Happiness research methodology, focusing on age

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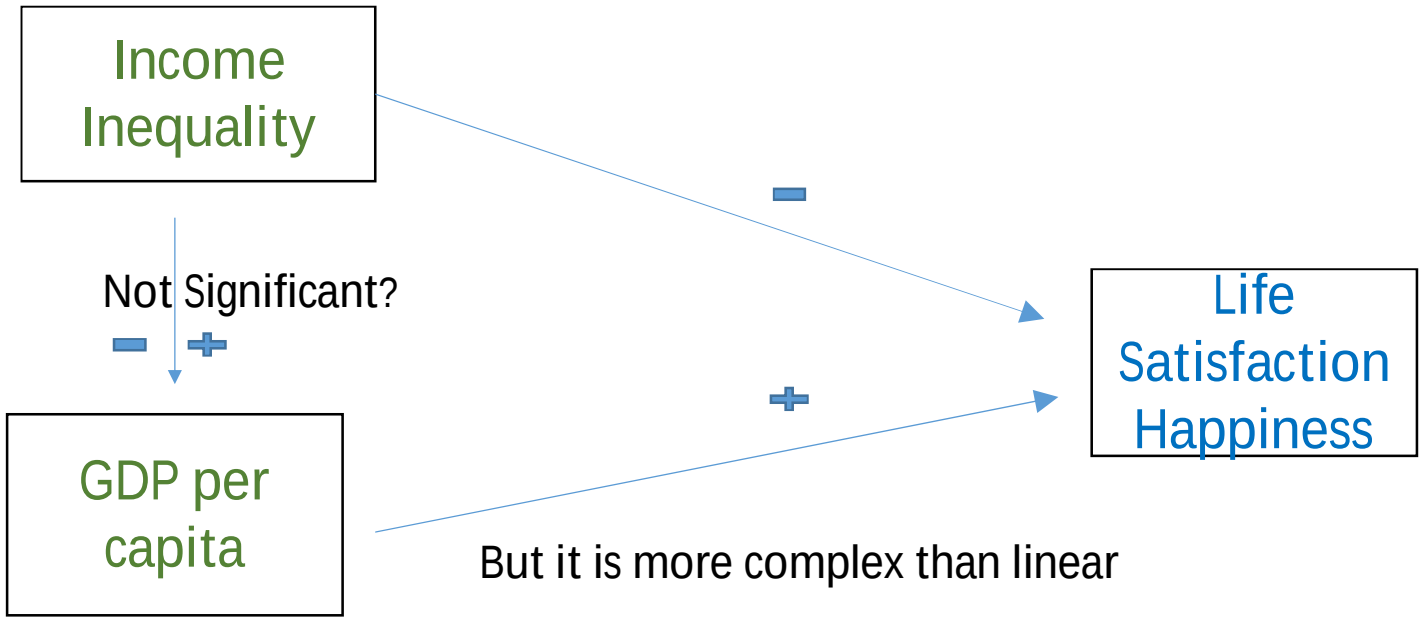
From Macro to Micro
Age and Synthetic Cohort

World Values Survey
Pisa
European Social Survey

MACRO: Happiness has been studied much at aggregate level. Most articles e.g. in Journal of Happiness Studies are based on macro data, such as concerning countries or regions. I think that such studies are OK but I prefer micro data analysis. The below example shows a typical finding based on cross-country macro data.



Micro level measurement by sample surveys

A long history in the World Values Survey (WVS), since early 1980's

The two questions:

V10. Taking all things together, would you say you are (*read out and code one answer*):

1 Very happy
2 Rather happy
3 Not very happy
4 Not at all happy

Happy

(*Show Card C*)

V23. All things considered, how satisfied are you with your life as a whole these days? Using this card on which 1 means you are "completely dissatisfied" and 10 means you are "completely satisfied" where would you put your satisfaction with your life as a whole? (*Code one number*):

Completely dissatisfied — Completely satisfied

1 2 3 4 5 | 6 7 8 9 10

Life_satisfaction

Micro level measurement by sample surveys

A shorter history in The European Social Survey (ESS), since 2002

The two questions:

Question C 1
Taking all things together, how happy would you say you are?
Instruction(s): Pre: CARD 21
Post: Please use this card

Variable name and label: HAPPY How happy are you

Values and categories
00 Extremely unhappy
01 1
02 2
03 3
04 4
05 5
06 6
07 7
08 8
09 9
10 Extremely happy
77 Refusal
88 Don't know
99 No answer

The Cantril ladder measure (scale)

Micro level measurement by sample surveys

A shorter history in The European Social Survey (ESS), since 2002

The two questions:

Question B 20
All things considered, how satisfied are you with your life as a whole nowadays? | dissatisfied and 10 means extremely satisfied.
Instruction(s): Pre: CARD 13

Variable name and label: STFLIFE How satisfied with life as a whole

Values and categories
00 Extremely dissatisfied
01 1
02 2
03 3
04 4
05 5
06 6
07 7
08 8
09 9
10 Extremely satisfied
77 Refusal
88 Don't know
99 No answer

Micro level measurement by sample surveys

The 2015 PISA survey

The three questions but these are not in data set as such but they have constructed their summary variable Subjective Well-Being so that it is normally distributed (0, 1) over OECD

This variable is created by the PISA team so that the three dimensions are covered: “one’s reflective assessment of one’s life (including the single “general life satisfaction” question); *affect*—an emotional state, typically at a particular point of time; and *eudaemonia*—a sense of meaning and purpose in life.”

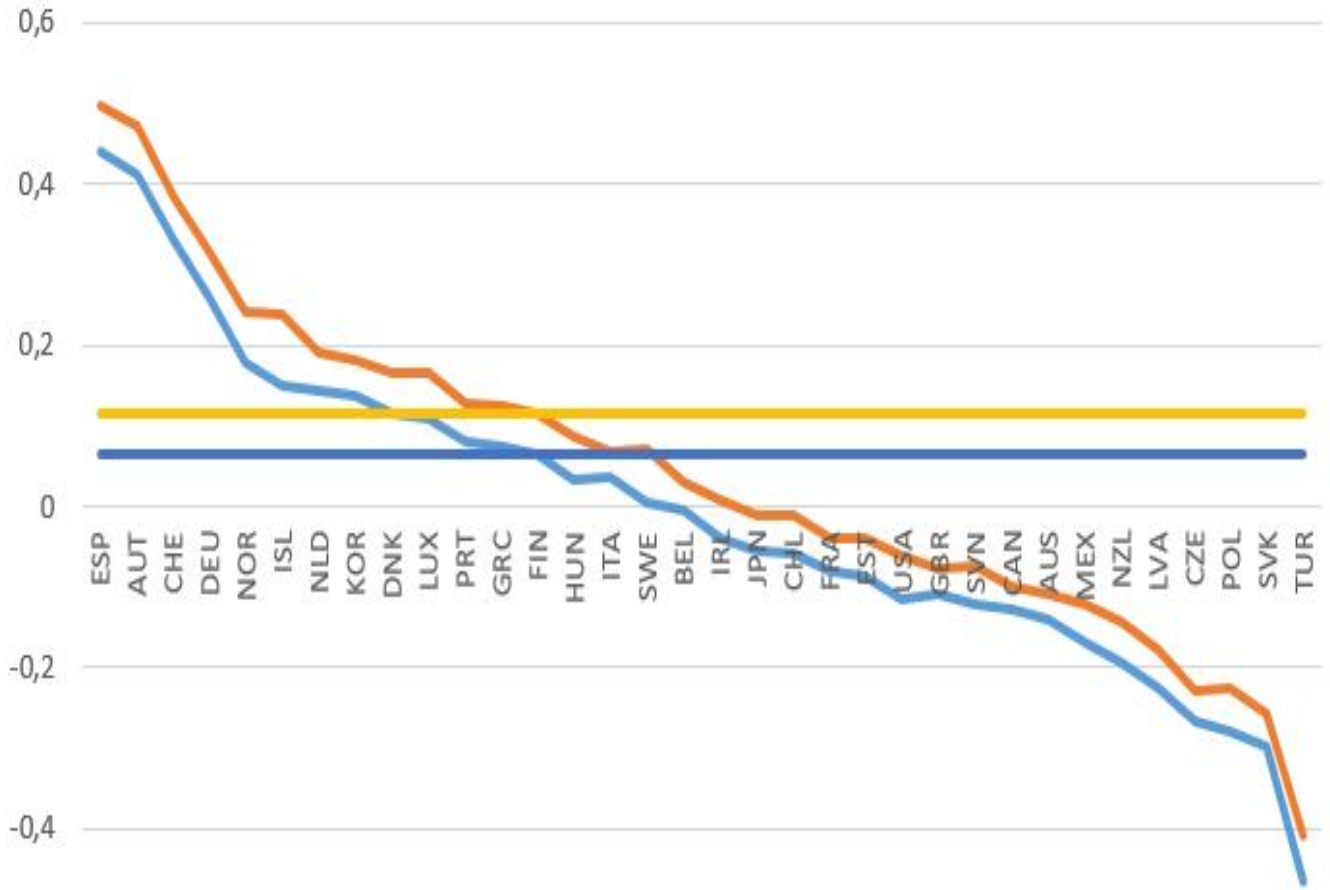
Now it is possible to go to empirical examples but it requires the linear transformations of those two questions in the WVS, since the scales are not consistent with the ESS. I made in this case a new variable called Happiness so that the scale is from 0 to 10 as in the ESS. This is ratio-scaled and better than those old-fashioned scales.

Happiness = Average of (4-Happy)*(100/3)
and (Life_satisfaction-1)*(10/9)

I have examples of these three surveys but the focus is on the ESS that is used in last examples.

