NETHERLANDS INTERDISCIPLINARY DEMOGRAPHIC INSTITUTE

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CONVERGENCE IN POPULATION AGEING ACROSS EUROPEAN NUTS-2 REGIONS

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WHY CONVERGENCE IN AGEING?

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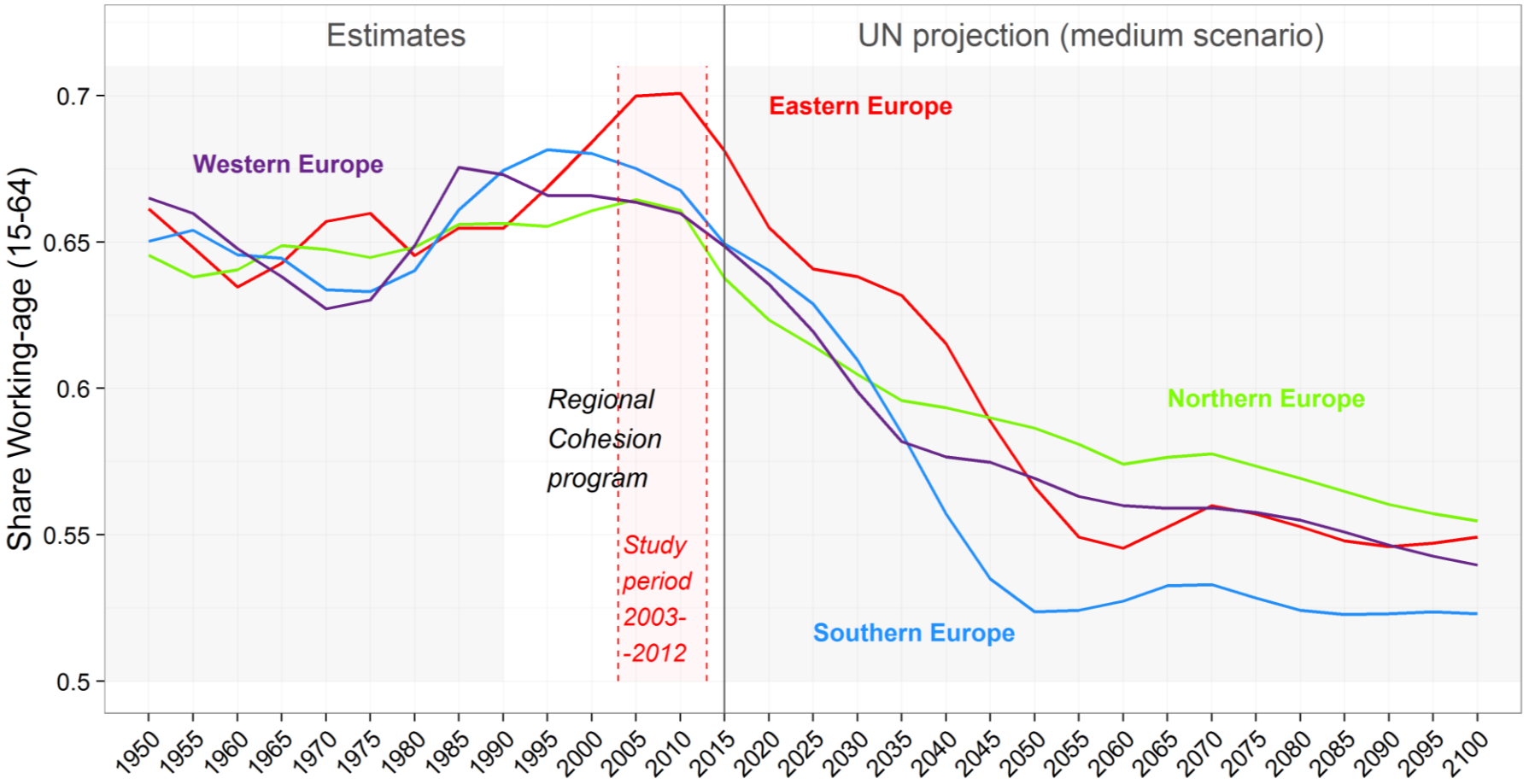

Note: lines are weighted averages of country level UN data by EuroVoc subregions; countries are weighted by the number of NUTS-2 regions

WHY CONVERGENCE IN AGEING?

