, dates of marriage and birth years of children that served to estimate pension entitlements, were taken from population registries. Details on the data linkage and simulation of pension entitlements are described in Kuhn, (2020). Since 2000, effective retirement age in terms of withdrawal from the labour market has fluctuated between 65 and 66 years for men and increased from 63 to 65 years for women in 2018.

For the analysis, we selected individuals aged between 55 and the regular retirement age. In Switzerland, these include women aged 55–63 and men aged 55–64, and in Germany, men and women aged 55−64. We compare early retirees with non-retired individuals who could potentially have gone into early retirement (see, e.g., Dorn & Sousa-Poza, 2005). Moreover, employment income before retirement is only informative if individuals have been economically active. In Germany, we exclude those who are receiving a pension because of a reduction in earning capacity due to severe health problems, as well as individuals who declared themselves homemakers or "other" over the prior 12 months. In Switzerland, we selected individuals who had at least an annual working income of CHF 8,046 in the preceding seven years (2008–2014).[8] The proportion of inactive individuals, who we excluded from the analysis, amount to 14 percent in Germany and 11 percent in Switzerland and consisted mostly of women.

4.2. Variables and method

The dependent variable distinguishes retired and non-retired individuals on the basis of self-reported status. In Switzerland, people were considered retired if they named retirement as their main labour force status when being interviewed. In Germany, individuals were considered retired if they declared themselves as retired in all months of the calendar year preceding the interview.[9] In the Swiss sample (n = 1,786), 201 persons (11.3 %) declared that they were retired in 2015. In the German sample (n = 2,037), 181 persons (8.9 %) declared that they were retired in 2012.

This retirement measure follows the view of Dorn and Sousa-Poza (2005) that early retirement is an intrinsically subjective concept. It considers that retirement is a process (even if measurement is binary) and allows us to capture the diverse institutional paths to retirement. Subjective retirement does not necessarily coincide with pension receipt or exit from work. This can be illustrated with income sources of early retired people in Switzerland, where we dispose of detailed registry information for working income, unemployment benefits, and social security pensions. Among the early retirement group in Switzerland, 42 percent received an income from employment or self-employment (88 % of non-retired), 2 percent received unemployment benefits (4 % of non-retired), 10 percent received disability benefits (4 % of non-retired), 67 % received an occupational old-age pension (3 % of non-retired) and 11 percent received a statutory old-age pension (0.3 % of non-retired).

For a valid comparison of the income of retired and non-retired individuals, we require that the person had employment income before retirement. To take account of gradual withdrawals from the labour market, we use the highest real annual working income in the last seven years. For the regression analysis, we recode income into quintiles to capture non-linear effects and to deal with outliers and skewed distributions.

To measure wealth, we distinguished housing and non-housing wealth. In Switzerland, financial wealth includes bank accounts, private savings for retirement (third-pillar account), stocks and bonds and valuable belongings, but lacks information on private loans and owned businesses. In the German SOEP, financial wealth includes financial assets, building loan contracts, private insurance policies, tangibles, business assets, and debts in form of consumer debt. As for income, we differentiate among wealth quintiles (computed on the sample analysed). To control for housing wealth, we distinguish between homeowners and renters. We argue that it is more relevant to have an (ideally paid off) property to save housing costs relative to renting than it is to focus on the value of a property itself.[10]

Pension wealth refers to the present value of pension entitlements for statutory pensions and occupational pensions. According to the accrual method, the value of each pension plan based on the individual's work history to date is considered (OECD, 2013). We use predicted monthly pension as an indicator for pension wealth, without any deductions for early retirement. For the retirement decision, the expected monthly pension is more relevant than the abstract present value of the pension stream. For a detailed view on the impact of pension entitlements on early retirement, we look at deciles of pension entitlements.

The derivation of the monthly pension in the German case is relatively easy, given that respondents were asked to report the exact information from the public or occupational pension provider's obligatory annual statement to the insured. The statement includes such information as the current value of accumulated pension entitlements (for details about the derivation of pension entitlements see Bönke, Grabka, Schröder, Wolff, & Zyska, 2019).[11]

The estimation of pension entitlements in Switzerland is based on registry information and is relatively complex. For the first pillar, monthly pensions were simulated taking account of average earnings, number of contribution years, childcare credits and income splitting during marriage. For occupational pensions, contributions were estimated at the basis of the earnings history (see Kuhn, 2020). The accumulated capital has been converted to yearly pensions assuming a conversion rate of 5.5 percent.