Average well-being in the 2015 Pisa, OECD countries

95% CI's of Finland

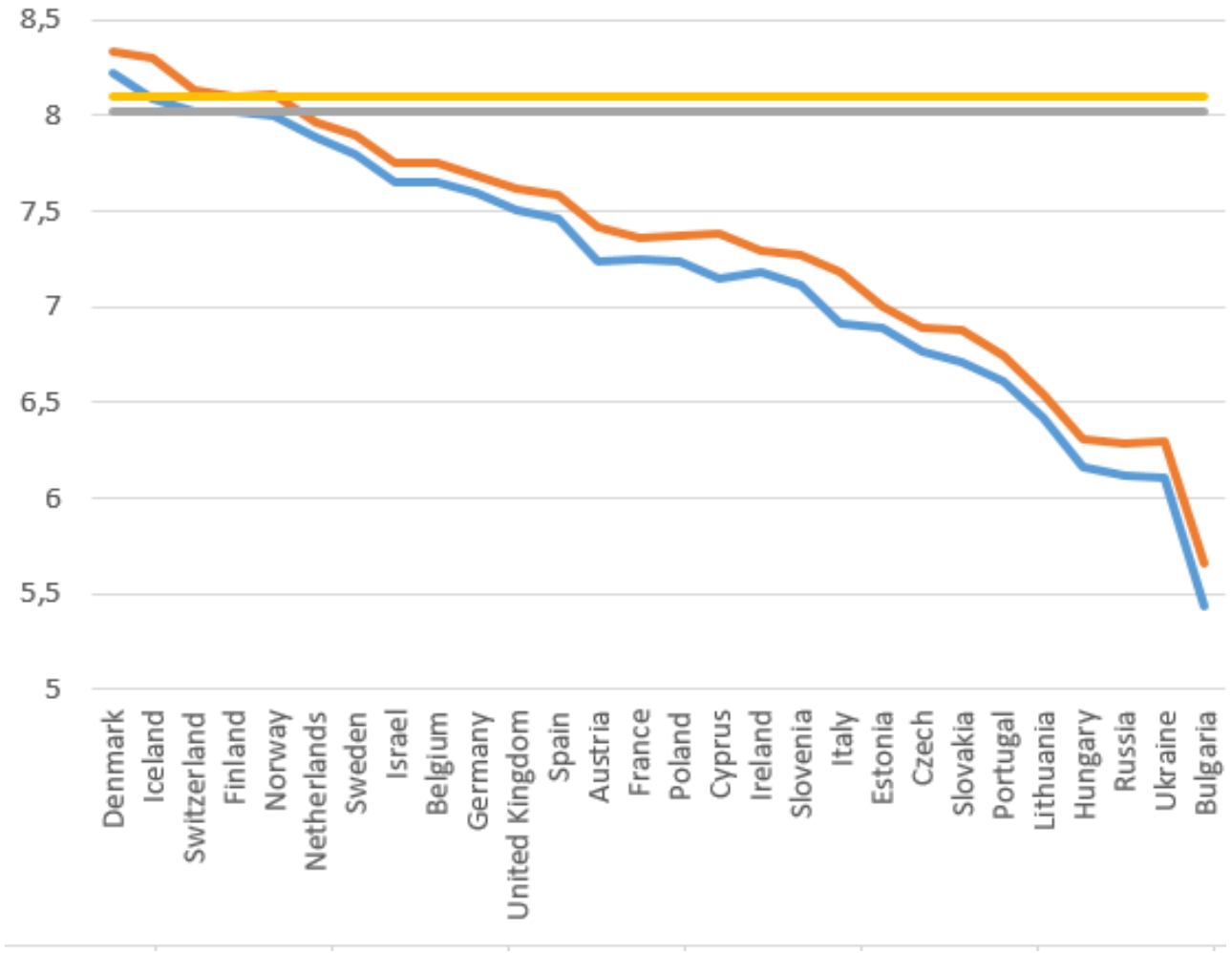


Well-being is not much correlated with the literacy scores, e.g. between science score
r = 0.23.

The variable well-being is not any significant explanatory variable at the micro level model in the OECD countries, and not either in Finland. Is it surprise?

Happiness CI's in the ESS rounds 6 and 7, Reference = Finland

Denmark and Iceland are at the same level but Iceland, Switzerland, Finland and Norway too (Iceland's sample size is rather small)

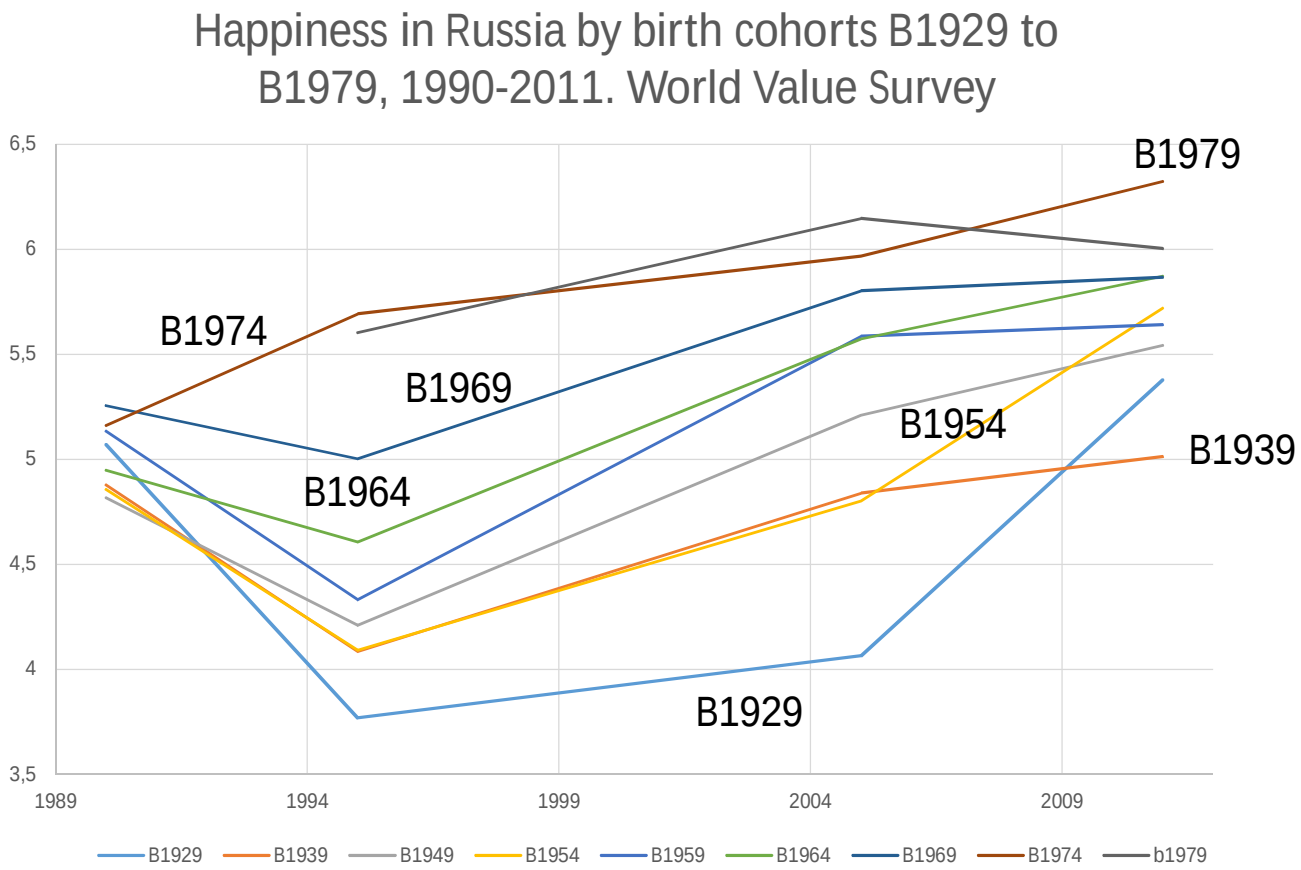


An example of the happiness changes in Russia 1990-2011

Since I had to review a manuscript on happiness changes in Russia, I decided to do my own analysis as well. This is better than made by the author. The author has found that Happiness was at bottom in 1990 but I cannot be sure since this survey is much different than those of the World Value Survey, that can be downloaded from the website. The first figure however well shows that the happiness was declined very clearly during the first years after The Soviet Union collapsed. This decline however did not concern the youngest birth cohort B1974 = born 1974-1978 as the second graph shows. On the other hand, happiness increased after that.

Happiness in Russia, World Values Survey
6,5
6
5,5
5
4,5
4
1985
1990
1995
2000
2005
2010
2015
Low
High

Happiness of youngest generations increased after the collapse of Soviet Union, but declined in other generations, in synthetic birth cohort 1929-38 especially but all changes are not very significant. Happiness was initially very even. Later, the changes vary much after 2006 in particular. The two oldest cohorts are for 10 years, next for 5 years.



