Well-being differences in old-age in Europe: the Active Ageing Index by cohorts

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Definitions

WHO (2002): "Active ageing is the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age".

The Active Ageing index (AAI) is a composite index that aggregates different dimensions of well-being of the elderly:

      Employment
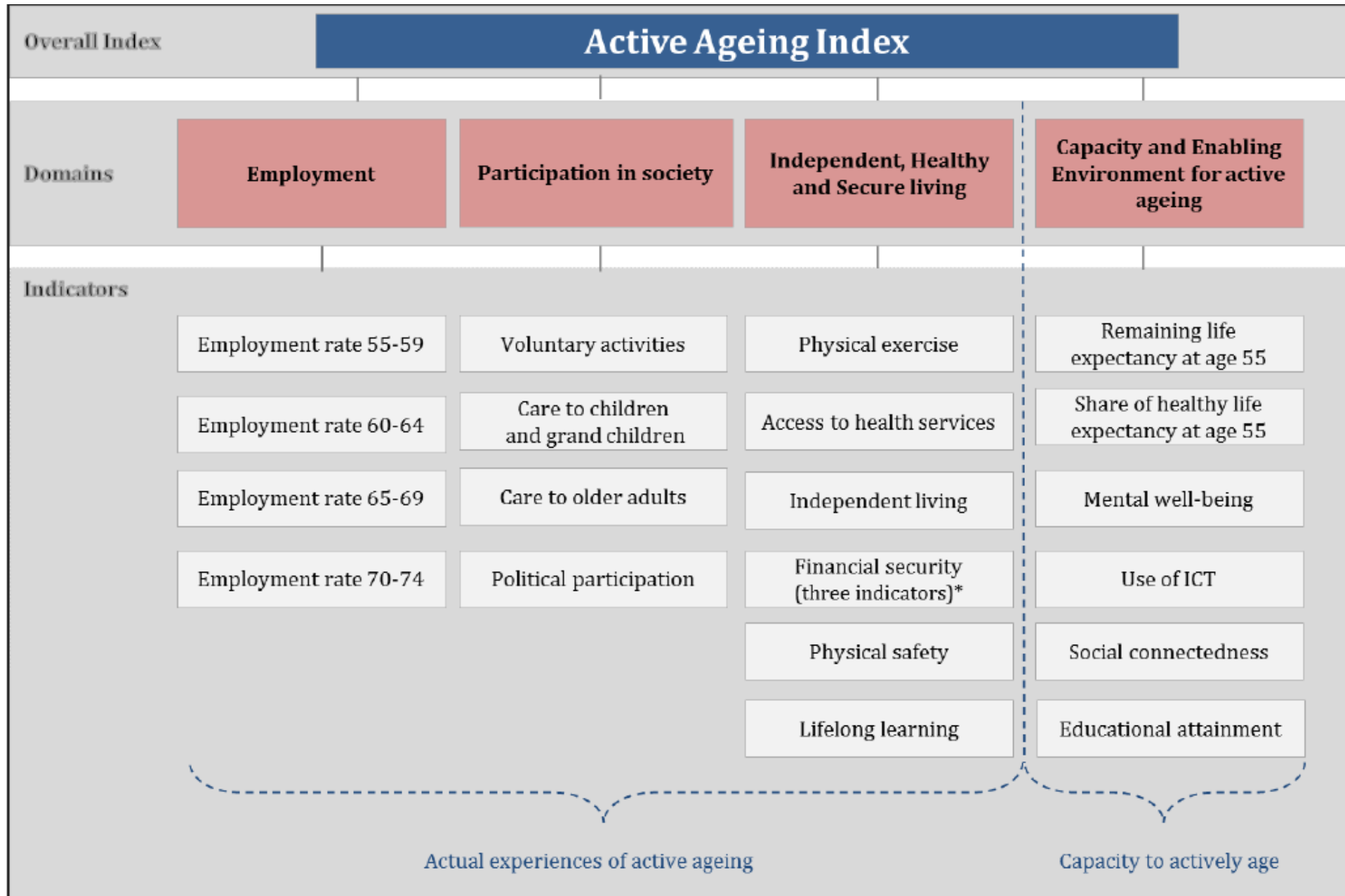
      Participation in society