Cohesion Policy (*success story* ?)

Population ageing, a big challenge

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To what extent convergence in income can be explained with convergence in ageing?

DATA & METHODS

European Union 27, 261 NUTS-2 regions

Population data: Eurostat, self harmonized

Economic data (GDP): Cambridge Regional Database

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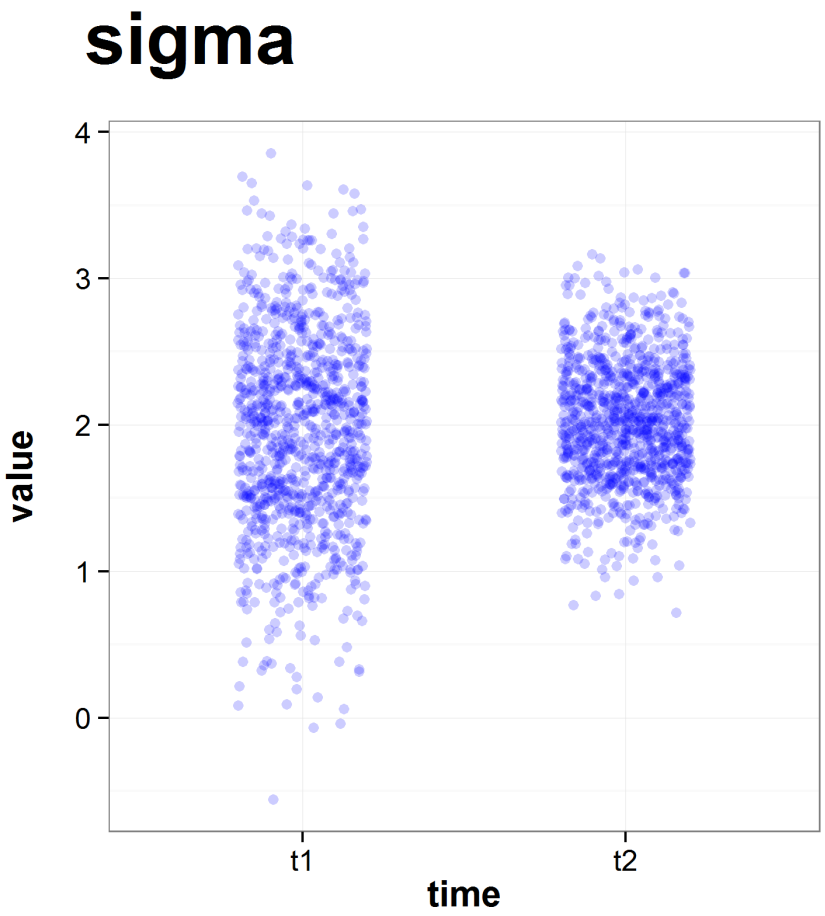
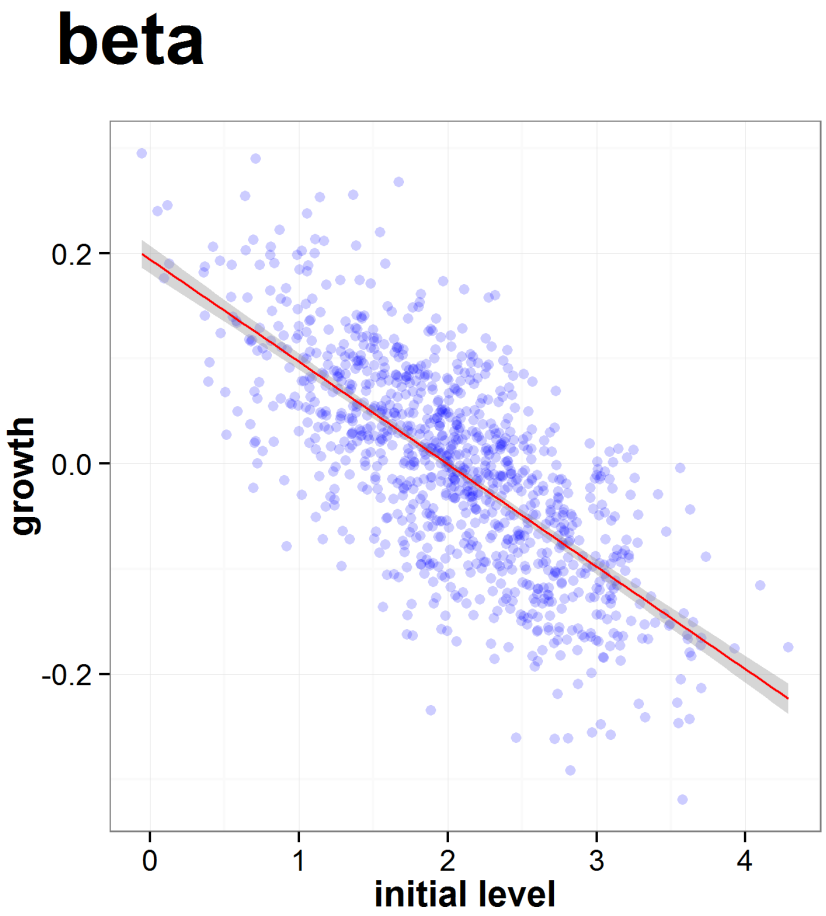
Sigma-convergence VS beta-convergence

