Migration, family history and pension: the second release of the SHARE Job Episodes Panel

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Abstract

Data about working life histories collected in the third wave of the SHARE survey, called SHARELIFE, were organized into a retrospective panel as described in Brugiavini, Cavapozzi, Pasini, Trevisan (2013). We now enrich such a publicly available dataset adding information on migration histories, fertility histories and marriage/cohabitation histories. Based on this information, we are able to link individual data to institutional features of pensions systems SHARE respondents were exposed to in each year of their working life. We add to the retrospective panel nine variables accounting for statutory retirement age, early retirement age and benefit reduction, contribution rate by the employer and the employee during working life, minimum and maximum pension benefit entitlements.

Keywords: panel data, retrospective interview, dataset management
JEL Classification: C81, C83

1. Introduction

SHARELIFE is the third wave of SHARE (Survey of Health, Ageing and Retirement in Europe) and provides life-history information about a representative sample of about 27,000 respondents aged 50 or over and living in Europe. The domains of interest include family relationships, housing, working history, health and health care. SHARELIFE is released as an individual-level dataset organizing sequences of life events in a flat file format (Stuck, Zuber, Korbmacher, Hunkler, Kneip and Schröder, 2010).

SHARELIFE information about working life histories is now available also as a retrospective panel, where each respondent contributes as many observations as there are years of age from birth to the age at which they are observed at the moment of the interview, as described in Brugiavini, Cavapozzi, Pasini and Trevisan (2013).

Working life of European households are intimately link to changes in household composition and migration histories. Moreover, individual pension entitlements depend on working history as well as on family composition and country of residence. Besides individual choices, well being at retirement depend on the pension system household were exposed to throughout their working lives. Each European country differ in terms of pension legislation and went through several important reforms in the last 30 years. Details about legislation and legislation histories are available from national sources, EU databases like the Mutual Information System on Social Protection, OECD and other international organizations. Yet, they are rarely operationalized into cross-country comparable variables ready to use in an analytic exercise.

In order to fill this gap and provide to the scientific community a new instrument for the analysis of well-being in old age, we update the retrospective panel based on SHARELIFE. We add variables accounting for changes along time in country of residence, family composition, and a set of nine variables describing pension entitlements at each point in time, accounting for individual heterogeneity deriving from working and family histories. This paper describes the details about the construction of family history and pension entitlement variables now included in the publicly released retrospective panel.

2. New demographic variables

The first step was to enrich the retrospective panel with a number of demographic variables, which draw from information available in SHARELIFE. Table 1 reports the list of new demographic variables added to the dataset.

Tab. 1: New demographic variables in the retrospective panel

Variables	Description	Questionnaire variables
country_res	Country of residence in a given year	Wave 3: sl_ac006, sl_ac007, sl_ac013, sl_ac014c, sl_015c, sl_ac021. Waves 1, 2: dn009
nchildren_nat	Number of natural children alive in a given year	sl_rc023 sl_rc024_* sl_rc027_* sl_rc028_*
nchildren	Number of children alive (including adopted children) in a given year	sl_rc023 sl_rc024_* sl_rc027_* sl_rc028_* sl_rc038_ sl_rc039_ sl_rc041* sl_rc043* sl_rc044* sl_rc045*
age_youngest_nat	Age of the youngest natural child alive in a given year	sl_rc023 sl_rc024_* sl_rc027_* sl_rc028_*
age_youngest	Age of the youngest child alive, including adopted children, in a given year	sl_rc023 sl_rc024_* sl_rc027_* sl_rc028_* sl_rc038_ sl_rc039_ sl_rc041* sl_rc043* sl_rc044* sl_rc045*
withpartner	Dummy, takes value 1 if Resp is cohabiting with a partner	sl_rp003 sl_rp004b_* sl_rp011_* sl_rp012_*
married	Dummy, takes value 1 if Resp is married	sl_rp008_* sl_rp014_*

Note: an asterisk on a questionnaire variable name means we used all variables relating to a given questionnaire item.

Country of residence

SHARELIFE respondents are asked to report all the changes in accommodation they had throughout their lives since they established their own household after being living in their parental home. As regards periods living in the same country as the country of residence at the moment of the interview, they are asked to report the region in which the accommodation was placed. Vice versa, if they were living in a different country, they were asked to report the country of residence.

As was done in the first release of the job episode panel regarding the beginning and end of job spells[2], we checked the consistency of the starting and ending date of each residence spell. More specifically, we applied the following corrections:

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[2] See Brugiavini, Cavapozzi, Pasini, Trevisan (2013) for further details.