      Independent, healthy and secure living

      Capacity and enabling environment for active ageing

Computed for each country of EU-28. Data year: 2012. Last version is Dec-14

Domains and indicators of the AAI

Overall Index	Active Ageing Index			
Domains	Employment	Participation in society	Independent, Healthy and Secure living	Capacity and Enabling Environment for active ageing
Indicators	Employment rate 55-59	Voluntary activities	Physical exercise	Remaining life expectancy at age 55
	Employment rate 60-64	Care to children and grand children	Access to health services	Share of healthy life expectancy at age 55
	Employment rate 65-69	Care to older adults	Independent living	Mental well-being
	Employment rate 70-74	Political participation	Financial security (three indicators)*	Use of ICT
			Physical safety	Social connectedness
			Lifelong learning	Educational attainment

Actual experiences of active ageing   Capacity to actively age

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Domains and indicators of the AAI

Domain	Indicator	Age group	Weight indicator	Weight domain	Data source	Adjustments
1. Employment	1.1 Employment rate 55-59	55-59	0.25	0.35	LFS, 2012	SILC-rev1, 2012 used
	1.2 Employment rate 60-64	60-64	0.25		LFS, 2012	Idem
	1.3 Employment rate 65-69	65-69	0.25		LFS, 2012	Idem
	1.4 Employment rate 70-74	70-74	0.25		LFS, 2012	Idem
2. Participation in society	2.1 Voluntary activities	55+	0.25	0.35	EQLS, 2012	
	2.2 Care to older children, grandchildren	55+	0.25		EQLS, 2012	
	2.3 Care to older adults	55+	0.3		EQLS, 2012	
	2.4 Political participation	55+	0.2		EQLS, 2012	
3. Independent, healthy and secure living	3.1 Physical exercise	55+	0.10	0.10	EQLS, 2012	
	3.2 Access to health and dental care	55+	0.20		SILC-rev1, 2012	
	3.3 Independent living arrangements	75+	0.20		SILC-rev1, 2012	
	3.4 Relative median income of 65+ relative to those aged below 65	65+	0.10		SILC-rev1, 2012	Relative median income of each cohort relative to those aged 25-54
	3.5 No poverty risk for older persons	65+	0.10		SILC-rev1, 2012	Done for each cohort
	3.6 No severe material deprivation rate	65+	0.10		SILC-rev1, 2012	Done for each cohort
	3.7 Physical safety	55+	0.10		ESS, 2012	
	3.8 Lifelong learning	55-74	0.10		LFS, 2012	Eurostat [trng_lfs_01]
4. Capacity and enabling environment for active ageing	4.1 Remaining life expectancy at age 55	55	0.33	0.20	EHLEIS, 2010	Eurostat 2012 [demo_mlexpec]
	4.2 Share of healthy life expectancy at age 65	55	0.23		EHLEIS, 2010	Eurostat 2012 [hlth_hlye]
	4.3 Mental well-being	55+	0.17		EQLS, 2012	
	4.4 Use of information and communications technology (ICT)	55-74	0.07		Eurostat, ICT Survey, 2012	
	4.5 Social connectedness	55+	0.13		EES, 2012	
	4.6 Educational attainment	55-74	0.07		LFS, 2012	SILC-rev1, 2012 used

Details of indicators of the AAI

2) Participation in society

2.1 Voluntary activities: percentage of population aged 55+ providing unpaid voluntary work through the organisations (EQLS 2011)

2.2 Care to children, grandchildren: Percentage of population aged 55+ providing care to their children and/or grandchildren (at least once a week) (EQLS 2011)

2.3 Care to older adults: Percentage of population aged 55+ providing care to elderly or disabled relatives (at least once a week) (EQLS 2011)

2.4 Political participation: Percentage of population aged 55+ taking part in the activities of a trade union, a political party or political action group (EQLS 2011)

3) Independent, healthy and secure living

3.1 Physical exercise: percentage of population aged 55+ who engage in physical activity and sport at least five times a week (Eurobarometer Special edition 334/2010)

3.2 Access to health and dental care: percentage of population aged 55+ who report no unmet need for medical and dental examination (SILC 2010)

3.3 Independent living arrangements: percentage of persons aged 75 and older living in single or couple households (SILC 2010)

3.4 Relative median income: ratio of the median equivalised disposable income of people aged 65+ to the median equivalised disposable income of those aged below 65 (SILC 2010)

3.5 No poverty risk for older persons: percentage of people aged 65+ who are not at the risk of poverty using 50% of the national median equivalised disposable income as the poverty threshold (SILC 2010)

3.6 No severe material deprivation for older persons: percentage of people aged 65+ not severely materially deprived (SILC 2010)

3.7 Physical safety: percentage of population aged 55+ who are not worried about becoming a victim of violent crime (ESS 2010)

3.8 Lifelong learning: percentage of older persons aged 55-74 who received education or training in the 4 weeks preceding the survey (EU-LFS 2011).