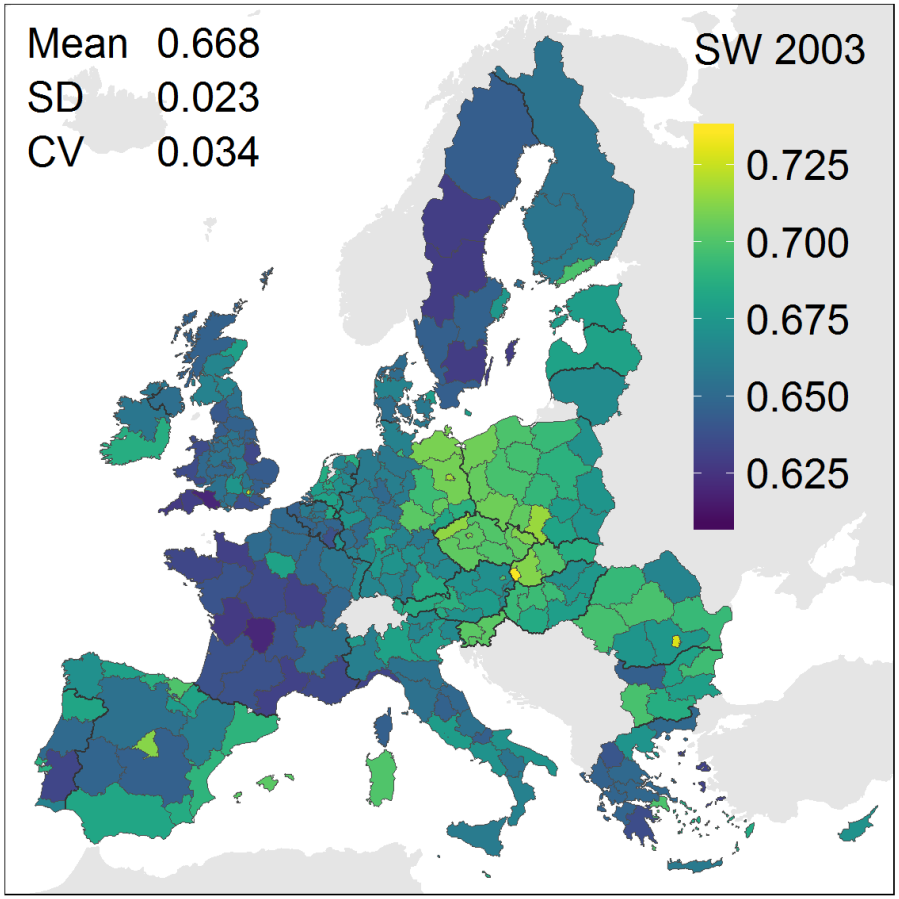
SIGMA-CONVERGENCE VS BETA-CONVERGENCE



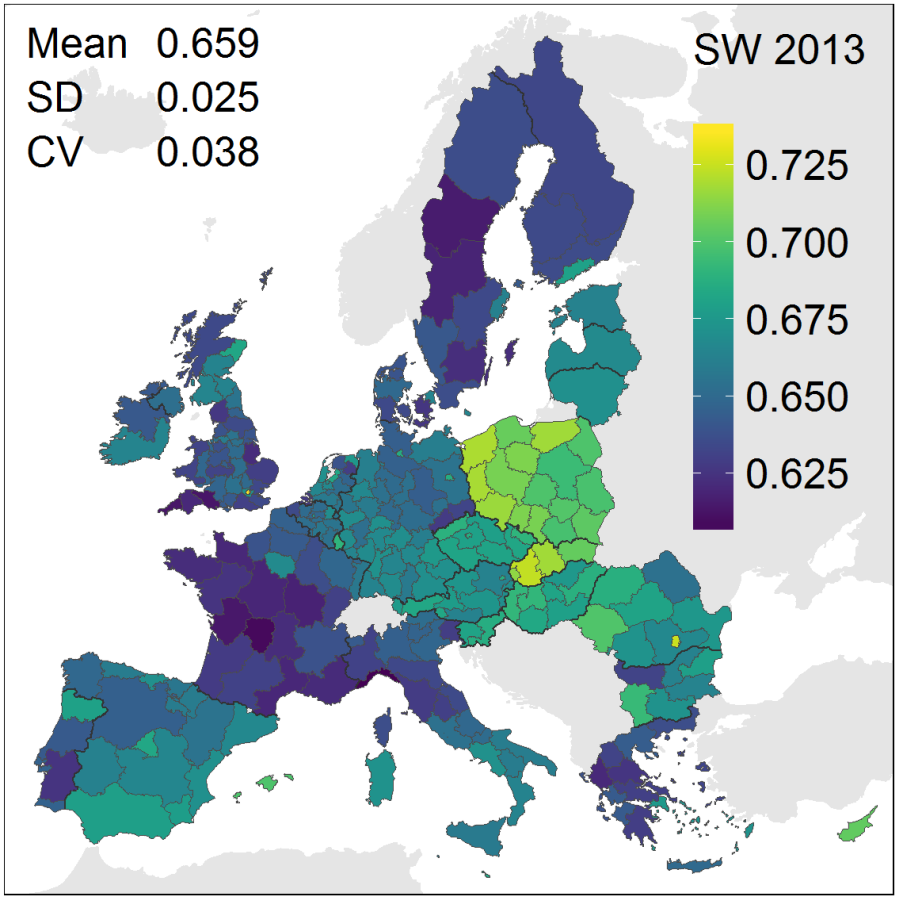