Due to data availability, we concentrate on pension entitlements for partners' financial resources. Partners' wealth is not included, because wealth is measured at the household level in Switzerland. Partners' labour income is not included because this would considerably reduce the already limited sample size in Germany due to non-response. For individuals who do not live with a partner, the partner's pension entitlements were set to zero (the presence of a partner is controlled for). In addition, a control variable for missing information from the partner due to partial unit non-response was included in Germany. Thanks to the use

[6] SILC is a rotative panel over four years with yearly interviews. The 2015 data include the samples from 2012 (household response rates for the first wave was 76%, 2013 (response rate 75%), 2014 (response rate 73.%) and 2015 (no quality report available).

[7] Reasons for this high rate are the availability of the social security number within the sampling frame and no requirement of additional consent to data linkage from survey respondents. The linkage and data analysis were conducted in a secure environment on the basis of a project-specific contract.

[8] A yearly income of CHF 8,064 per year amounts to a 20 percent employment position and low wage (CHF 20/hour).

[9] Income and (pension) wealth measures in the SOEP refer to the year 2012, so we use the activity status during the same reference period.

[10] All missing values were imputed in both surveys.

[11] Item non-response on the actual level of the entitlement was only 0.3 percent among those with an entitlement and were multiply imputed. It has been shown by Bönke et al. (2019) that the distribution of pension entitlements stated by the respondents coincides well with figures from the statutory pension scheme.

Table 2
Overview of the sample (mean values).

	DE	CH
Early retirement	9 %	11 %
Women	47 %	46 %
Civil status: Married	78 %	68 %
Civil status: Divorced or separated	13 %	18 %
Civil status: Single or widowed	10 %	14 %
Migration status	8%	20 %
Dependent children in household	13 %	12 %
Does not live with a partner	21 %	26 %
Partner not retired	75 %	63 %
Partner retired	4 %	12 %
Education: Lower than upper secondary	6 %	9 %
Education: Upper secondary	56 %	52 %
Education: Tertiary	38 %	39 %
Poor health	3 %	4 %
Age	59.2 years	59 years
Age of partner	58.8 years	59.3 years
Self-employed	11 %	14 %
Number of years worked	33.3 years	33.5 years
Public sector	42 %	
Civil servant	12 %	
Non-housing wealth (	123,265 (797,009)	69,670 (203,816)
Housing wealth	176,738 (314,533)	126,825 (238,269)
Homeowner	66 %	65 %
Monthly pre-retirement income[a]	3,975 (6,8567)	4,735 (10,408)
Predicted pensions	1,261 (950)	1,858 (979)
Predicted pensions of the partner	878 (927)	1,159 (1029)

Note: Standard deviation in parenthesis. Financial indicators are expressed in purchase power parity from Eurostat. Source: SOEP, FSO-SILC 2015, version of 7 June 2018 with experimental data on wealth, administrative records.
[a] Mean value over the last seven years.

of registry information, there are no missing data in this respect in Switzerland. To limit the effects of outliers, we applied a logarithmic transformation.[12]

As control variables, we included individual and household characteristics that have been shown to be important for retirement timing in previous research. In addition to basic socio-demographic characteristics such as gender, age, civil status (married, divorced, other) and education (below upper secondary, upper secondary, tertiary), we controlled for migration status, living with a partner, retired partners, age of the partner, health status (bad vs. average and good), self-employment (vs. dependent employment) and previous unemployment (binary variable). In Germany, we added variables indicating employment in the public sector and as a civil servant, as well as an indicator for East Germany.[13]

Table 2 gives an overview of the sample. The average age is 59 years. Men are in a slight majority, because more women are homemakers. Moreover, women in Switzerland have a lower regular retirement age. Most individuals are married (68 % in Switzerland, 78 % in Germany). Divorced individuals, singles, and widows/widowers are slightly more frequent in Switzerland compared to Germany. In line with this, most individuals live with a partner (75 % in Switzerland, 79 % in Germany), and only a few individuals (12 % in Switzerland, 4% in Germany) live with a retired partner. The proportion of individuals who were born in other countries is considerably higher in Switzerland (20 %) than in Germany (8 %). Educational levels are comparable in the two countries, with the majority of individuals having a secondary-level education. The number of years worked is about 33 in both countries. All economic figures in purchasing power parity are higher in Germany, which is due to the oversampling of high-income households and the high price level in Switzerland.