4) Capacity and enabling environment for active and healthy ageing

4.1 Remaining life expectancy achievement of 50 years at age 55, using EHLEIS

4.3 Share of healthy life years in the remaining life expectancy at age 55, using EHLEIS

4.3 Mental well-being (for older population aged 55+, using EQLS 2011 and using WHO's ICD-10 measurement)

4.4 Use of ICT by older persons aged 55-74 at least once a week (including everyday), using Eurostat ICT Survey

4.5 Social connectedness: Percentage of older population aged 55+ who meet friends, relatives or colleagues at least once a month, using ESS 2010 / 2008 (for LV and RO) / 2006 (for AT) / 2004 (for LU) / 2002 (for IT)

4.6 Educational attainment of older persons: Percentage of older persons aged 55-74 with upper secondary or tertiary educational attainment (EU-LFS 2010)

Replication of the AAI

Replicate the index for synthetic cohorts formed by:
      5 Age groups (55-59, 60-64, 65-64, 70-74 and 75+)
      2 Sex
      28 Countries (EU-28)
      Total = 5x2x28 = 280 observations

Same official methodology with some adjustments (improvements?)

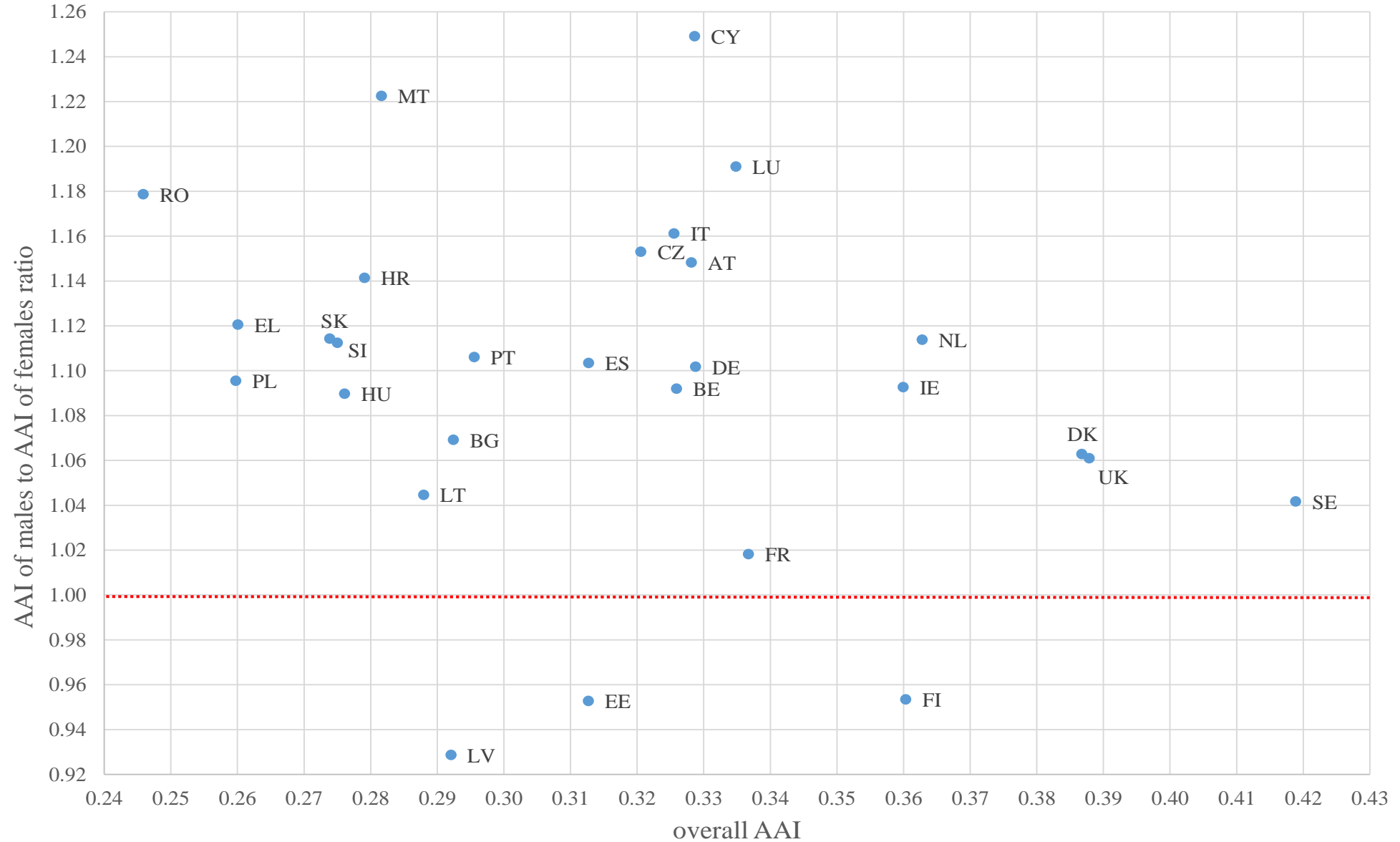Graph and econometric analysis of AAI by cohorts, sex and countries