SIGMA DIVERGENCE

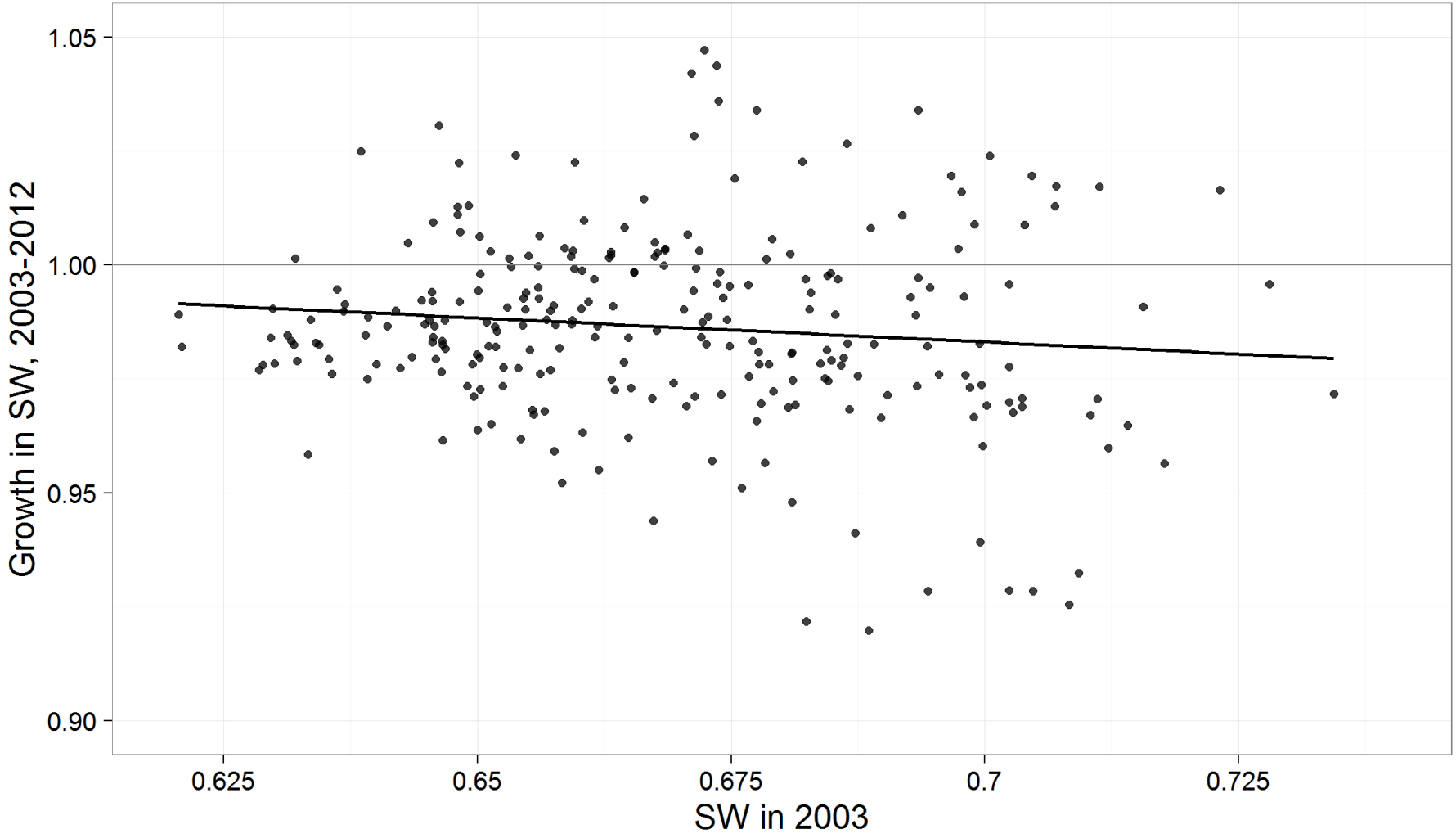
2003



2013