Happiness here is the average of life satisfaction and happiness (from 0 to 10)

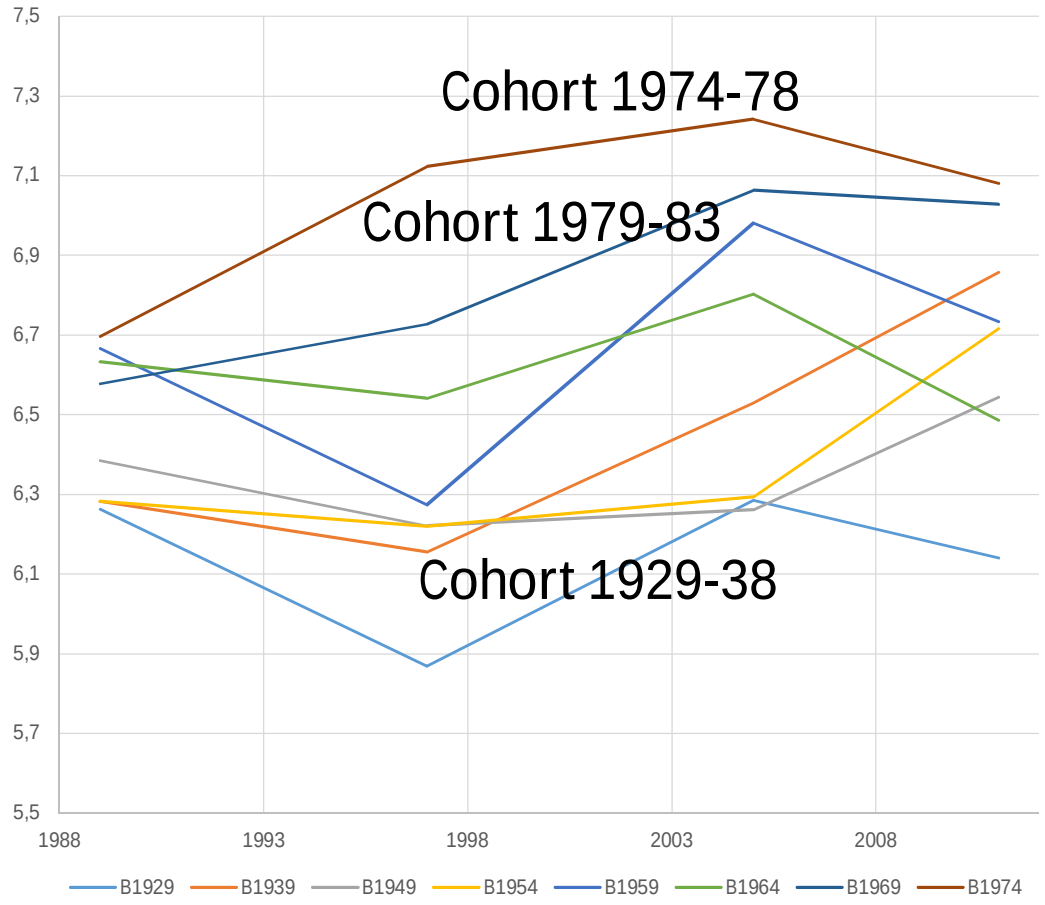
Happiness in Poland 1989-2011, World Values Survey

Poland's trend is slightly similar as in Russia. The sample size is smaller that is reason for a longer CI.

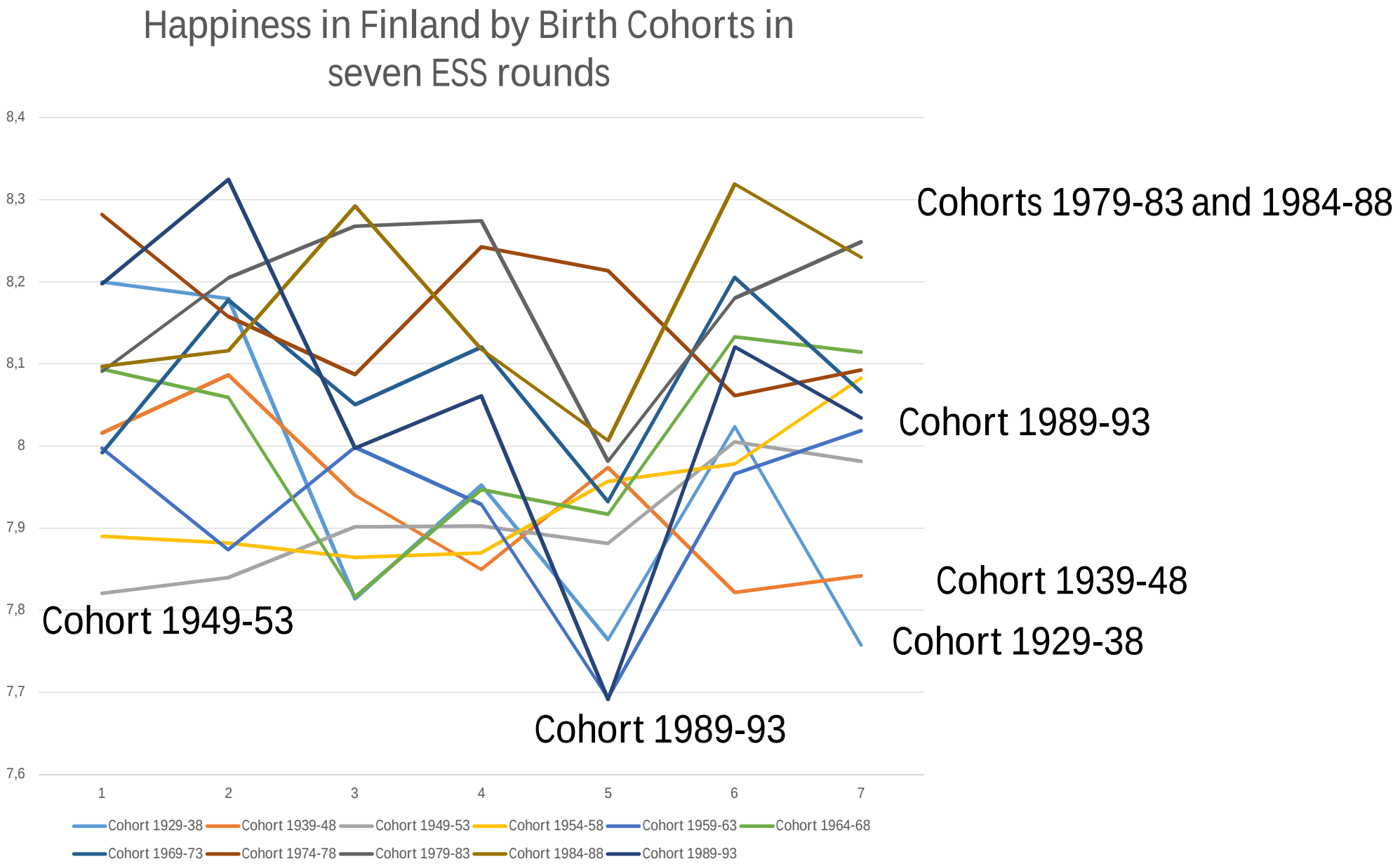
Cf. ESS later 2002-2014

Happiness in Poland 1989-2011 by synthetic birth cohorts World Values Survey

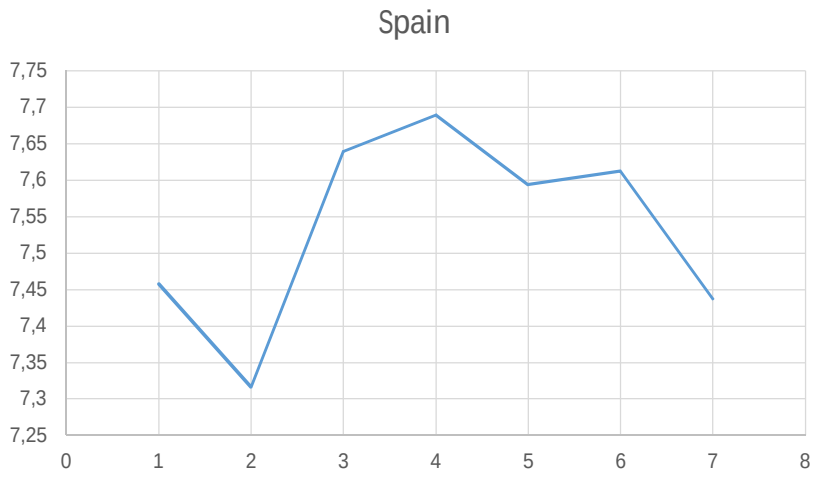
This is also somewhat similar as in Russia.
Why?

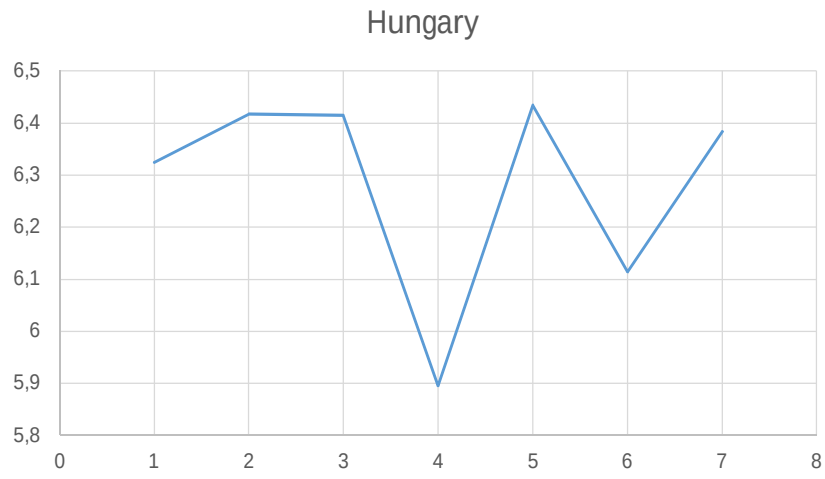


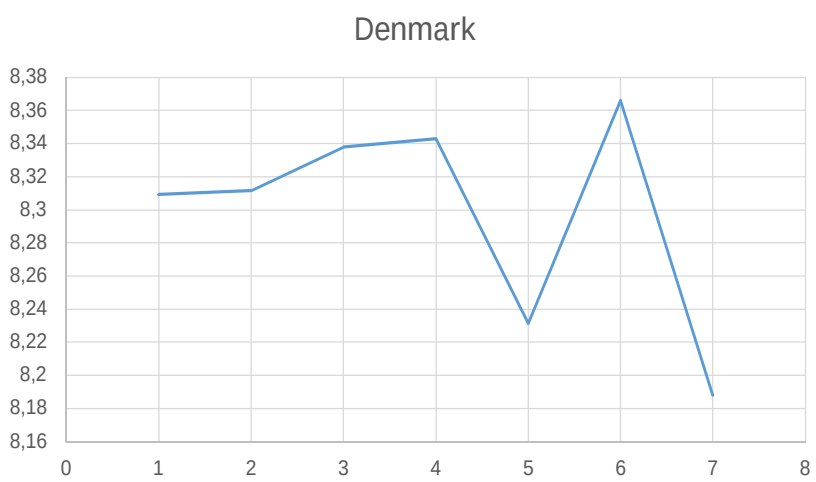
Nothing similar as in Russia or Poland cannot be found in Finland although we have no information from 1990’s. Hence the next page graph is for 2002-2014 and from the European Social Survey.