Analysis of predictors of AAI at the country level (macro variables) and the role of the welfare state types on favouring AAI.
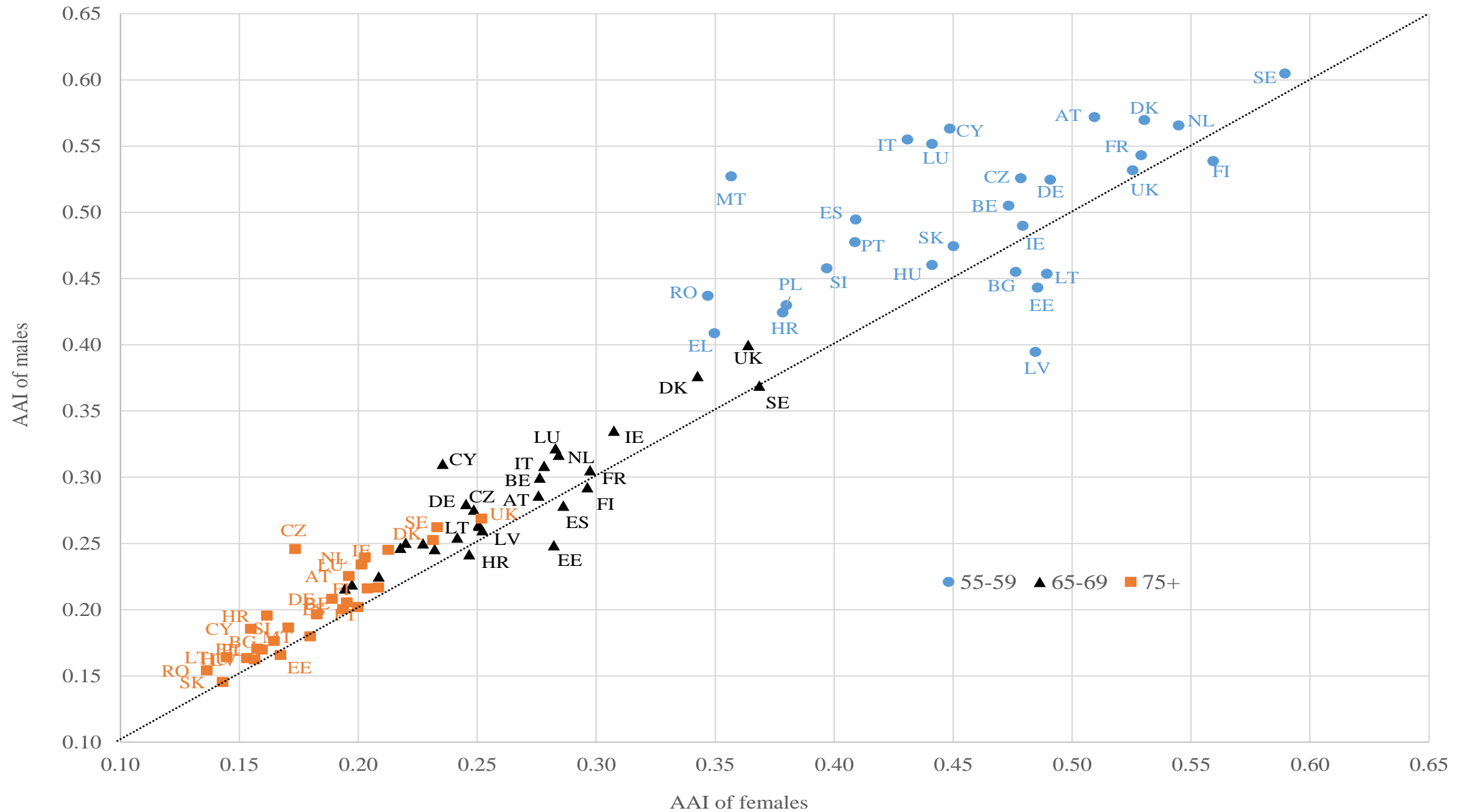
AAI ranking