BETA CONVERGENCE



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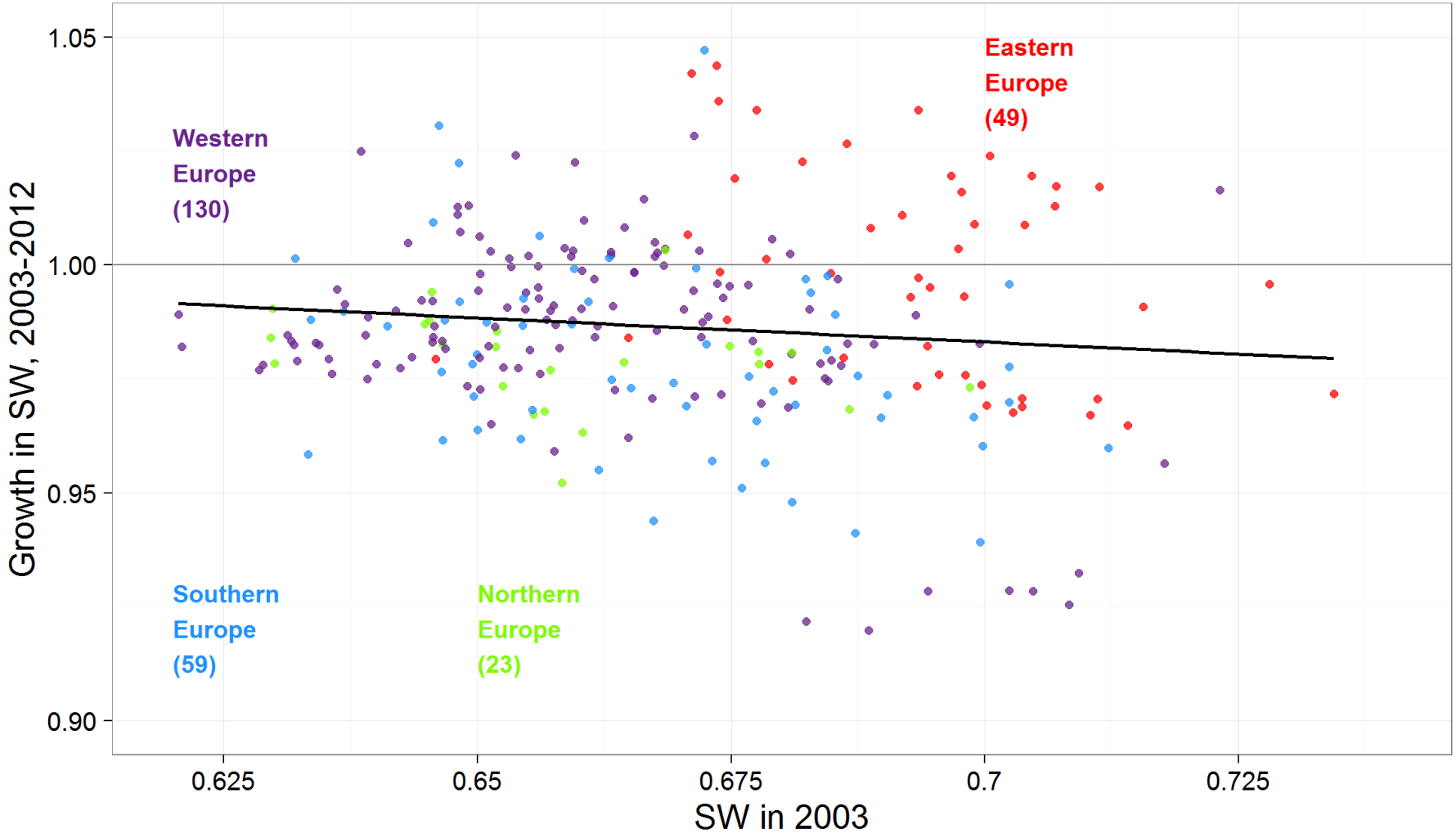