- **Missing start of the first spell:** to fill the missing information we use the year of birth or the year in which the respondent establish her own household (sl_ac003_) if the end of the spell is subsequent to this date.
- **Missing start of any of the intermediate spell:** We assumed that there is no gap between one residence spell and the other, thus if the start date of an intermediate spell was missing it has been replaced with the ending year of the previous spell.
- **Missing end of any of the intermediate spell:** As for the missing start of any intermediate residence spell, we assume no gap between residence spells and the missing end year has been replaced with the starting year of the following spell.
- **Missing end of last residential spell:** when missing, the ending year of the last residence spell has been replaced with the interview's year.

We recode countries of residence and report them in *country_res*, which takes the following values:

value	label	value	label
3	Czechoslovakia	24	Slowakia
5	Finland	25	Israel
9	Hungary	26	Norway
11	Austria	28	Czech Republic
12	Germany	29	Poland
13	Sweden	30	Ireland
14	Netherlands	31	Luxemburg
15	Spain	33	Portugal
16	Italy	34	Slovenia
17	France	35	Estonia
18	Denmark	37	Croatia
19	Greece	41	United Kingdom
20	Switzerland	98	Other European country
21	Russia	99	Non-European country
22	USA	121	FRG, West Germany
23	Belgium	122	GDR, East Germany

We coded all countries included in any SHARE wave from wave 1 to wave 5 consistently with values of the variable *country*, i.e. the country of residence at the moment of the interview. Respondents during the interview were proposed a showcard including also USA, UK, Finland, Norway and two categories for other countries (divided into other European and non-European countries). *country_res* reports also Czechoslovakia, East and West Germany.

Czechoslovakia is available as a valid answer in the recoded variable of wave 3 public release sl_ac014c. sl_ac014c, compared to sl_ac014, accounts for differences in response items proposed in

different SHARE countries to question AC014, as well as of interviewer remarks recoded after the release of the data. There are 12 records, relative to 4 respondents, which report *country_res* as Czechoslovakia after 1994, which is after the "velvet revolution". 11 of these observations refer to respondents who were living in Czechoslovakia before and after 1993 but living in a different country at the moment of the interview. Region of residence (question AC015) was not asked in this case, therefore it is not possible to identify whether they were living in Czech Republic or in Slovakia from 1994 onwards. The last observation refer to an individual reporting being currently living in Czech Republic but for which the region of residence is missing.

During the interview, respondents were not asked to report whether they were living in East or West Germany, but only in Germany. The distinction between FRG and DGR is based on the reported region of residence and on question DN009, asked in waves 1 and 2[3]. Both questions are asked only to respondents who were living in Germany at the moment of the interview. This implies we are not able to distinguish between East and West Germany for respondents who lived in Germany before 1989 but were living in a different country at the moment of the interview.

Fertility history

SHARELIFE contains information on the date of birth and death of each child of respondents, as well as on the year of adoption for the adopted children. We first checked the consistency of dates of birth, adoption and death. Since in the questionnaire there is not enough information to make reasonable assumptions to fill the missing information, we simply ordered chronologically the children births and correct typos. However, the number of missing in the date of birth of children is very low (less than 1%).

We then used this information to generate four new variables, which vary by year and respondent. These variables are the number of natural children alive in a given year, *nchildren_nat*; the total number of children alive in a given year, including adopted children, *nchildren;* the age of the youngest natural child alive, *age_youngest_nat;* and the age of the youngest child alive, including adopted children, *age_youngest*. *age_youngest_nat* and *age_youngest* are set to missing if respondent does not have any child alive in a given year.

Relationship history

SHARELIFE asks a number of questions about marriages and relationships. As for the fertility

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[3] DN009 question asks "Where have you lived on November 1st 1989, that is before the Berlin wall came down - in the GDR, in the FRG, or elsewhere?

history, we do not have many information to fill the missing value. We then simply order chronologically the spells and correct the typos. Also in this case, the number of missing values is very low.

We use the wedding and divorce years to create a dummy variable (*married*) which takes value 1 if the respondent is married in a given year. Respondent are then asked to report the year in which they started and finished to live with each partner they name, regardless of the marital status. We use this information to build a second dummy variable, which takes value 1 if the respondents is cohabiting with a partner in a given year (withpartner)

3. Contextual variables on pension institutions

Table 2 reports the set of variables describing the pension legislation the respondent faced throughout their lives, which we linked to individual information in the job episodes panel.