Country	AAI (official)		AAI		Diff	
	Index	Rank	Index	Rank	Index	Rank
Sweden	0.448	1	0.419	1	0.029	0
Denmark	0.405	2	0.387	3	0.018	-1
Netherlands	0.399	3	0.363	4	0.037	-1
Finland	0.396	4	0.360	5	0.036	-1
United Kingdom	0.392	5	0.388	2	0.004	3
Ireland	0.390	6	0.360	6	0.030	0
Germany	0.359	7	0.329	9	0.030	-2
Luxembourg	0.358	8	0.335	8	0.023	0
France	0.357	9	0.337	7	0.020	2
Austria	0.352	10	0.328	11	0.023	-1
Estonia	0.348	11	0.313	16	0.035	-5
Czech Republic	0.346	12	0.321	14	0.025	-2
Cyprus	0.344	13	0.329	10	0.016	3
Italy	0.340	14	0.326	13	0.015	1
Belgium	0.338	15	0.326	12	0.012	3
Portugal	0.336	16	0.296	17	0.040	-1
Spain	0.328	17	0.313	15	0.015	2
Malta	0.318	18	0.282	21	0.037	-3
Lithuania	0.317	19	0.288	20	0.029	-1
Latvia	0.316	20	0.292	19	0.024	1
Croatia	0.313	21	0.279	22	0.034	-1
Bulgaria	0.300	22	0.292	18	0.008	4
Slovenia	0.299	23	0.275	24	0.024	-1
Romania	0.297	24	0.246	28	0.051	-4
Hungary	0.286	25	0.276	23	0.010	2
Slovakia	0.285	26	0.274	25	0.011	1
Poland	0.282	27	0.260	27	0.022	0
Greece	0.277	28	0.260	26	0.017	2

Indices highly correlated at 97%

AAI of females to males ratio

AAI by sex and age group

AAI by age group

55-59
60-64
65-69
70-74
75+

Sweden, United Kingdom, Denmark, Finland, Ireland, Netherlands, France, Estonia, Germany, Belgium, Luxembourg, Austria, Italy, Latvia, Czech Republic, Spain, Cyprus, Bulgaria, Lithuania, Portugal, Hungary, Croatia, Slovakia, Slovenia, Malta, Poland, Greece, Romania