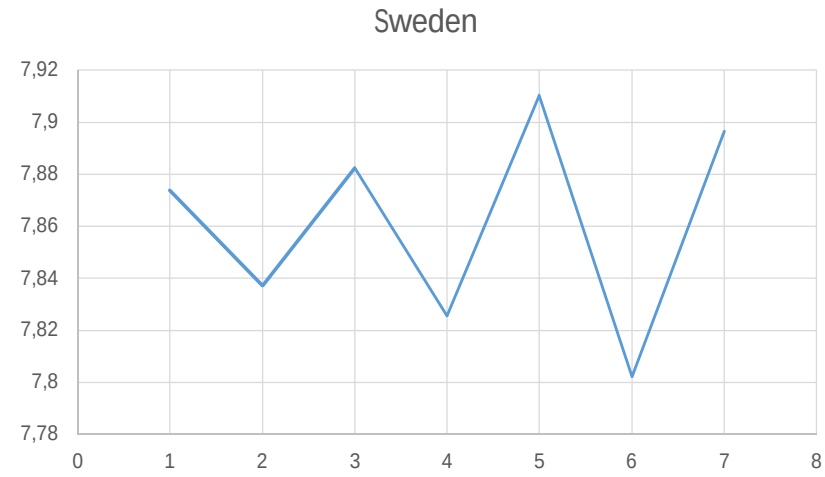

Happiness in Finland by Birth Cohorts in seven ESS rounds
8,4
8,3
8,2
8,1
8
7,9
7,8
7,7
7,6
1
2
3
4
5
6
7
Cohort 1929-38
Cohort 1939-48
Cohort 1949-53
Cohort 1954-58
Cohort 1959-63
Cohort 1964-68
Cohort 1969-73
Cohort 1974-78
Cohort 1979-83
Cohort 1984-88
Cohort 1989-93
Cohorts 1979-83 and 1984-88
Cohort 1989-93
Cohort 1939-48
Cohort 1929-38
Cohort 1949-53
Cohort 1989-93

Next pages are country level time series' from the ESS. I tried to put countries with similar trends in each page. You can do your own evaluation. The countries are such that have been participating for four rounds at least. You have to guess logically the round if it is less than all seven. For example, Greece did not participate after 2010 (maybe due to financial problems), and Ukraine either (many problems).


Spain
7,75
7,7
7,65
7,6
7,55
7,5
7,45
7,4
7,35
7,3
7,25
0
1
2
3
4
5
6
7
8


Hungary
6,5
6,4
6,3
6,2
6,1
6
5,9
5,8
0
1
2
3
4
5
6
7
8


Denmark
8,38
8,36
8,34
8,32
8,3
8,28
8,26
8,24
8,22
8,2
8,18
8,16
0
1
2
3
4
5
6
7
8


Sweden
7,92
7,9
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7,86
7,84
7,82
7,8
7,78
0
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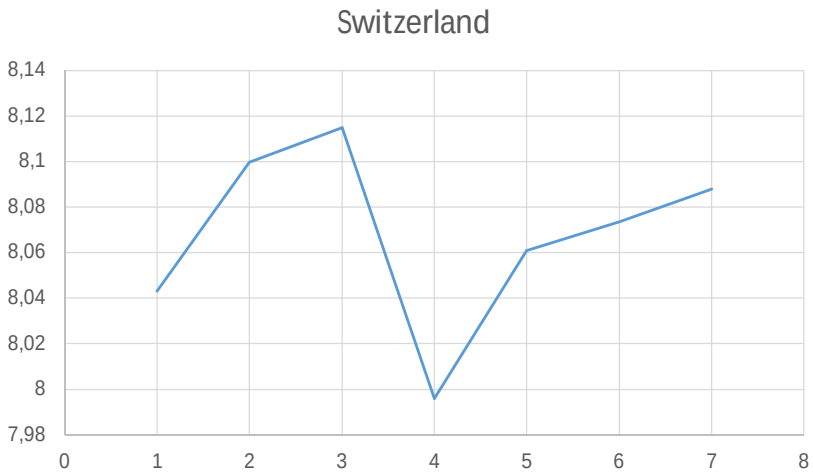
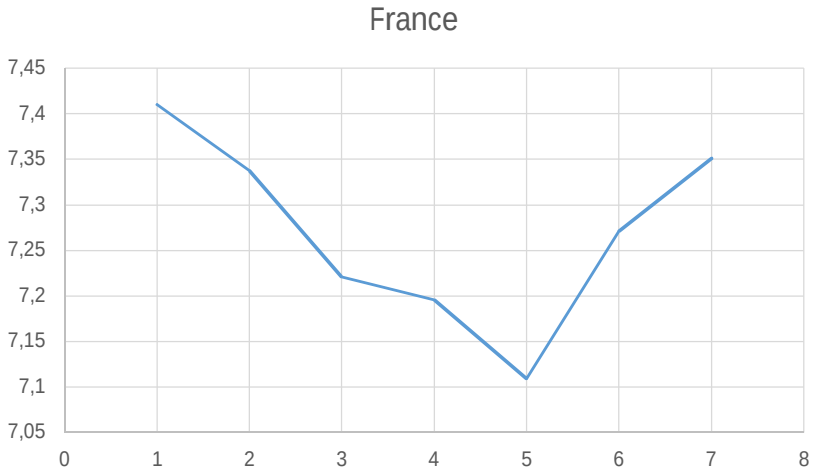
6
7
8


Switzerland
8,14
8,12
8,1
8,08
8,06
8,04
8,02
8
7,98
0 1 2 3 4 5 6 7 8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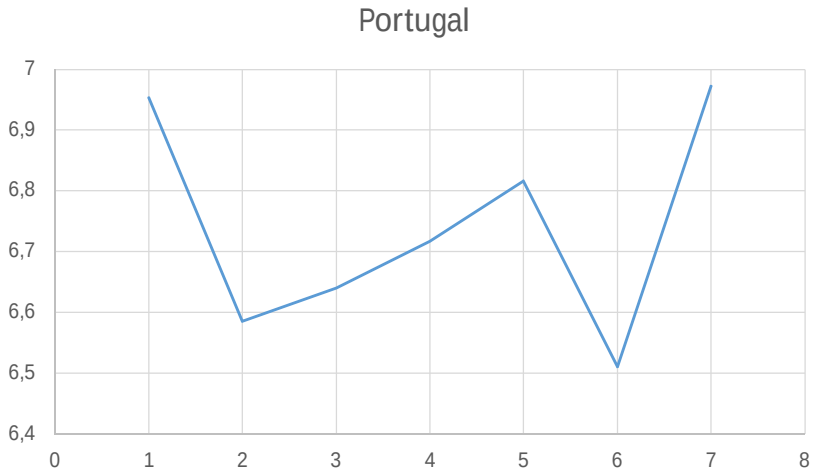
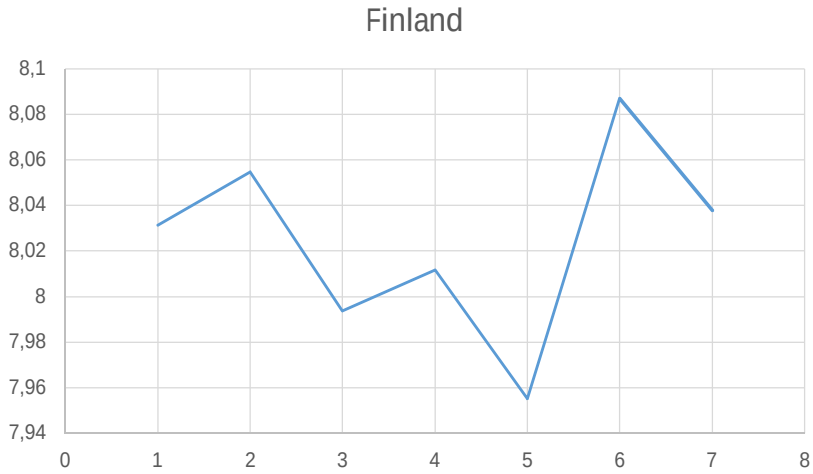
7,45
7,4
7,35
7,3
7,25
7,2
7,15
7,1
7,05
0 1 2 3 4 5 6 7 8


Portugal
7
6,9
6,8
6,7
6,6
6,5
6,4
0 1 2 3 4 5 6 7 8


Finland
8,1
8,08
8,06
8,04
8,02
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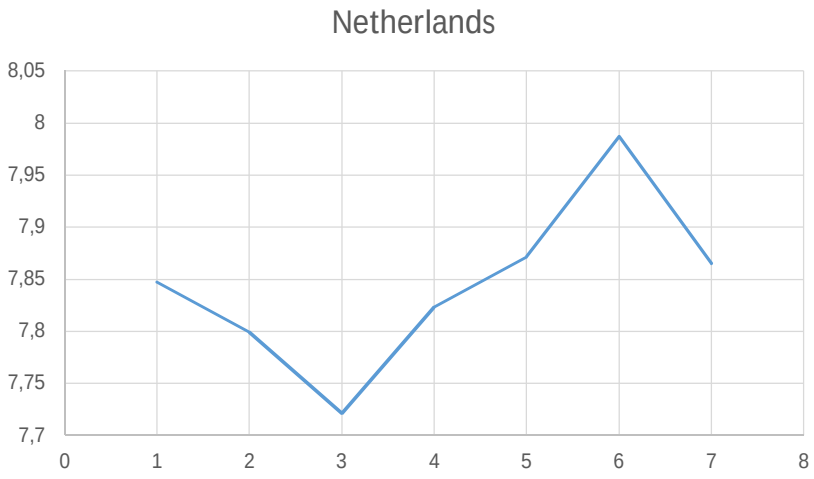
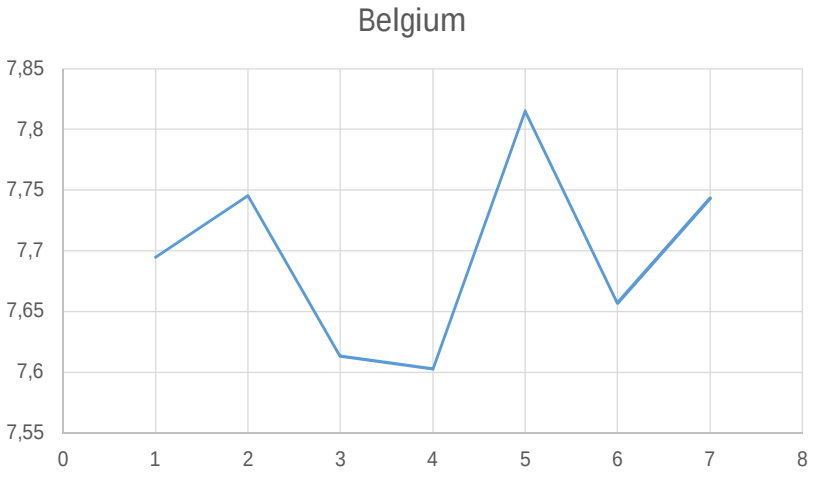
7,98
7,96
7,94
0 1 2 3 4 5 6 7 8