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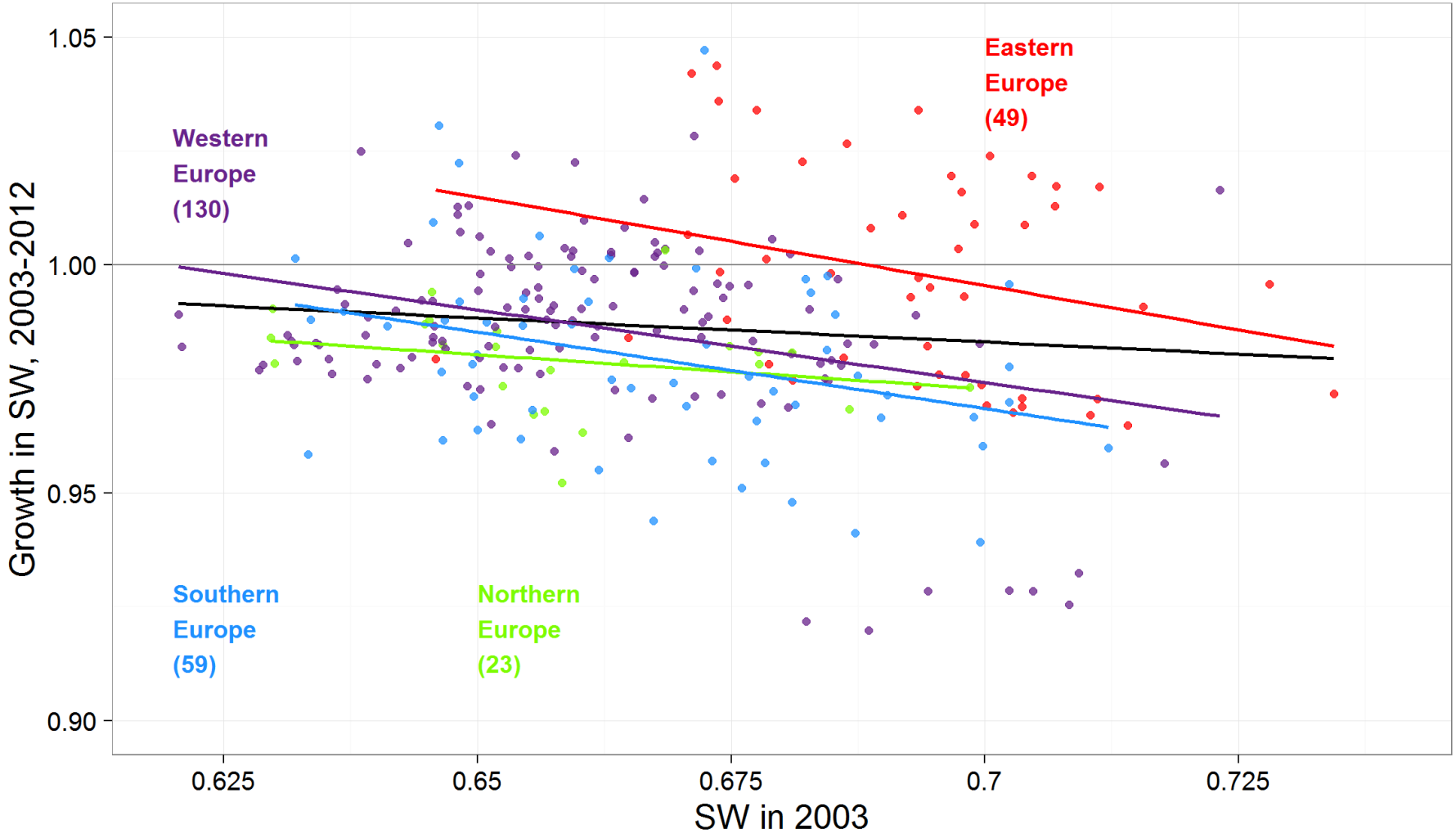