As the dependent variable, we compared retired and non-retired individuals. Because pension entitlements were measured only in one year, we cannot apply a longitudinal model, but estimated logistic regression models separately for Germany and Switzerland. To interpret the results, we computed predicted probabilities.[14]

5. Results

For the multivariate analysis, we used a stepwise approach. In the first model, we included only labour income as a standard measure for financial resources. In the second model, we added asset information. In the third model, we added pension wealth. The stepwise approach enables us to estimate the bias if some financial variables are omitted. Average marginal effects[15] of all three models are shown in Table 3. Predicted probabilities for financial resources are presented in Fig. 2 for the first and the third model.

We first discuss the role of employment income. In the model that includes only employment income as a financial measure (M1), we find contrasting results in Germany and Switzerland. In Switzerland, early retirement is most frequent among high earners. The predicted probability to retire early amounts to 7 percent for the lowest quintile and 13 percent for the highest quintile. In Germany, low earners are most likely to retire early. The probability of early retirement amounts to 15 percent for the first quintile and to 6 percent for the fifth quintile. In both countries, the influence of income on early retirement is high, but points in opposite directions. This is in line with previous research on the two countries when only employment income is considered (Baldenweg-Bölle, 1998; Balthasar et al., 2003; Dorn & Sousa-Poza, 2005; Schils, 2008).[16]

The divergent findings regarding employment income in the two countries disappear in the full model (M3). The effect of employment income in Switzerland changes direction once pension wealth is controlled for. In line with Hypothesis 1, high earning individuals are least likely to retire early in both countries. The difference between the highest and lowest quintiles is 13 percentage points in Germany and 9 percentage points in Switzerland. However, only the highest income quintile stands out in Switzerland. The differences between the lower four quintiles are small and not significant ($p > .05$). The stepwise approach illustrates that high-earning individuals in Switzerland are more likely to retire *because* they have high pension entitlements and not because of their high employment income before retirement. High-income individuals might keep working because of the high opportunity costs of retirement that are related to common seniority wage agreements (Schils, 2008).

The country differences remain when we add private wealth into the statistical model. While the probability to retire is 3 percentage points higher for homeowners in Germany than for renters, housing wealth

[12] Alternative model specifications have been tested but yield the same results. We tested quintiles of partners' pension entitlements and removed the retired partner and net wealth from the analysis because these variables might be correlated with partners' pension entitlements.

[13] Our population of interest may in principle be biased in cases where early retirees moved abroad or spent at least part of the year living in another country. Weighting factors in the two surveys do not adjust for this phenomenon. The remaining population in our sample thus may encompass only a subset of all early retirees. However, there is no official information available on how many early retirees live abroad.

[14] The reported analysis did not use survey weights, but we assured that findings are unaffected when weights are applied.

[15] Marginal effects show how the probability of early retirement changes when the independent variables changes.

[16] It needs to be pointed out, that depending on who is considered as permanently out of the labor force (e.g. homekeepers at the moment of the interview), the findings for some income quintiles are not robust due to the limited sample size in Switzerland. However, the effect is always significantly positive if income is included as a linear term into the equation irrespectively of changes in the sample composition. Moreover, results for models 2 and 3 in Switzerland are robust to all alternative specifications of early retirement.

Table 3
Marginal effects for probability of early retirement in Germany and Switzerland.