Netherlands
8,05
8
7,95
7,9
7,85
7,8
7,75
7,7
0 1 2 3 4 5 6 7 8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7,75
7,7
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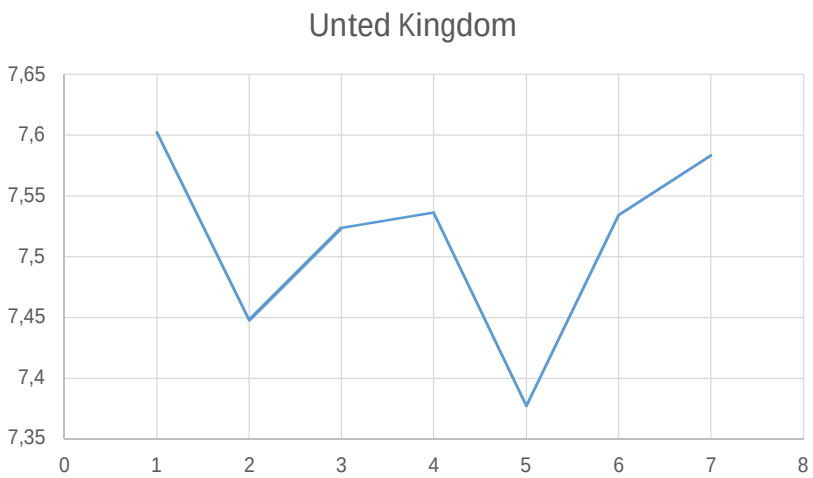
7,6
7,55
0 1 2 3 4 5 6 7 8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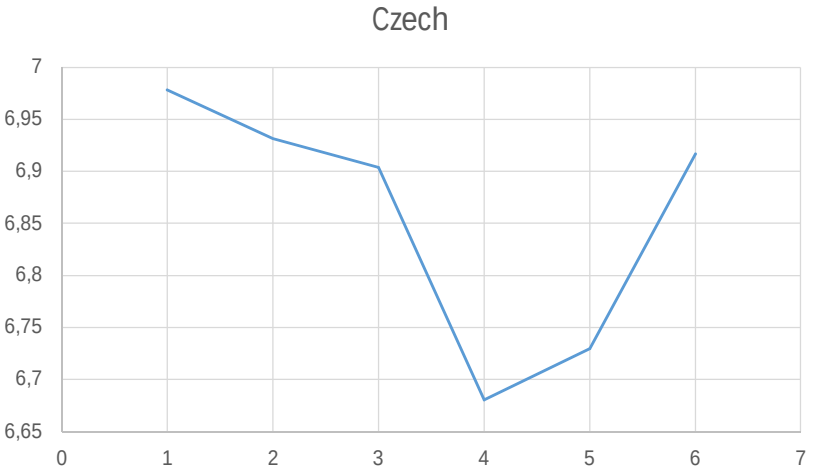
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6,75
6,7
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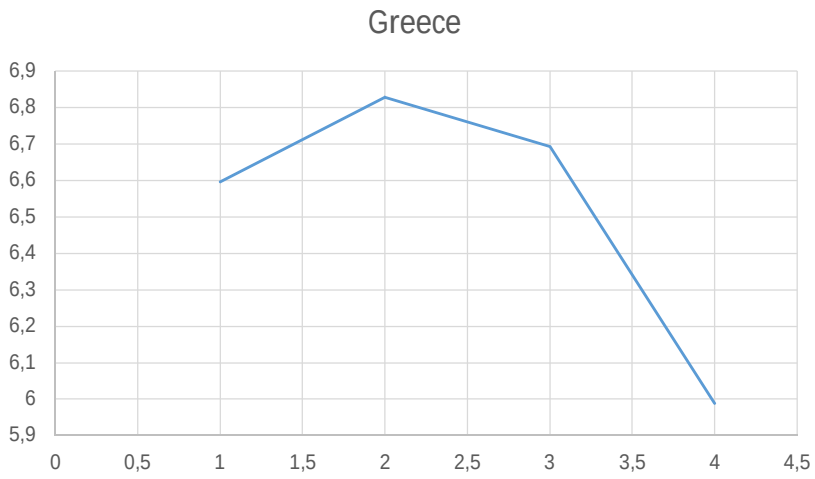
Greece
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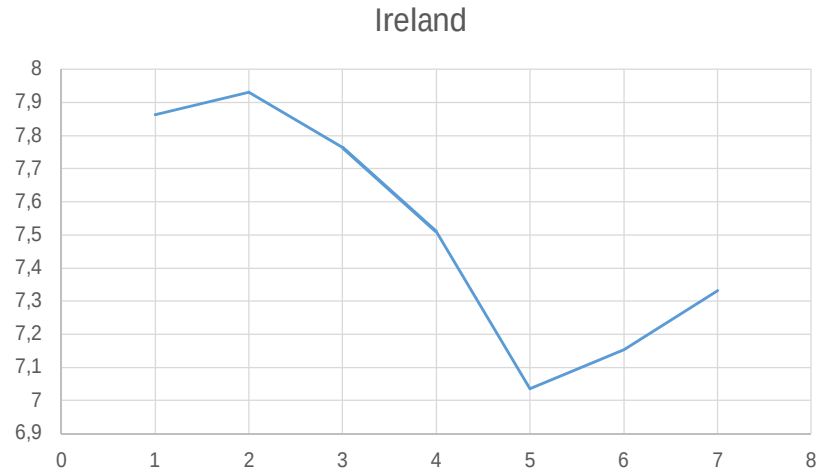
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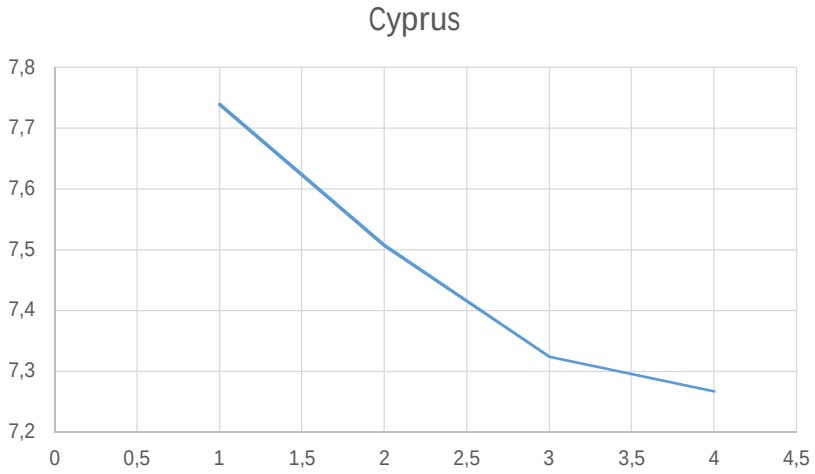
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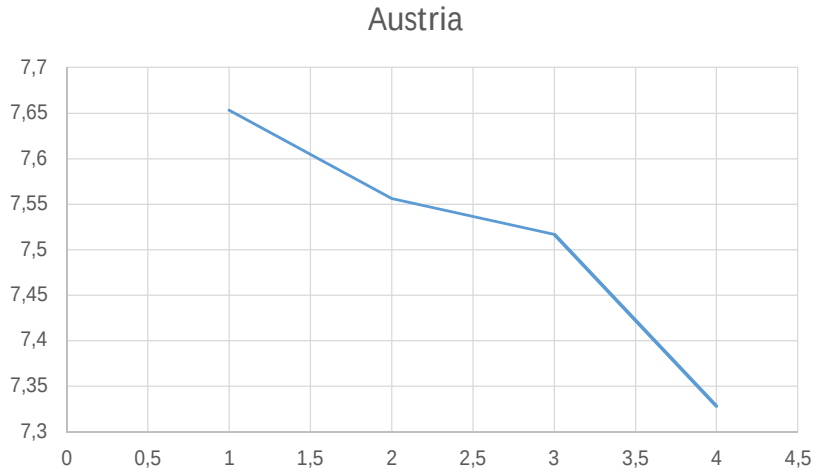
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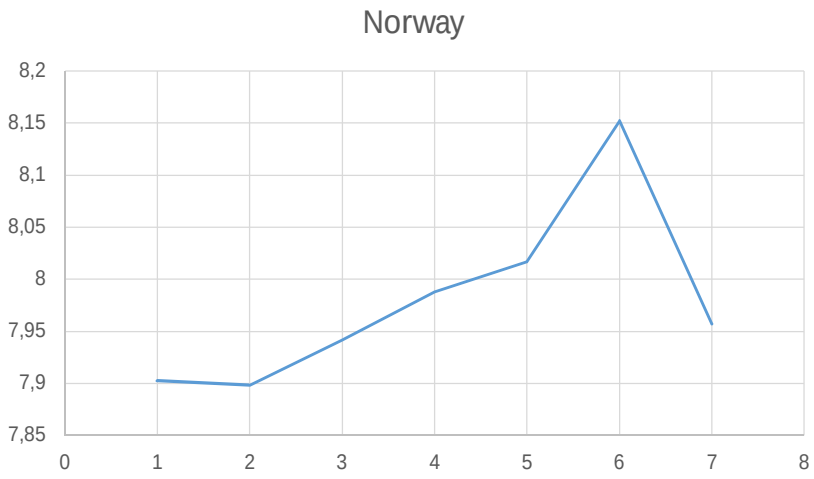
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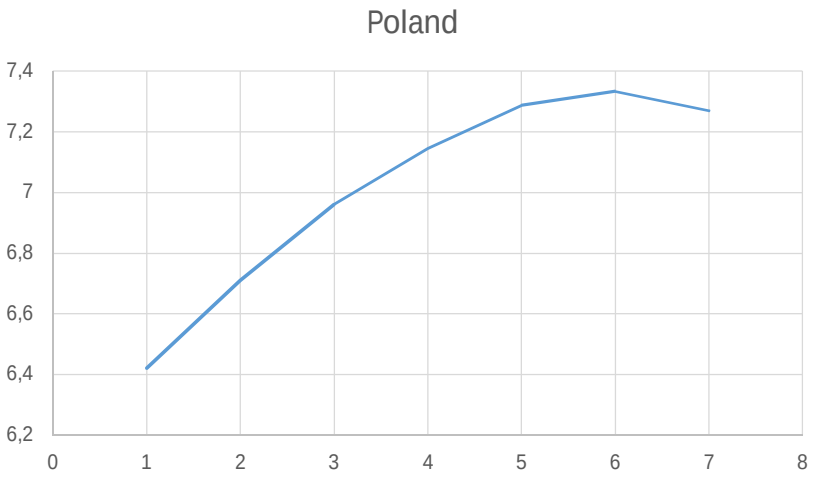
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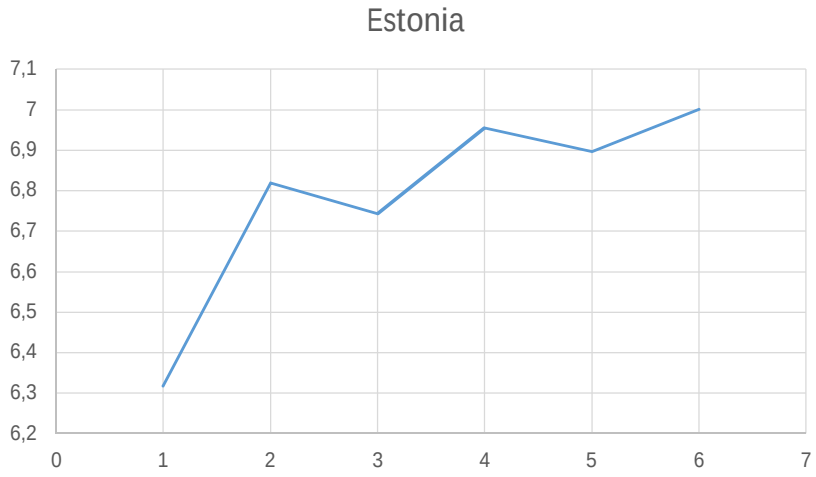
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Ukraine
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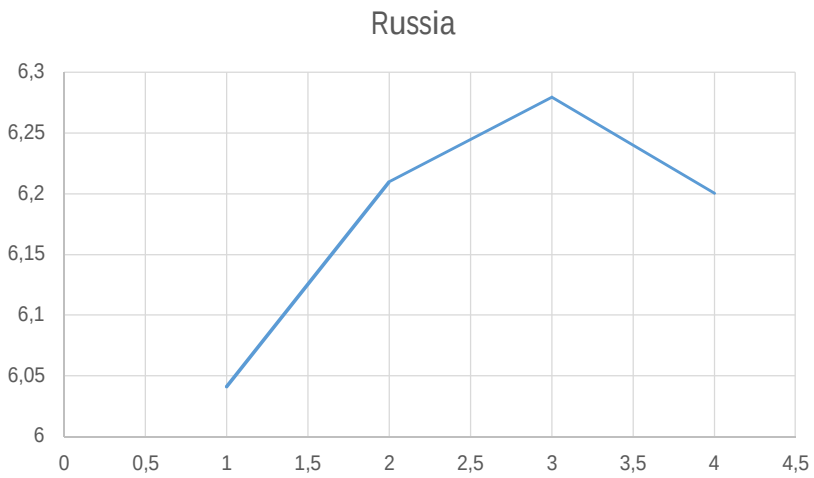
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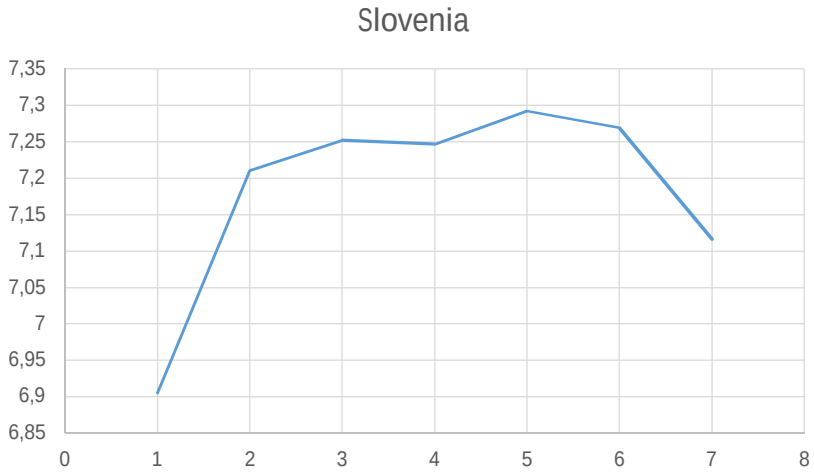
Slovenia
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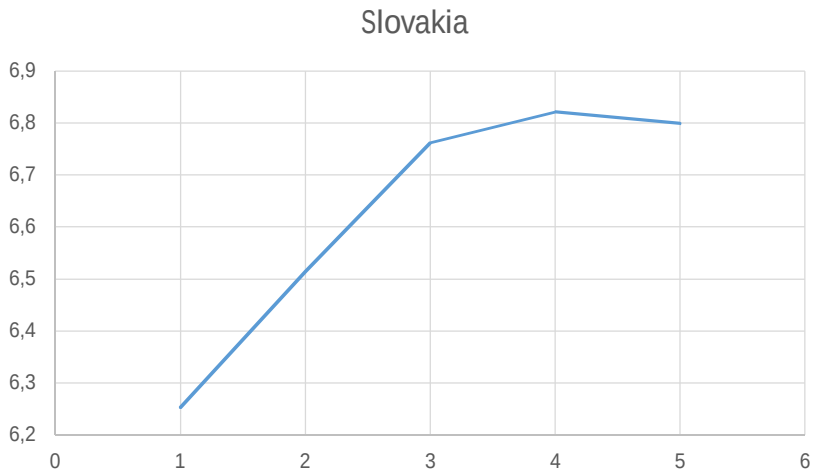
Slovakia
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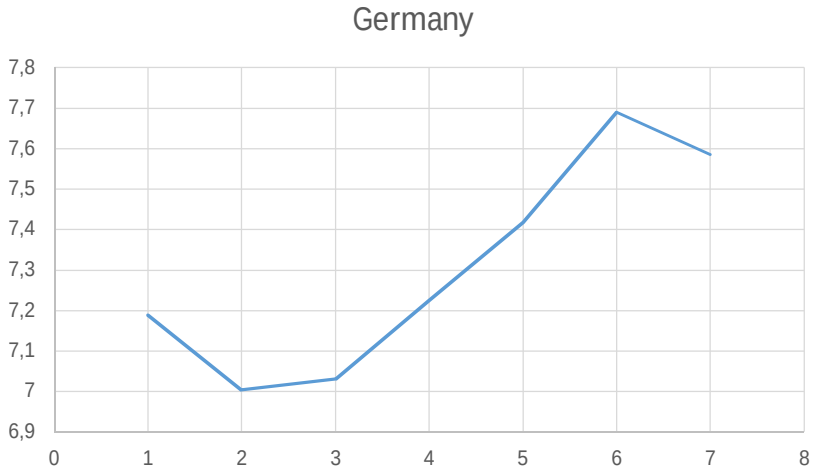
5
6


