**Online Appendix**

**Appendix A: Gateway to Global Aging Data Countries and Harmonized Data**

Table A.1 documents the countries covered by the Gateway to Global Aging data and summarizes years covered and characteristics of the survey design. Table A.2 summarizes harmonized variables included in the Gateway to Global Aging data.

[Table A.1]

[Table A.2]

**Appendix B: UK Pension Formulas**

**Additional Pension Benefit Formula**

The additional pension (AP) is a combination of the SERPS and S2P formula.

$$AP=SERPS+S2P$$

$$SERPS=\frac{1}{N\_{1}}\left(\sum\_{t=1978}^{1987}\left[\left(E\_{t}-LEL\_{t}\right)×ρ\_{tT}\right]×0.25+\sum\_{t=1988}^{min⁡(2001,T-1)}\left[\left(E\_{t}-LEL\_{t}\right)×ρ\_{tT}\right]×AR\right)$$

$$S2P=\frac{1}{N\_{2}}\left(\sum\_{t=2002}^{T-1}\left[\left(B1E\_{t}×ρ\_{tT}×2×AR\right)+\left(B2E\_{t}×ρ\_{tT}×0.5×AR\right)+\left(B3E\_{t}×ρ\_{tT}×AR\right)\right]\right)$$

Where

N1 = the number of years in an individual’s working life between 1978 and 2001 (see description of BSP in text)

N2 = the number of years in an individual’s working life between 2002 and T

T = year individual reaches State Pension Age (SPA), i.e., age 65 for men in our sample

t = tax year

Et = Earning in t. Capped at UELt. See note about earnings under S2P below.

LELt = Lower earnings limit in t (specified annually by the UK pension system)

$ρ\_{iT}$ = the revaluation factor, which is equal to the average earnings growth between the year in which the income is earned (t) and the year in which the individual reaches the SPA (T)

AR = accrual rate based on SPA and birth year

 $B1E\_{t}=\left\{\begin{array}{c}\left(E\_{t}-LEL\_{t}\right) if E\_{t}\in [LEL\_{t},LET\_{t}]\\\left(LET\_{t}-LEL\_{t}\right) if E\_{t}>LET\_{t}\end{array}\right.$

 $B2E\_{t}=\left\{\begin{array}{c}\left(E\_{t}-LET\_{t}\right) if E\_{t}\in [LET\_{t},UET\_{t}]\\\left(UET\_{t}-LET\_{t}\right) if E\_{t}>UET\_{t}\end{array}\right.$

 $B3E\_{t}=\left\{\begin{array}{c}\left(E\_{t}-UT\_{t}\right) if E\_{t}\in [UET\_{t},UT\_{t}]\\\left(UT\_{t}-UET\_{t}\right) if E\_{t}>UT\_{t}\end{array}\right.$

UELt = Upper earnings limit in t (specified annually by the UK pension system

LETt = Lower earnings threshold in t (specified annually by the UK pension system)

 $UET\_{t}=\left\{\begin{array}{c}3×LET\_{t}-2×LEL\_{t}, T<2010\\LET\_{t}, T\geq 2010\end{array}\right.$, Upper earnings threshold

$UT\_{t}=\left\{\begin{array}{c}UEL\_{t}, T<2010\\UAP\_{t}, T\geq 2010\end{array}\right.$ , Upper threshold

$UAP\_{t}$ = Upper Accruals Point in t (specified annually by the UK pension system)

Earnings under S2P

* There are a number of ways where $E\_{t}<LET\_{t}$ can lead to earnings being treated as if they are at LETt. In the paper, we assume that individuals satisfying $E\_{t}\geq LEL\_{t}$ are treated as having earnings equivalent with $LET\_{t}$.