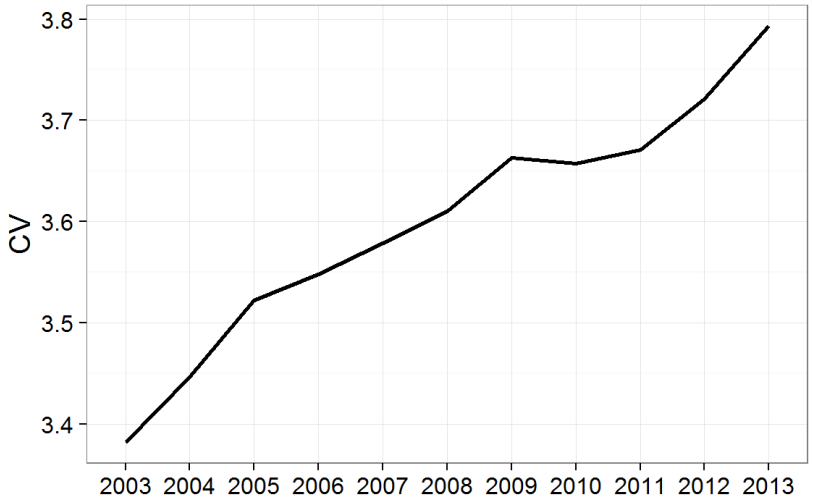
CONVERGENCE IN AGEING

beta

	Europe, global	Europe, conditional
(Intercept)	1.06 (0.04)***	1.20 (0.04)***
Initial WR	-0.11 (0.06)	-0.32 (0.06)***
Western (ref)		NA
Eastern		0.02 (0.00)***
Northern		-0.01 (0.00)
Southern		-0.01 (0.00)
R^2	0.01	0.18
Adj. R^2	0.01	0.17
Num. obs.	261	261
RMSE	0.02	0.02

***p < 0.001, **p < 0.01, *p < 0.05;
standard errors in parenthesis

sigma



CV of the share of working-age population increased from 3.38% to 3.79%, an increase of 12.2%

CONVERGENCE IN GDP PER CAPITA

beta

	Europe, global	Europe, conditional
(Intercept)	1.29 (0.02)***	1.18 (0.03)***
Initial WR	-0.08 (0.01)***	-0.03 (0.01)***
Western (ref)		NA
Eastern		0.21 (0.03)***
Northern		0.06 (0.03)*
Southern		-0.15 (0.02)***
R^2	0.23	0.58
Adj. R^2	0.23	0.58
Num. obs.	261	261
RMSE	0.16	0.12