	DE: M1		DE: M2		DE: M3		CH: M1		CH: M2		CH: M3	
Employment Income: 1st quintile (ref.)												
2nd quintile	−0.056*	(-2.4)	−0.055*	(-2.3)	−0.076**	(-2.9)	0.059*	(2.4)	0.062*	(2.6)	0.040	(1.7)
3rd quintile	−0.060*	(-2.4)	−0.060*	(-2.4)	−0.091**	(-3.1)	0.048	(1.9)	0.051*	(2.0)	−0.008	(-0.3)
4th quintile	−0.086***	(-3.5)	−0.087***	(-3.6)	−0.122***	(-4.4)	0.053*	(2.0)	0.051	(1.9)	−0.036	(-1.2)
5th quintile	−0.093***	(-3.7)	−0.094***	(-3.7)	−0.131***	(-4.6)	0.069*	(2.4)	0.060*	(2.1)	−0.092**	(-2.8)
Housing wealth: Owner			0.029*	(2.1)	0.030*	(2.1)			−0.002	(-0.1)	−0.0001	(-0.0)
Other wealth: 1st quintile (ref.)												
2nd quintile			0.020	(1.1)	0.014	(0.7)			0.048	(1.9)	0.038	(1.6)
3rd quintile			0.014	(0.7)	0.013	(0.7)			0.039	(1.6)	0.026	(1.2)
4th quintile			0.013	(0.7)	0.009	(0.4)			0.058*	(2.4)	0.034	(1.5)
5th quintile			0.013	(0.6)	0.011	(0.5)			0.073**	(3.0)	0.042*	(2.0)
Pension wealth: 1st decile (ref)												
2nd decile					0.029	(1.6)					−0.021	(-0.5)
3rd decile					0.030	(1.5)					0.021	(0.6)
4th decile					0.045*	(2.2)					−0.005	(-0.1)
5th decile					0.039	(1.9)					0.033	(0.9)
6th decile					0.059**	(2.6)					0.044	(1.1)
7th decile					0.079***	(3.4)					0.068	(1.8)
8th decile					0.083**	(3.2)					0.092*	(2.4)
9th decile					0.105***	(4.1)					0.125***	(3.3)
10th decile					0.092**	(3.3)					0.240***	(6.5)
Partner's pension entitlements					0.005	(0.8)					0.023	(1.5)
Women (ref: men)	−0.017	(-1.2)	−0.018	(-1.3)	−0.007	(-0.5)	−0.020	(-1.3)	−0.027	(-1.6)	−0.023	(-1.5)
Age	0.036***	(11.9)	0.036***	(11.9)	0.035***	(11.9)	0.041***	(13.3)	0.041***	(13.2)	0.033***	(11.0)
Divorced (vs. single or widowed)	−0.041	(-1.0)	−0.045	(-1.1)	−0.047	(-1.2)	−0.069***	(-3.1)	−0.062**	(-2.8)	−0.031	(-1.5)
Married (vs. single or widowed)	−0.033	(-1.0)	−0.031	(-1.0)	−0.034	(-1.1)	−0.056*	(-2.3)	−0.052*	(-2.2)	−0.016	(-0.7)
Living with a partner	−0.111	(-0.8)	−0.108	(-0.8)	−0.174	(-1.1)	0.031	(0.3)	−0.020	(-0.2)	−0.195	(-1.2)
Age of the partner	0.002	(1.2)	0.002	(1.1)	0.002	(1.2)	0.000	(0.3)	0.000	(0.2)	0.000	(0.2)
Partner retired	0.059*	(2.1)	0.056*	(2.0)	0.053*	(2.0)	0.065***	(3.4)	0.063***	(3.3)	0.063***	(3.5)
Dependent children (ref. none)	−0.001	(-0.1)	−0.001	(-0.0)	0.005	(0.2)	−0.047	(-1.4)	−0.039	(-1.2)	−0.045	(-1.5)
Migrant (ref. born in Germany)	−0.043*	(-2.5)	−0.038*	(-2.1)	−0.032	(-1.7)	−0.061**	(-3.0)	−0.052**	(-2.5)	−0.026	(-1.3)
Poor health	0.078*	(2.0)	0.083*	(2.1)	0.089*	(2.3)	0.094***	(3.4)	0.094***	(3.3)	0.090***	(3.5)
Education: Upper Secondary (ref. low)	−0.003	(-0.1)	−0.005	(-0.2)	−0.008	(-0.3)	−0.006	(-0.2)	−0.016	(-0.6)	−0.018	(-0.8)
Education: Tertiary (ref. low)	0.000	(0.0)	−0.002	(-0.1)	−0.009	(-0.3)	−0.019	(-0.7)	−0.033	(-1.3)	−0.042	(-1.7)
Self-employed	−0.020	(-1.1)	−0.021	(-1.1)	0.001	(0.1)	−0.135***	(-4.6)	−0.135***	(-4.7)	−0.070***	(-2.6)
Past unemployment spells	−0.005	(-1.9)	−0.004	(-1.4)	−0.003	(-1.1)	−0.004	(-0.9)	−0.003*	(-0.6)	0.002	(0.6)
Pseudo R2	0.255		0.259		0.277		0.300		0.309		0.393	