**Appendix Tables**

Table A.1. Countries including in the Gateway to Global Aging

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Survey | Country | Sample years | Age eligibility at baseline | Spouse inclusion |
| HRS | USA | 1992, 1993, 1994, 1995, 1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014 | 51+ | yes |
| MHAS | Mexico | 2001, 2003, 2012, 2015\* | 50+ | yes |
| ELSA | England | 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016 | 50+ | yes |
| SHARE‡ | Austria, Belgium, Denmark, France, Germany, Italy, Spain, Sweden, Switzerland | 2004, 2006, 2010, 2012, 2014 | 50+ | yes |
|  | Netherlands | 2004, 2006, 2010, 2012 | 50+ | yes |
|  | Israel | 2004, 2006, 2012, 2014 | 50+ | yes |
|  | Greece | 2004, 2006, 2014 | 50+ | yes |
|  | Czech Republic | 2006, 2010, 2012, 2014 | 50+ | yes |
|  | Poland | 2006, 2010 | 50+ | yes |
|  | Estonia, Slovenia | 2010, 2012, 2014 | 50+ | yes |
|  | Portugal | 2010, 2014  | 50+ | yes |
|  | Luxembourg | 2012, 2014 | 50+ | yes |
|  | Ireland | 2006 | 50+ | yes |
|  | Hungary | 2010 | 50+ | yes |
|   | Croatia | 2014 | 50+ | yes |
| CRELES◊ | Costa Rica | 2004, 2006, 2008, 2010, 2012 | 60+/55-65 | no/yes |
| KLoSA | Korea | 2006, 2008, 2010, 2012, 2014\* | 45+ | only 45+ |
| JSTAR | Japan | 2007, 2009, 2011, 2013\* | 50-75 | no |
| TILDA | Ireland | 2010, 2012, 2014\* | 50+ | yes |
| CHARLS | China | 2011, 2013, 2015 | 45+ | yes |
| \* Sample year harmonization is in progress as of November 2018 |
| ‡ SHARE 2008-2009 is their life-history questionnaire and is not considered to be a longitudinal wave. |
| ◊ CRELES survey contains two separate cohorts: pre-1945 cohort (waves 1-3) and 1945-1955 retirement cohort (waves 4-5)  |

Table A.2. Summary of Harmonized Variables in Gateway to Global Aging Data

|  |  |
| --- | --- |
| **Sampling Information** | **Income**  |
| Identifiers for household, respondent, and spouse |  Employment earnings |
|  Interview status |  Self-employment income |
|  Sampling weights |  Capital income |
|  Number of household respondents | Private and public pension income |
|  Interview date | Private transfer income |
| **Demographic Information** | Total household income |
|  Birth date and place | **Assets** |
|  Death date | Real estate wealth |
|  Age at interview | Business wealtg |
|  Gender |  Individual retirement account wealth  |
|  Education | Stock and bond wealth |
|  Marital status and history | Checking and savings wealth |
|  Region/country |  Home ownership and housing wealth |
| **Physical Health** |  Debts: mortgages and other debts |
|  Self-rated health  |  Total household wealth |
|  Activities of daily living (ADLs) | **Consumption** |
|  Instrumental activities of daily living (IADLs) |  Food consumption |
|  Other functional limitations and helpers |  Monthly household expenditures |
|  Doctor diagnosed chronic and infectious diseases |  Expenditure on durables |
| **Physical/Performance Measures**  |  Total household consumption  |
|  Height and weight | **Family** |
|  Waist and hip circumference |  Number of household members |
|  Blood pressure |  Number of children |
|  Lung function |  Number of siblings |
|  Balance tests |  Number of living parents |
|  Grip strength  |  Parents’ mortality  |
|  Walking speed |  Co-residence with children |
| **Mental Health** | **Social Network and Participation** |
|  Psychiatric and emotional problems |  Social participation  |
|  CES-D and EURO-D depression scale |  Volunteering |
| **Cognitive Function** |  Social network |
|  Self-reported memory |  Financial transfers |
|  Date and place orientation | **Expectations**  |
|  Word recall: Immediate and delayed |  Mortality/survival  |
|  Serial 7’s |  Employment  |
|  Numerical ability |  Living arrangement |
| **Behavioural Health**  |  Overall economy and personal income |
|  Smoking history  | **Informal Care**  |
|  Alcohol consumption  |  Whether spouse helps with ADL/IADL  |
|  Physical activity |  Whether children help with ADL/IADL |
| **Health Care Utilization and Insurance** |  Whether professional helps with ADL/IADL |
| Hospital and nursing home stays |  Cost of help |
|  Doctor and dental visits |  Care giving |
|  Medical expenditure | **Pension** |
|  Health insurance: public, private, and others | Current public pension receipt |
| **Employment**  | Age started to receive public pension |
|  Employment status  | Current private pension receipt |
|  Job characteristics  | Whether pensions continue after death |
|  Job history | Pension plan from current employer |
|  Pension arrangements and contributions |  |
|  Retirement status and year |  |