Germany
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6,9
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6
7
8

Age Happiness is more complex than U-Shaped

U-shaped results are much derived from the two well-known economists, David Blanchflower (US) and Andrew Oswald (UK). It has also been criticized (e.g. Glenn). I will show that it is not completely true but works well for the UK for example in its all meanings.

This theory says that people's happiness is declining until about 45 years since many things are too 'hectic' (job career, children. ...).

Blanchflower, D. G., & Oswald, A. J. (2000). Well-being over time in Britain and the USA. *National Bureau of Economic Research (NBER)* Working Paper No. 7487. 38 pp..

Blanchflower, D. G., & Oswald, A. J. (2004). Well-being over time in Britain and the USA. *Journal of Public Economics*, 88(7–8), 1359–1386.

Glenn, N. (2009). Is the Apparent U-Shape of Well-being over the Life Course a Result of Inappropriate Use of Control Variables. *Social Science and Medicine* 69, 481-485.

Blanchflower, D.G. & Oswald, A.J. (2009a). The U-Shape without Controls. University of Warwick, Department of Economics, The Warwick Economics Research Paper Series (TWERPS).

Blanchflower, D.G. & Oswald, A.J. (2009b). The U-Shape without Controls: A Response to Glenn. *Social Science and Medicine* 69, 486-488.

The existence of the U-shape

- Might be found as such, thus estimating the happiness curve by age
  - First results in 1990's were found e.g. in graphs but
  - The U-shape is later estimated using the two explanatory variables, Age and Age-Squared. Linear and logistic regressions were applied.