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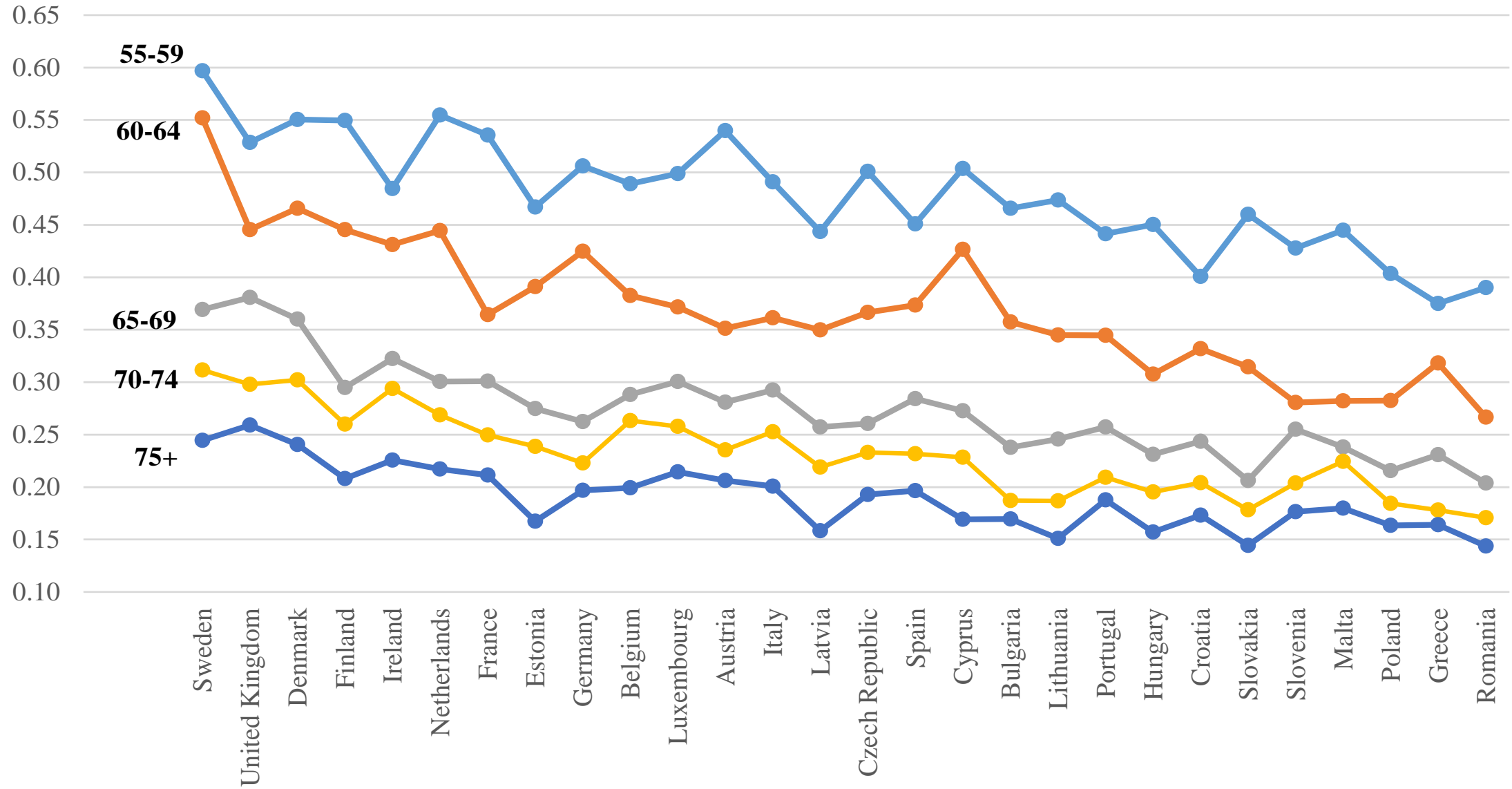
OLS specification models

(1) $\quad AAI_{i,j,c} = \alpha + \beta_1 sex_i + \beta_2 age_j + \beta_3 country_c + \varepsilon_{i,j,c}$

(2) $\quad AAI_{i,j,c} = \alpha + \beta_1 sex_i + \beta_2 age_j + \beta_3(sex_i \times age_j) + \beta_4 country_c + \varepsilon_{i,j,c}$

(3) $\quad AAI_{i,j,c} = \alpha + \beta_1 sex_i + \beta_2 age_j + \beta_3 X_c + \varepsilon_{i,j,c}$