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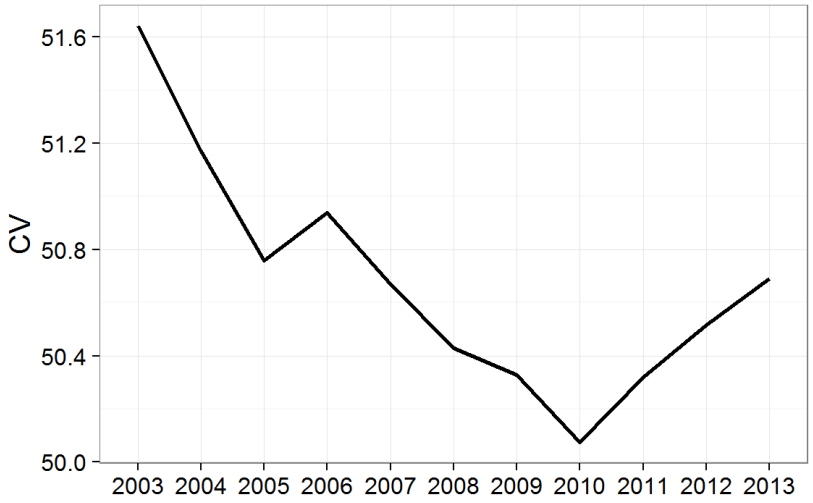
sigma



CV of GDP per capita reduced from 51.64 to 50.69, a decrease of 1.84%

CORRELATION: INCOME AND AGEING

	Europe, global	Europe, conditional
(Intercept)	-1.34 (0.50)**	0.34 (0.36)
Initial WR	2.49 (0.51)***	0.76 (0.37)*
Western (ref)		NA
Eastern		0.28 (0.02)***
Northern		0.06 (0.03)*
Southern		-0.12 (0.02)***
R^2	0.09	0.57
Adj. R^2	0.08	0.56
Num. obs.	261	261
RMSE	0.17	0.12

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There is a positive correlation between growth in GDP per capita and growth the share of working-age population

There are big differences between subregions: the dummies explain half of the variance in GDP per capita growth

EFFECT OF AGEING ON INCOME CONVERGENCE

$$\frac{GDP_2/P_2}{GDP_1/P_1} = \frac{GDP_2/W_2}{GDP_1/W_1} \times \frac{W_2/P_2}{W_1/P_1}$$

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GDP growth | **productivity** | **population structure**

$$GDP_1/P_1 \times \frac{GDP_2/W_2}{GDP_1/W_1} \times \frac{W_2/P_2}{W_1/P_1} = GDP_2/P_2$$

EFFECT OF AGEING ON INCOME CONVERGENCE

$$GDP_1/P_1 \quad x \quad \frac{GDP_2/W_2}{GDP_1/W_1} \quad x \quad \frac{W_2/P_2}{W_1/P_1} \quad = \quad GDP_2/P_2$$

51.64 (1)

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51.64 (1)

Real ----- 50.38 (2)

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51.64				(1)
	Real	-----	50.38	(2)
	Real	Real	50.69	(3)

Divergence in ageing (real) reduces income convergence by 24.4%

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51.64				(1)
	Real	-----	50.38	(2)
	Real	Real	50.69	(3)
	Real	Fit	50.03	(4)

Divergence in ageing (real) reduces income convergence by 24.4%

Convergence in ageing (beta-convergence model fit) increases income convergence by 28.4%

CONCLUSIONS

Convergence in ageing: sigma divergence; weak beta convergence; club convergence

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Changes in the share of working-age population account for 8.5% of regional income growth

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Convergence in ageing: sigma divergence; weak beta convergence; club convergence

Convergence in income: sigma convergence; moderate beta convergence; club convergence

Convergence in ageing is positively related with convergence in income

Changes in the share of working-age population account for 8.5% of regional income growth

In the coming decades, the he effect of population dynamics on income convergence will increase as the result of the acceleration of population ageing

thank you

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NIDI is an institute of the Royal Netherlands Academy of Arts and Sciences KNAW and is affliated to the University of Groningen
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