- But the U-shape usually requires to include some control variables in the model as Oswald said me when I started my first exercises about 10 years ago. I made a come back two years ago and tried to do everything better and looking for all possible literature that is rather huge. There exists even a specialized journal (Journal of Happiness Studies)

The existence of the U-shape

Most authors consider that certain controls are required, such as income, education and a series of other personal characteristics (see also Lelkes 2006, 2008). However, no complete agreement concerning which personal characteristics should be included exists.

Lelkes, O (2006). Tasting Freedom: Happiness, Religion and Economic Transition. *Journal of Economic Behavior & Organization*, 59, 2, 173-194.

Lelkes, O. (2008). Happiness Across the Life Cycle: Exploring Age-Specific Preferences. European Centre. Policy Brief March. http://www.euro.centre.org/data/1207216181_14636.pdf

My study was much motivated due to the improved quality of the European Social Survey (ESS) micro data since round 6 (2008). These improvements are concerned

- Sampling that is my area in the ESS
- New better sampling weights that were available for all rounds since 2014
    - Objective income variable is now rather good, not earlier
- Education is now also rather good.

The data of this study is from rounds 4, 5 and 6 (2008-2013). The newest round 7 was not yet available when I started my comeback spring 2015.

In this study, our purpose is not to solve the question about control variables and hence we compare four different alternatives cumulatively:

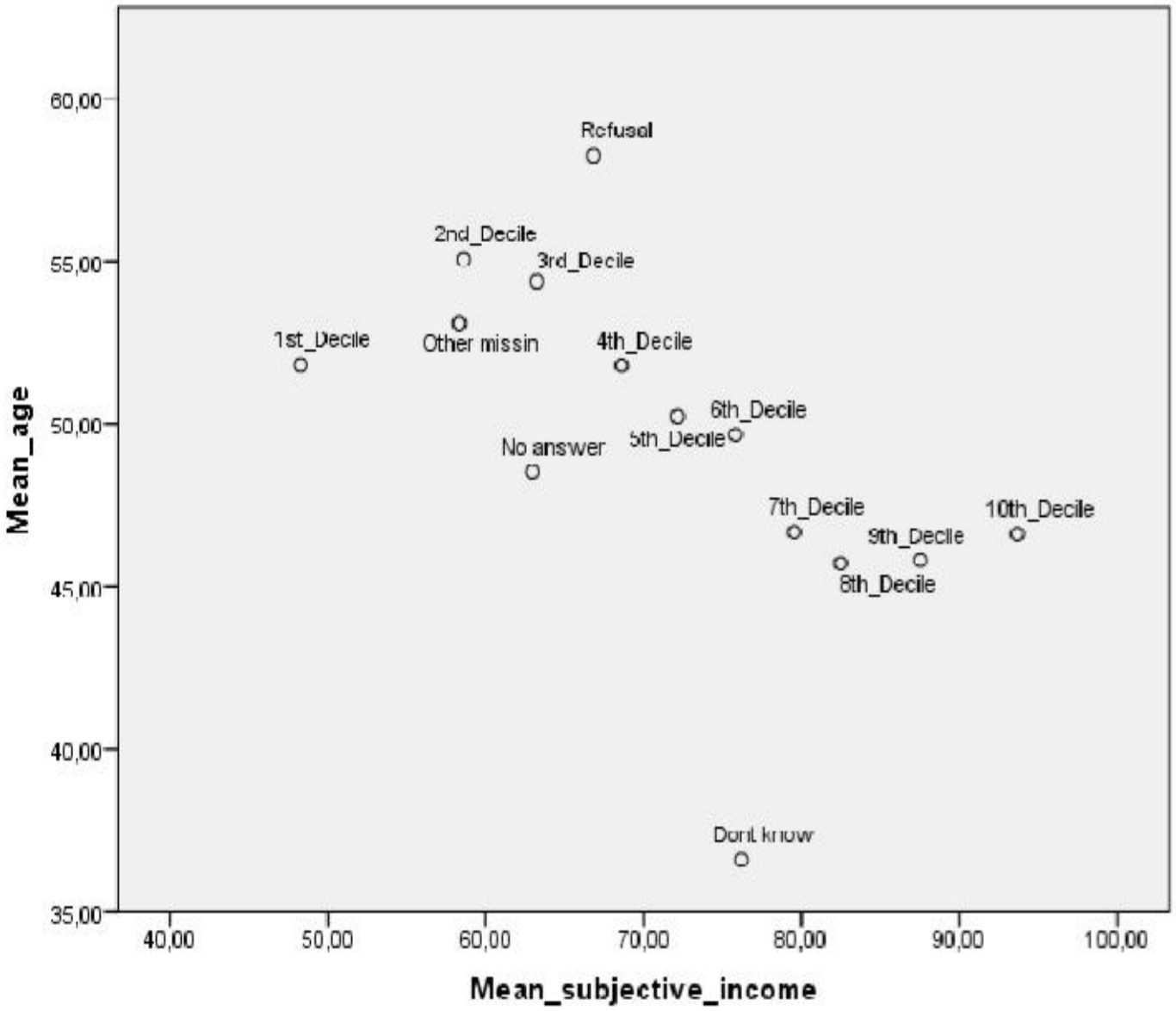
A. No other controls except gender
B. Adding objective income
C. Adding education
D. Adding subjective health

E. In addition we include gender and the two technical control variables: Country (30) and ESS-Round (2 or 3)

Question about missingness in the data

- A very good point is that item nonresponse of happiness is small (around 1 % at country level). Our dependent variable is not problematic thus.
- Gender and age are almost complete (age between 15 and 100 years). These are important explanatory variables.
- Our proper control variables have some item nonresponse, most in income (average about 20%). All these are categorical (income deciles, education levels, subjective health). These variables are without missing values since we include the missingness categories (four for income, one for education and one for health). It is good to recognize that the estimates of these categories are believable (next page). I do not know how common is this strategy. Do you know?

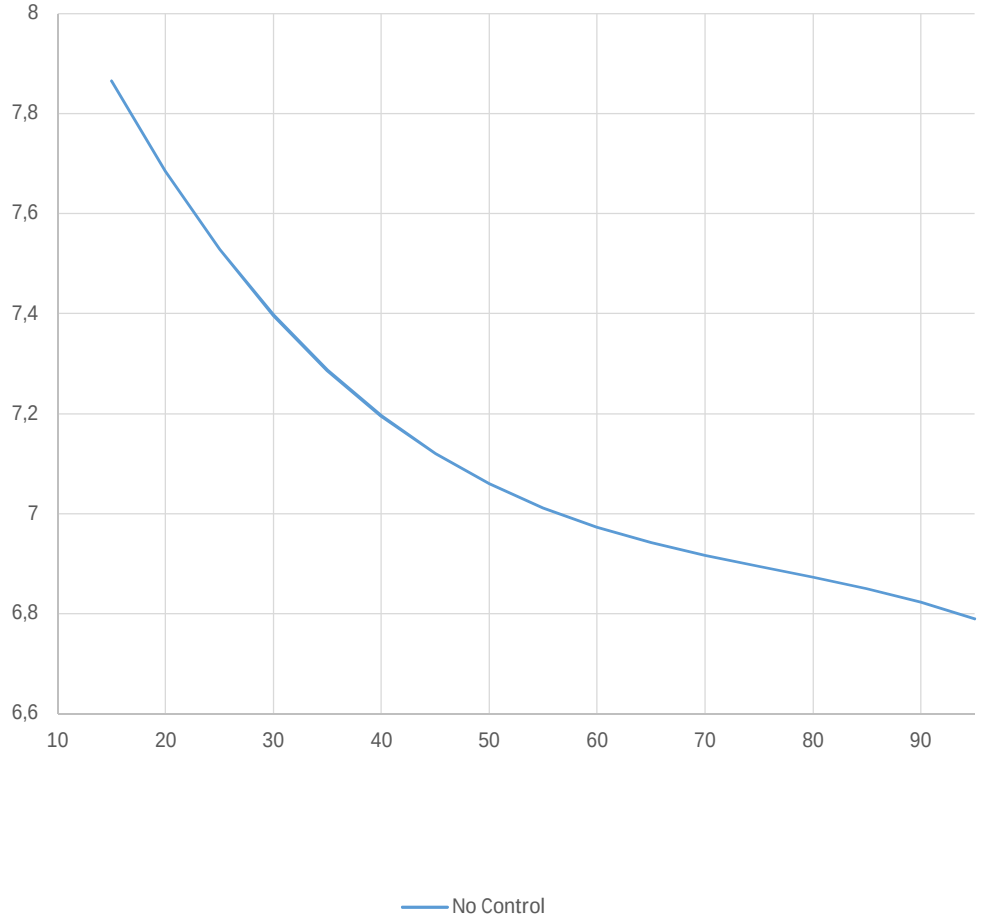
Missing objective income categories (Refusal, Don’t know, Other missing, No answer) by averages of subjective income and age.