OLS estimations of AAI

Variable	(1) AAI	(2) AAI	(3) AAI.1 (employment)	(4) AAI.2 (participation)	(5) AAI.3 (independent)	(6) AAI.4 (capacity)
female	-0.0260***	-0.0184***	-0.0122***	-0.0230***	-0.0375***	-0.0117*
	(0.0045)	(0.0031)	(0.0039)	(0.0082)	(0.0045)	(0.0059)
age 75+ (reference)						
age 70-74	0.0403***	0.0385***	0.0282***	0.0529***	0.0015	0.0496***
	(0.0034)	(0.0047)	(0.0048)	(0.0108)	(0.0046)	(0.0050)
age 65-69	0.0820***	0.0823***	0.1072***	0.0823***	-0.0187***	0.0891***
	(0.0039)	(0.0047)	(0.0121)	(0.0100)	(0.0049)	(0.0046)
age 60-64	0.1795***	0.1895***	0.4080***	0.0963***	-0.1153***	0.1228***
	(0.0093)	(0.0086)	(0.0254)	(0.0097)	(0.0041)	(0.0055)
age 55-59	0.2875***	0.2979***	0.6935***	0.1104***	-0.1202***	0.1429***
	(0.0074)	(0.0079)	(0.0180)	(0.0112)	(0.0049)	(0.0055)
age 70-74 x female		0.0036	-0.0106**	0.0158	0.0168***	0.0003
		(0.0053)	(0.0045)	(0.0125)	(0.0055)	(0.0050)
age 65-69 x female		-0.0006	-0.0377***	0.0227*	0.0365***	0.0050
		(0.0042)	(0.0082)	(0.0117)	(0.0049)	(0.0055)
age 60-64 x female		-0.0200***	-0.1276***	0.0489***	0.0675***	0.0041
		(0.0072)	(0.0211)	(0.0090)	(0.0063)	(0.0052)
age 55-59 x female		-0.0208*	-0.1291***	0.0523***	0.0346***	0.0130**
		(0.0114)	(0.0278)	(0.0126)	(0.0055)	(0.0061)
constant	0.2052***	0.2014***	0.0218**	0.1077***	0.7087***	0.4260***
	(0.0052)	(0.0042)	(0.0105)	(0.0068)	(0.0034)	(0.0042)
N	280	280	280	280	280	280
R^2	0.9463	0.9484	0.9306	0.8008	0.9604	0.9528

The top row indicates the dependent variable used in each model equation. Robust and clustered (by country) standard errors are given in parenthesis. * $p<0.1$ ** $p<0.05$ *** $p<0.01$. Each model includes dummies for countries.

Predicted AAI per sex and age group (models 2-6)

Age group	Female				
	AAI	AAI.1 (employment)	AAI.2 (participation)	AAI.3 (independent)	AAI.4 (capacity)
age 75+	0.183	0.010	0.085	0.671	0.414
age 70-74	0.225	0.027	0.153	0.690	0.464
age 65-69	0.265	0.080	0.190	0.689	0.508
age 60-64	0.353	0.291	0.230	0.623	0.541
age 55-59	0.460	0.574	0.247	0.586	0.570
	Male				
age 75+	0.201	0.022	0.108	0.709	0.426
age 70-74	0.240	0.050	0.161	0.710	0.476
age 65-69	0.284	0.129	0.190	0.690	0.515
age 60-64	0.391	0.430	0.204	0.593	0.549
age 55-59	0.499	0.715	0.218	0.589	0.569
	Female - Male				
age 75+	-0.018	-0.012	-0.023	-0.038	-0.012
age 70-74	-0.015	-0.023	-0.007	-0.021	-0.011
age 65-69	-0.019	-0.049	0.000	-0.001	-0.007
age 60-64	-0.038	-0.139	0.026	0.030	-0.008
age 55-59	-0.039	-0.141	0.029	-0.003	0.001

The predicted values are computed with the results of models 2-6 from Table 4.

OLS estimates of AAI

Variable	(1) AAI	(2) AAI	(3) AAI	(4) AAI	(5) AAI	(6) AAI
female	-0.0260***	-0.0260***	-0.0260***	-0.0260***	-0.0260***	-0.0260***
	(0.0043)	(0.0043)	(0.0043)	(0.0043)	(0.0043)	(0.0044)
log gdp pc	0.0860***					0.0443**
	(0.0262)					(0.0162)
gini index		-0.0042*				-0.0010
		(0.0024)				(0.0017)
old age social protection exp.			0.0063*			-0.0015
			(0.0034)			(0.0020)
log pension pc				0.0432***		
				(0.0108)		
retirement age				0.0086**		0.0034
				(0.0037)		(0.0034)
pension coverage				0.0010**		0.0011**
				(0.0005)		(0.0004)
age dependency ratio					0.0053***	0.0043***
					(0.0013)	(0.0014)
share of 55+ females					-0.0063***	-0.0038*
					(0.0017)	(0.0021)
Constant	-0.6597**	0.3293***	0.1426***	-0.7709***	0.2981**	-0.5032*
	(0.2618)	(0.0719)	(0.0335)	(0.2237)	(0.1160)	(0.2592)
N	280	280	280	280	280	280
R^2	0.8753	0.8244	0.8309	0.8827	0.8803	0.9130

The top row indicates the dependent variable used in each model equation. Robust and clustered (by country) standard errors are given in parenthesis. * $p<0.1$ ** $p<0.05$ *** $p<0.01$.Dummies of age groups are included.