Notes: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$; $n = 2037$, t-values in parentheses. Source: SOEP, also controlling for civil servant or public sector employees, and region (East and West Germany). FSO-SILC 2015, version of 7 June 2018 with experimental data on wealth, administrative records., administrative records.

does not influence retirement decisions in Switzerland.[17] Therefore, Hypothesis 2a is supported only in Germany, but it should be considered that the effect is rather small. Possible explanations for the absent correlation in Switzerland are the requirement to pay off mortgages to a certain extent until retirement and the fact that many home-owners have used occupational pension wealth to finance their property. In contrast, non-property wealth plays a significant role for early retirement in Switzerland, while there is no significant effect in Germany. In Switzerland, the probability to retire early is 7 percent in the lowest wealth quintile compared to 14 percent in the highest quintile. Therefore, we have only partial support for Hypothesis 2b, stating that non-property wealth influences the retirement decision. The possibility to withdraw second pillar wealth as capital and high average wealth levels might play a role for this effect in Switzerland, which would emphasize the relevance of different early retirement rules across countries.

In line with Hypothesis 3, pension wealth is highly relevant for early retirement in both countries. In Switzerland, 40 percent of individuals in the highest pension wealth decile are estimated to retire early, while less than 7 percent (predicted probability) of individuals in the lower half of the distribution are expected to do so. The difference is somewhat weaker in Germany. The probability to retire early is 13 percent in the highest decile of pension wealth and less than 7 percent in the first three deciles. Low-income-earners in Germany prefer to retire early, but they expect to work longer to achieve a reasonably high pension (Hess, 2018). This is not only because of unemployment spells in working histories, but also due to lower access to occupational and private pension insurance policies (Grabka et al., 2018).

In contrast to personal pension wealth, partners' pension entitlements do not seem to influence early retirement. Therefore, our findings do not support Hypothesis 4. In Switzerland, a partner's pension wealth might be included in non-property wealth if the partner has chosen a lump-sum withdrawal. In Germany, this result is in line with findings for non-property wealth.

The results support Hypothesis 5, which expected a stronger influence of pension wealth in Switzerland. This reflects the higher relevance of occupational pensions and higher flexibility in choosing pension take-up in Switzerland.

To see the relevance of financial variables in comparison to other

[17] Other operationalisations of housing wealth (quintiles, IHS transformation) yield non-significant effects. This confirms that it is home ownership in itself that is relevant rather than the value of the property.