Tab. 2: New context variables

Variable	Description	Source
contrib_employee_MISSOC	Pension contribution rate by the employee	MISSOC
contrib_employer_MISSOC	Pension contribution rate by the employer	MISSOC
ret_age_MISSOC	Statutory retirement age	MISSOC
early_age_MISSOC_OECD	Early retirement age	MISSOC, OECD
early_ret_reduction_MISSOC	Early retirement reduction rate	MISSOC
currency_min_pension	Currency of minimum pension	SHARE
currency_max_pension	Currency of maximum pension	SHARE
min_pension_MISSOC	Minimum pension benefits	MISSOC
max_pension_MISSOC	Maximum pension benefits	MISSOC

Producing comparable measures across countries inevitably requires a number of simplifying assumptions. This means the proposed variables are meant to be a useful device to compare the pension systems faced by individuals of different countries in different point in time, and may be useful control in a number of analysis. On the other end, a detailed analysis on the incentives embedded in the pension system specific of each country may require more information than what is available in the proposed dataset.

The first key assumption is that when a pension system is formed out of several blocks (like in France or Denmark) only the main block is considered, while the supplementary schemes are disregarded. Moreover, legislation regarding hazardous, heavy or unhealthy employment is not taken into account.

Institutional information regarding statutory retirement age, early retirement age, employer and employee contribution and minimum and maximum old age pension is collected. From 2004 onwards, the data are consistent with the information provided by the Mutual Information System on Social Protection (MISSOC) website.[4] For countries with several types of pension benefits, the values provided are in accordance with the main or core part of the pension plan, i.e., the one arguably affecting the large majority of the population. For instance, in France pension benefits consist of both a General and a Supplementary scheme: only information belonging to the General scheme is collected.

Observations from the Job Episodes Panel are merged by year and country with relevant contextual variables regarding pension programs. Whenever a variable depends not only on country and year, but also on demographic characteristics (e.g., gender) demographic information from SHARELIFE is used as an additional merging factor. In this way, context variables such as the statutory retirement age and the minimum and maximum benefits valid per country and year are linked to each person-year of the data.

The assumption behind this approach is the following: not being aware of future changes in pension legislation, individuals base their choices on the existing legislation at each moment in time. Nevertheless, a different principle is used when merging information regarding early retirement age for countries where the number of years of contributions to the pension system is relevant in determining such age (Belgium, Germany, Italy, Netherlands, Spain). Early retirement age for respondents from these countries is given as missing until the required number of years of contributions is reached by each respondent. After the threshold is met, the missing value is replaced by the early retirement age allowed for by each country's legislation at that point in time.

Finally, contextual information for individuals residing in East Germany (GDR) is assigned a missing value until the year 1990, when re-unification took place. Thereafter, the contextual variables for all individuals residing in Germany are constructed according to the German legislation in place. Similarly, contextual information for the Czech Republic starts being collected from 1995 onwards. This, coupled with the lack of available institutional data comparable across countries on pension schemes from the post-WWII period until the most recent decades, results in a large number of missing observations (Table 3). Additionally, variables such as early retirement age

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[4]   The MISSOC data are publicly available online at: http://www.missoc.org/.

contain a large proportion of missing information by design (e.g., in some countries, no value is assigned until the required number of years of contributions are completed).

Variable	Total observations	Missing	Percent Missing
contrib_employee	1759175	1028986	58,49
contrib_employer	1759175	1028986	58,49
ret_age	1759175	568824	32,33
early_age	1759175	1186558	67,45
early_ret_reduction	1759175	1418124	80,61
currency_min_pension	1759175	1341395	76,25
currency_max_pension	1759175	1525191	86,7
min_pension	1759175	1342586	76,32
max_pension	1759175	1525191	86,7

Statutory retirement age

Statutory retirement age in a country is the age at which a person is expected or required to cease working and at which she may be entitled to receive pension benefits. In many countries, statutory retirement age is different for males and females, for which information on the gender of each respondent is retrieved from the SHARE dataset and utilized to estimate individual retirement ages.

The base assumption made when constructing this variable is that statutory retirement age in all countries is mainly age-dependent. However, in some countries other conditions may apply (e.g., qualifying minimum periods of contributions, degree of disability, years of military service, etc.). The statutory retirement age provided in the present dataset does not account for such secondary requirements. An exception is the Czech Republic, where the statutory retirement age for females depends on the number of children raised. To account for such requirement, information on the number of natural and adopted children alive at the time of interview is included for the calculation of the retirement age of female respondents from the Czech Republic.