Welfare state regimen classification in EU-28

Social-Democratic	Southern	Liberal (Anglo-Saxon)	Conservative	Former USSR (baltic)	Post-communist
Denmark	Greece	United Kingdom	Austria	Estonia	Bulgaria
Finland	Italy	Ireland	France	Latvia	Croatia
Sweden	Spain		Germany	Lithuania	Czech Republic
	Portugal		Luxembourg		Hungary
	Malta		Belgium		Poland
	Cyprus		Netherlands		Slovakia
					Romania
					Slovenia

On the basis of the revision of Fenger (2007), Kammer et al. (2012) and Sapir (2006)

OLS estimates of AAI and the welfare state

Variable	(1) AAI	(2) AAI.1 (employment)	(3) AAI.2 (participation)	(4) AAI.3 (independent)	(5) AAI.4 (capacity)
female	-0.0260***	-0.0732***	0.0049	-0.0064***	-0.0072
	(0.0043)	(0.0087)	(0.0050)	(0.0022)	(0.0049)
age 75+ (reference)					
age 70-74	0.0403***	0.0229***	0.0608***	0.0098***	0.0498***
	(0.0032)	(0.0039)	(0.0070)	(0.0030)	(0.0034)
age 65-69	0.0820***	0.0883***	0.0936***	-0.0005	0.0916***
	(0.0037)	(0.0094)	(0.0059)	(0.0036)	(0.0033)
age 60-64	0.1795***	0.3442***	0.1207***	-0.0816***	0.1249***
	(0.0089)	(0.0256)	(0.0071)	(0.0035)	(0.0046)
age 55-59	0.2875***	0.6289***	0.1366***	-0.1029***	0.1494***
	(0.0071)	(0.0193)	(0.0076)	(0.0044)	(0.0051)
type: social-democratic	0.1129***	0.1332***	0.0618***	0.1168***	0.1649***
	(0.0177)	(0.0312)	(0.0113)	(0.0130)	(0.0292)
type: liberal (anglo-saxon)	0.0968***	0.1214**	0.0700***	0.0675***	0.1154***
	(0.0137)	(0.0465)	(0.0191)	(0.0134)	(0.0160)
type: conservative	0.0616***	0.0328	0.0586***	0.0738***	0.1110***
	(0.0095)	(0.0206)	(0.0147)	(0.0144)	(0.0184)
type: southern	0.0239*	0.0196	0.0342*	0.0021	0.0243
	(0.0131)	(0.0223)	(0.0173)	(0.0153)	(0.0220)
type: former USSR (baltic)	0.0197*	0.0885***	-0.0094	-0.0272	-0.0265
	(0.0102)	(0.0214)	(0.0113)	(0.0227)	(0.0179)
type: post-communist (reference)					
constant	0.1657***	0.0086	0.0633***	0.6625***	0.3717***
	(0.0091)	(0.0151)	(0.0109)	(0.0134)	(0.0150)
N	280	280	280	280	280
R^2	0.9168	0.8950	0.6492	0.8243	0.8166

Concluding remarks

- There are significant differences in the Active Ageing Index among cohorts of elderly.

- Computing the AAI for distinctive groups can contribute to detect areas of active ageing where some groups of elderly are lacking and promote an adequate policy response.

- Wealth, equity and favourable pension characteristics of the country are important predictors for a better active ageing.

- It is worrying to observe a systematic female disadvantage in old age wellbeing.

- The results show that the Social-Democratic regime (Nordic countries), with its strong redistributive policies, is the most favourable for active ageing.

- Analysing the effects of welfare regimes on active ageing can be an important task for future research and improve our understanding of the relationship between policies and outcomes in old age.