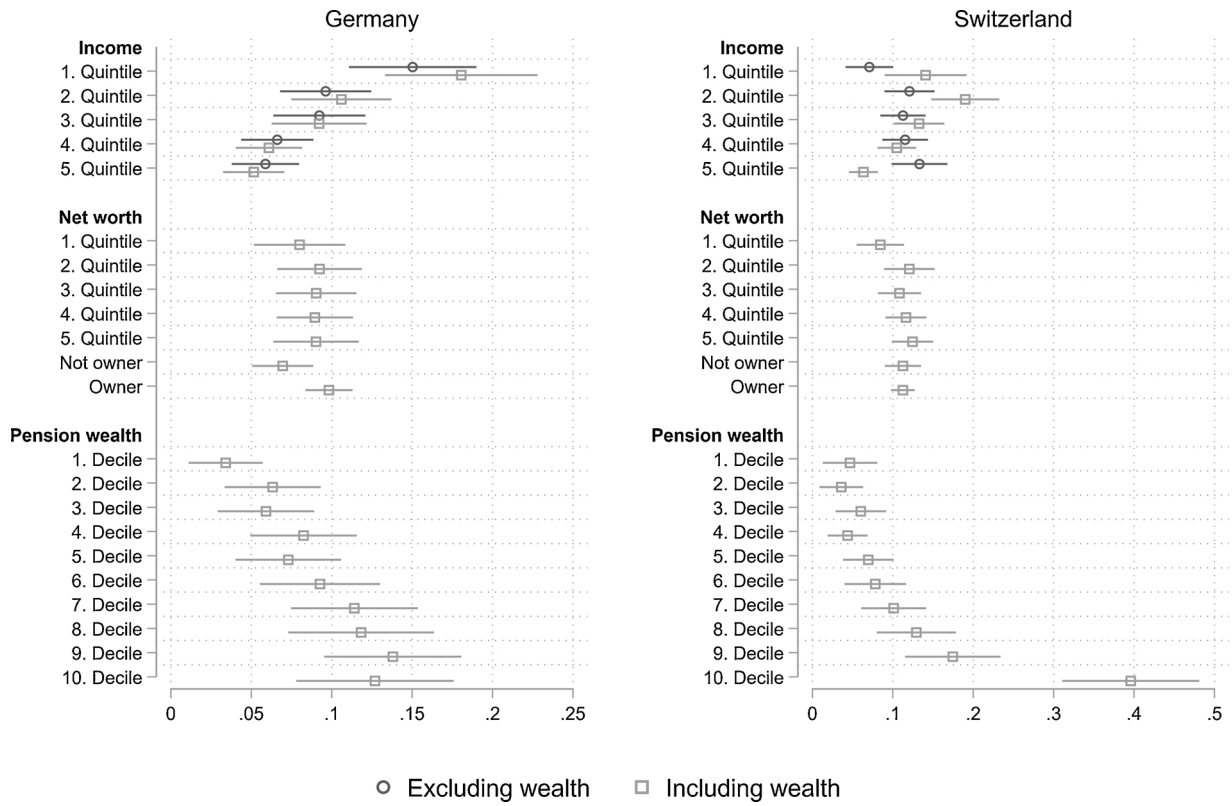

Fig. 2. Predicted probabilities for early retirement by financial resources.

main predictors of early retirement and to gain a broader perspective, we briefly discuss the effect of socio-demographic variables, which are mostly in line with previous studies.

The closer a person is to official retirement age, the higher their probability of retiring early. In Switzerland, a 60-year-old's probability of retiring early is 17 percentage points higher than that of a 55-year-old (in the full model). In Germany, this difference amounts to 18 percentage points. Individuals in poor health are 9 percentage points more likely to retire early in Switzerland and 9 percentage points more likely to retire early in Germany than individuals in better health. A retired partner increases the probability by 6 percentage points in Switzerland and 5 percentage points in Germany, where the coefficient is not significant in the full model.

Surprisingly, divorce has little impact on early retirement. In both countries, the effect is not significant in the full model. However, divorce lowers the likelihood of early retirement significantly in Models 1 and 2 in Switzerland. Therefore, the lower probability of divorced individuals to retire early can be explained by their lower pension wealth, as pension entitlements accumulated during marriage are evenly split after a divorce. Similarly, married individuals in Switzerland have a lower probability to retire early than single individuals in Models 1 and 2, but the effect disappears when pension entitlements are considered. Married couples tend to have lower pension entitlements than unmarried couples or singles, because they are more likely to have adhered to a single-breadwinner model, where women accumulate lower pension entitlements.

Many other variables do not seem to impact early retirement significantly. There is no significant gender difference in either of these two countries. East Germans have a similar probability of retiring early to West Germans irrespective of the model specification. Surprisingly, educational levels and dependent children do not have an influence on early retirement in any of the models analysed. In contrast, migrants seem to retire early less frequently in the first two models. In Germany, the difference between migrants and natives is 4 percentage points, in Switzerland 3 percentage points. However, the difference between migrants and natives can be explained largely by the lower pension entitlements of migrants, as the effect is no longer significant in the full model.