Due to a pension reform, statutory retirement age increased in Greece to 65 for all those men and women who started working on or after 1993. The data allow us to take this into account; the adjusted retirement age also applies to all individuals who report not having worked before 1993.

Early retirement age

Some countries' legislation allows for early retirement as long as certain conditions are met. Early retirement age is thus the minimum permitted age at which a person can start receiving pension benefits before she reaches the statutory retirement age.

When it comes to early retirement age, requirements vary substantially across countries. For instance, early retirement can be obtained with no conditions in Austria and Switzerland, while sufficient years of contributions are required in Belgium, Greece and Italy. This requirement has also been enacted for some periods of time in the legislations of the Netherlands, Germany and Spain. In Poland and the Czech Republic the requirement for early retirement corresponds in turn to a certain amount of years of insurance. On the other hand, early retirement is not considered in the Danish legislation.

Information on the number of years worked per individual respondent was used to estimate the early retirement age in countries where a given number of years of contributions is required. In such cases, it is assumed that the number of years worked is equivalent to the number of years of contributions. However, the number of years of contributions are not taken into account when calculating the early retirement age for countries where the number of years of insurance is the requirement (e.g., Czech Republic, Poland). This results from the complexity of the years-of-insurance calculation: in some countries it may even include certain periods of education, maternity leave and/or sick leave. Consequently, respondents from Czech Republic and Poland might not be eligible for the reported early retirement age since they may fail to satisfy their country's sufficient years of insurance criterion.

 Some remarks are at hand regarding more specific aspects of early retirement age at the individual country level. Since not directly specified in the MISSOC tables, early retirement data for Sweden comes from the OECD "Pensions at a Glance 2013" report. Alongside, early retirement age in the Czech Republic depends on the number of children in the same way as statutory retirement. With regard to Denmark, before 2003 there was a possibility of early retirement via PEW (Post-employment wage program, designed for those doing physically demanding jobs) and/or SDP (social disability pension). Given the arbitrariness required for establishing a threshold to classify physically-demanding jobs and the lack of information on social disability, these possibilities were not considered.

In Italy the possibility of early retirement differs depending on the employment sector (e.g., either private or public), so we use the corresponding variable in SHARE to attach the institutional information to the early retirement age of Italian respondents.

In France the possibility of early retirement depends on the age at which the respondent started to work. Thus, the early retirement age is attached only to those individuals for whom this information

is available (i.e., those reporting having started to work at age 14 if reached early retirement age in 2004-2008 or 16 if reached early retirement age in 2009-2011).

Between 2006 and 2011 female early retirement in Germany was possible under a double condition: having completed at least 15 years of insurance as well as 10 years of contributions after the age of 40. Since, as discussed above, estimating the total number of insurance years is problematic, only the second condition is taken into account and the early retirement age is provided only for those women who reported an employment period of at least 10 years after the age of 40 at the moment they reach the established early retirement age.

Finally, for those insured before the 1992 reform early retirement age in Greece is 60 years for males and 55 for females, as long as they have completed 18 full years of contributions (equivalent to 4,500 working days). The requirement differs for those insured after 1993, for whom early retirement age is set to 60 years irrespective of the gender given a minimum amount of 15 years of contributions.

Early retirement reduction

Early retirement reductions correspond to the amount of pension benefits given up by a respondent who decides to retire at an earlier age than what otherwise established by the legislation of his or her country. In the dataset, these rates are calculated in terms of percentage reductions for each year of anticipation of retirement with respect to the statutory retirement age. The midpoint between the minimum and the maximum reduction rate is reported whenever a range of values was used to describe early retirement reductions in the MISSOC tables (which is the case for Spain and Italy for some periods of time).

When opting to retire early, individuals can receive the full amount of pension benefits (Belgium); reduced pension benefits but only for those years left until the full retirement age is reached (Germany); or pension benefits which are permanently reduced (Czech republic, Sweden). Due to data limitations, such variability is not captured, and the reduction rates provided for all countries are assumed to be of the permanent type.

In Belgium from 2004 to 2008 –as well as in Switzerland from 1997 to 2010– early retirement reductions differ by gender. In Austria starting from 2008, the total reduction cannot exceed a limit of 15%, a limitation that is not reflected in the values as reported in the present dataset.