Among the work-related variables, only self-employment in Switzerland seems relevant. Self-employed people are 6 percentage points less likely to retire early in the full model than employed individuals, probably because they can adjust their working hours more flexibly and chose the timing of retirement freely. At the same time, they might have lower pension entitlements, as there is no mandatory occupational pension. Indeed, the effect of self-employment is even stronger (9 percentage points' difference from the employed) in the restricted models. Past unemployment spells, and work in the public sector or as a civil servant had no significant impact on retirement.

6. Conclusions

In this paper, we presented the correlates for early retirement in Switzerland and Germany. In contrast to previous studies, we distinguished among three dimensions of financial resources: last labour income before retirement, private wealth, and pension entitlements. Our results show that all three financial resources contribute to early retirement and that the direction of the effect is consistent in the two countries. We find that a high labour income reduces the probability of early retirement, which points to a positive substitution effect. In contrast, high pension entitlements are associated with a higher probability of early retirement, which denotes an income effect. While the substitution effect applies to pre-retirement employment income, the income effect applies to post-retirement income (and partly also to wealth). We think that the inconclusive results in previous research can be attributed to the omission of some of these financial variables and that future research should pay attention to the different forms of financial resources.

Our study underscores the extent to which financial resources

constrain voluntary early retirement, as this option is not available for everyone. This is in line with the life course literature that criticises the view of retirement timing as an individual decision and points to the limits to individual agency (Gettings & Anderson, 2018).

Retirement entitlements have been revealed as the strongest predictor for early retirement. As these entitlements reflect the work biography, they are in line with previous research by Bennett and Möhring (2015); Visser et al. (2016) and Raymo et al. (2011) that demonstrated the importance of unemployment spells, precarious jobs, social class and labour force participation in explaining timing of the transition into retirement. We also assessed the partner's pension entitlements, but did not find an effect on early retirement. However, having a retired partner has been revealed as an important reason for early retirement, which is in line with the perspective of linked lives.

Despite the overall consistent effect, the influence of wealth (both pension wealth and private wealth) on early retirement is much stronger in Switzerland than in Germany. These observed differences should also be interpreted against the backdrop of differing pension rules. Switzerland offers high flexibility in the use of pension wealth from the second pillar: Entitlements can be withdrawn as a lump sum and claimed starting at a relatively early age. In Germany, occupational pensions are of lower relevance, cannot be converted into a lump sum, and can only be claimed as of age 63, together with a statutory pension. Besides the mandatory character of the occupational pensions in Switzerland, these factors may explain the strong association between early retirement and pension wealth in the Swiss case. The possibility of lump-sum pay-outs and high average wealth levels could explain why higher non-property wealth is associated with a higher probability of early retirement in Switzerland. Many individuals can afford to retire early and enjoy a high material living standard at the same time. High wealth can bridge the period between withdrawal from work and the start of social security pension benefit payments. In Germany, there may be a smaller number of individuals who can afford to retire early in a comfortable financial situation. Early retirement in Switzerland is a privilege of the rich that is even encouraged politically through tax incentives.

This study comes with some caveats. The consideration of pension entitlements implied a cross-sectional data analysis, which means an information loss for time-varying variables, and possible bias from omitted variables. In particular, we lack information on age-norms and job-specific characteristics. With our data and approach, we are better able to explain voluntary retirement than involuntary retirement. For future research, it would be interesting to link a broader perspective of the life course to pension entitlements and retirement timing. Moreover, these analyses refer to specific contexts in terms of the countries and points in time considered. In the perspective of the changing nature of retirement and pension reforms (see e.g. Brussig, Knuth, & Mümken, 2016), it would be important to establish the role of financial resources in other contexts. The baby boomer cohorts in the two countries will enter retirement in near future, which will lead to shortages of highly qualified workers in the labour force. Welfare states will respond by shifting further from "pro-retirement" to "pro-work" policies (McNamara et al., 2012). Early retirement will become more difficult for future cohorts. The official retirement age has been and will most likely continue to be postponed further. Due to low interest rates, accumulating wealth either in occupational or private pension schemes or in the form of private savings will become more difficult, as well. It appears that early retirement is becoming more and more a privilege of the rich. For all others, in particular for those in poor health, the risk of old-age poverty will most likely increase.

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