Reduction rates in the Czech Republic are discontinuous: they are equal to 0.9% for each 90 days of anticipation (with a limit of 720 days) and 1.5% when this limit is surpassed. We take into account only the first number and assume a consequent yearly reduction of 3.6% for each year of anticipation of Czech respondents.

Contribution of employee/employer

Employee and employer contributions are building blocks of most of today's pension systems. A yearly percentage contribution rate was estimated separately for employees and employers by country and incorporated in the dataset. Yet, there are two countries which display an atypical system of contributions and which require further clarification. In the Czech Republic, the figures provided are valid only for regular employees, while for self-employed they are equal to 28% of declared net earnings (total income subtracted by the total expenses) bounded by a ceiling of CZK 14,931 per year. Moreover, and in contrast to all other countries in the dataset, survival and invalidity pensions are comprised in the given contribution rates provided for the Czech Republic. This results in inflated contribution rates; in other words, the reported rates are higher than what they should be were they to include only and exclusively contributions to old age pension benefits. Finally, no information is provided for Denmark, since its pension system is not based on contributions of employers and employees, but entirely financed through general taxation.

Minimum pension benefits

Considerable cross-country variation is observed in the data with regard to the existence and amount of minimum and maximum pension benefits. For instance, minimum pension schemes display diverging eligibility criteria: while minimum pensions are guaranteed whenever sufficiency in years of contributions is attained in Belgium (corresponding to two thirds of the amount of years required for the full pension), in Denmark three years of residency suffice to be eligible for a minimum pension. In Italy, the minimum pension applies only to people insured before 1/01/1996.

Marital status is an important element in the estimation of minimum pensions in some European countries. In particular, in Austria, Belgium and Spain –and, since 2008, also Sweden– minimum pension benefits differ depending on whether the individual is single or married. Until 2008, having a dependent spouse resulted in a higher level of minimum pension benefits in Spain. In the Netherlands, however, the defining criteria is not marriage but cohabitation.[5] Whenever relevant, marriage and cohabitation requirements are incorporated when calculating minimum pension benefits in the different countries. Nevertheless, spouses are considered to be independent; thus, until 2008 equal amounts of minimum pensions for single and married respondents are reported for Spain.

In Italy (from 1961 to 1973) and in Spain (from 2004 to 2011), the minimum pension depended also on the age of the individual: people younger than 65 were eligible to smaller minimum pensions than those aged 65 or older. Thus, minimum pensions in the dataset are calculated according to the age of the respondent in each year.

From 1981 to 1993, minimum pensions in Italy also depended on whether the number of years of contributions exceeded 35. We account for this variation by assuming, as before, equality between the number of years worked and the number of years of contributions.

In Greece, minimum and maximum pension benefits differ slightly for those insured before and after the 1992 reform. We account for these differences starting from 2004, the first year of availability of the MISSOC data.

The amounts provided for minimum and maximum pension benefits are translated into yearly terms and provided in the local currency valid in the country at each particular year. Furthermore, minimum and maximum pension benefits are not applicable in the Netherlands, where a flat-rate pension system is in place.

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[5]   According to MISSOC, starting from 2009 the minimum pension in the Netherlands is higher for single parents with at least one underage child (aged 17 or less). Since our dataset spans from 1961 to 2008, this fact is not considered when calculating minimum pension benefits for Dutch respondents.

Maximum pension benefits

Most country legislations also provide for a maximum amount of public pension benefits. In Belgium, Denmark, and the Netherlands this amount differs by marital status; on the other hand, in Belgium (from 2004 to 2008), maximum pension benefits differed by gender. We take this heterogeneity into account. Finally, no maximum pension is provided for Poland in the dataset, since the amount of maximum benefits equates to the totality of the reference wage and thus varies on an individual basis.

4. Conclusion

This paper describes the procedure and the assumptions we made in order to enrich the job episodes panel based on SHARE (Brugiavini, Cavapozzi, Pasini, and Trevisan, 2013). The new variables include a number of demographic characteristics which are standard controls in many analyses, but that convey interesting information about the migration patterns across Europe, as well as the evolution of family compositions along time in different countries. The second set of variables included in this updated job episodes panel provide a set of basic characteristics of pension systems in a user-friendly format: institutional characteristics are already linked to each record in the job episodes panel accounting for different years, country of residence and demographics of SHARE respondents across the continent and along time. We hope this new derived dataset will help researchers in using SHARE data to further understand the fascinating process of ageing Europe is going through.

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