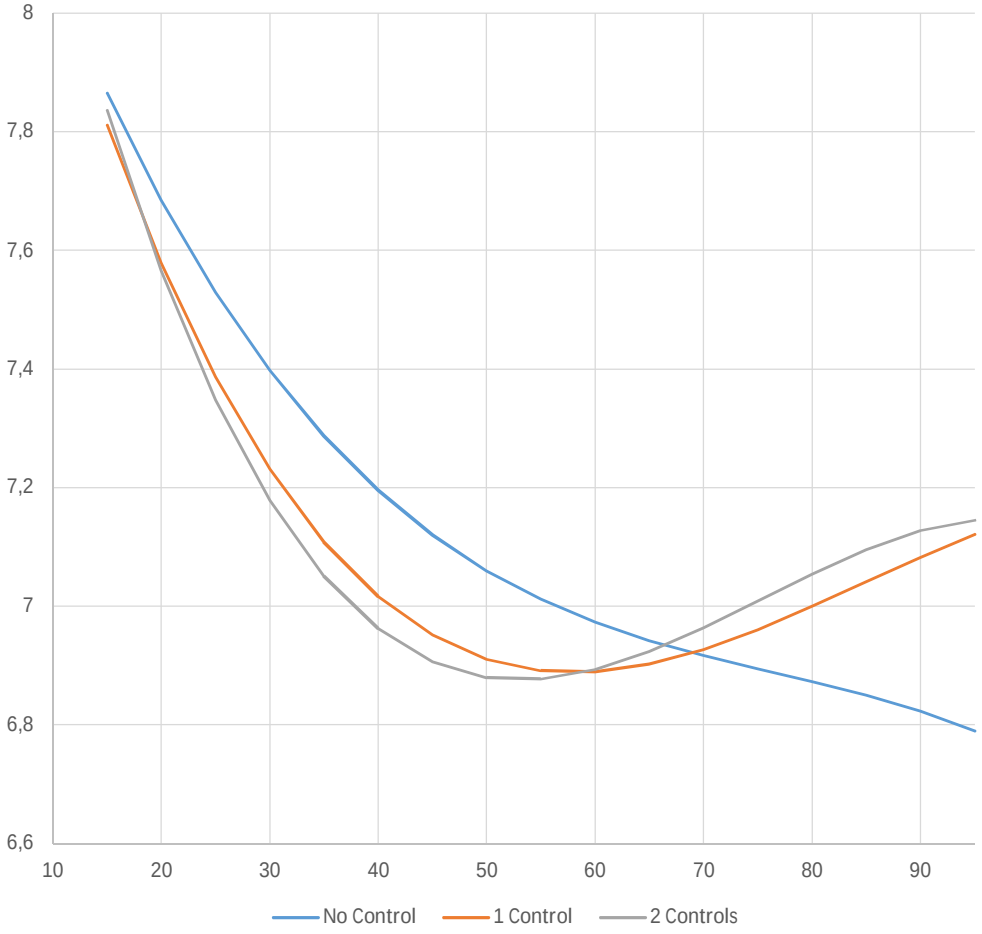
The results thus are estimated from the multivariate linear regression model included the best ESS sampling weights there. I do not present any results about estimates of the control variables even though they might be interesting. All results thus are for age estimates. I have the ordinary two age variables (Age and Age-Squared) but I have the third age variable in some models too (Age-cubed). I considered this to be interesting since the age interval in the ESS is so large, that is not common in many other studies. This variable gives opportunity to see whether there exists a turning point at certain ages.

Graphical illustration of age happiness with gender and three age variables and technical controls, 30 ESS countries.

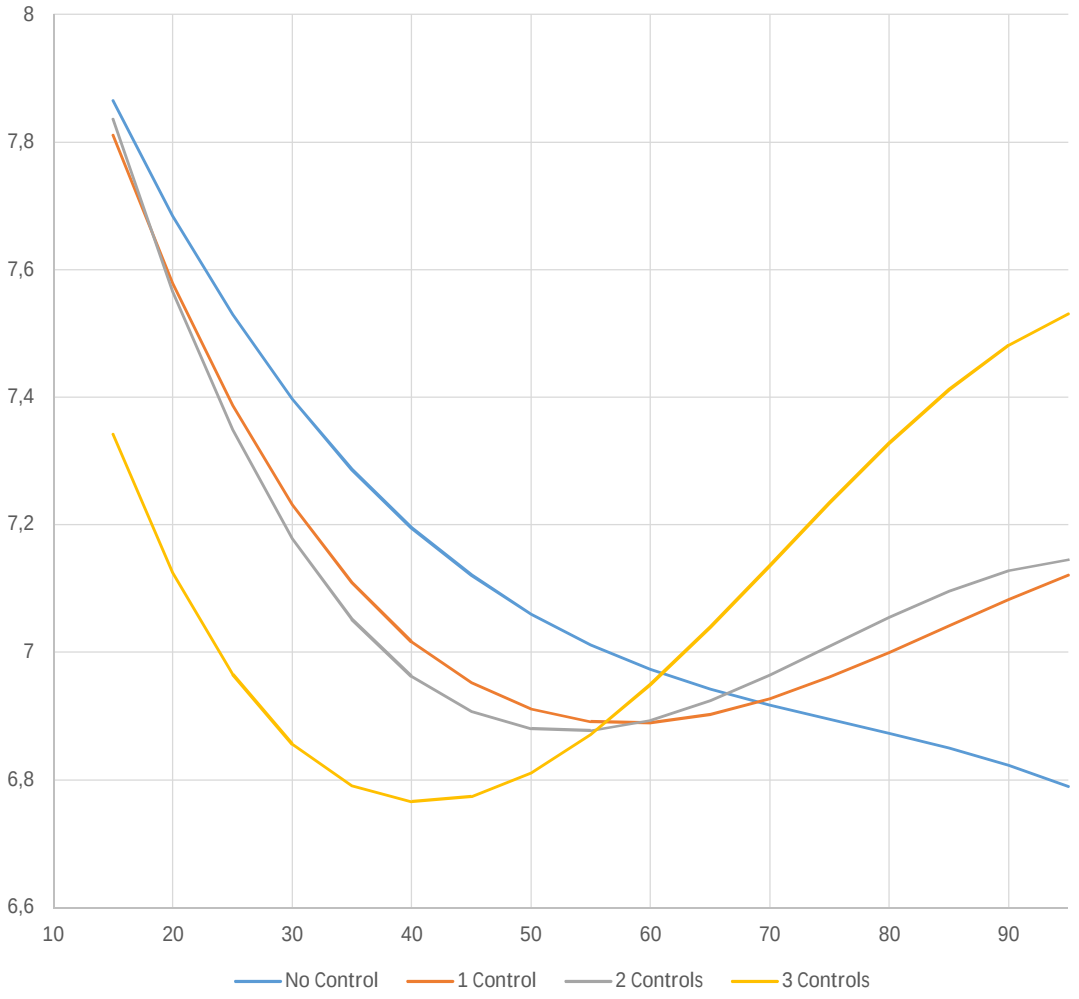
U-shape does not exist, no recognized turning point either,
I have calibrated the y-axis to correspond to the proper happiness values in all graphs.



Graphical illustration of age happiness with gender, three age variables, 1st control = Income, 2nd control = Education, and technical controls. U-curve can be found.



Graphical illustration of age happiness with gender, age variables, 1st control = Income, 2nd control = Education, 3rd control = Health, and technical controls.

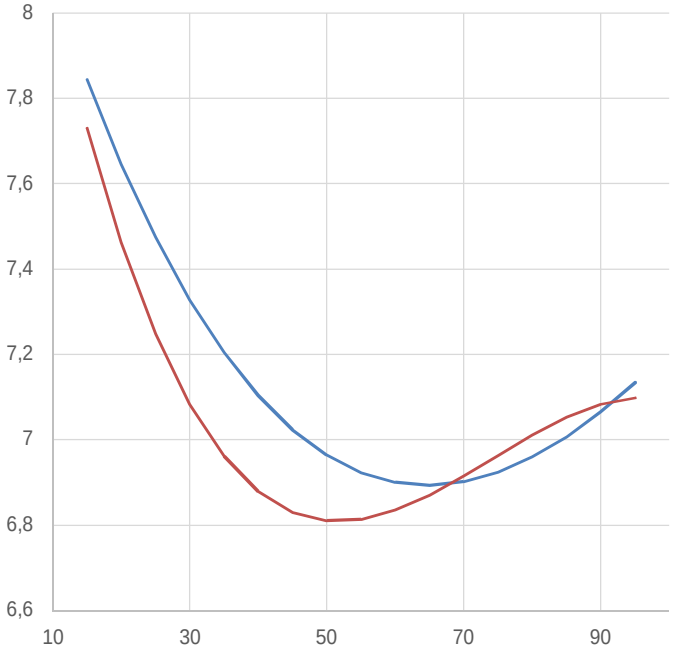


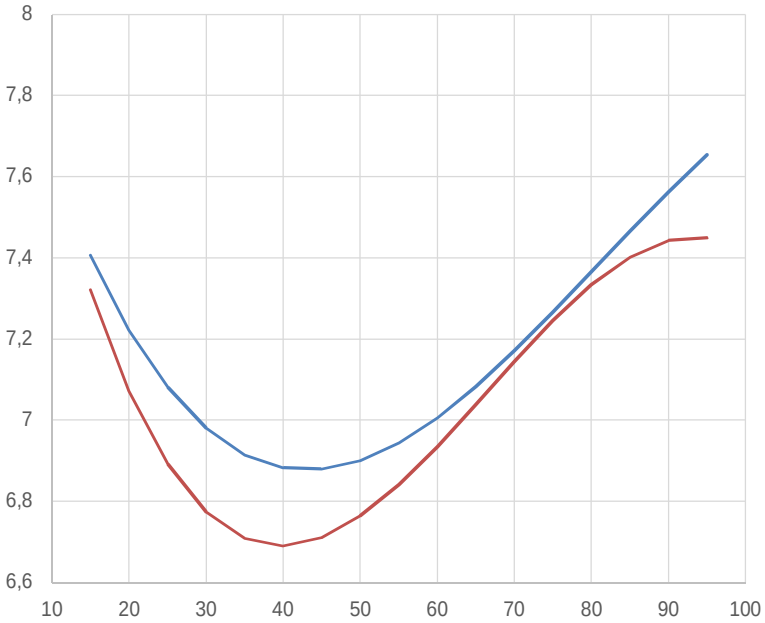
The graphs are quite easy to interpret but its is difficult to precisely see the Minimum age, and the turning point age, respectively. These are possible to calculate using the school mathematics. We see such estimates for each model on next page. It is good to recognize that the turning point is not always plausible, meaning that the estimated age is impossible, sometimes negative (for a few single countries), sometimes at impossible ages (clearly more than 100). These variables are not either significant in such cases.

The main results of age happiness for all 30 countries (NS = no plausible estimate)

	Models			
	A	B	C	D
Minimum of two ages	76.3	60.6	57.8	45.0
Minimum of three ages	NS	58.0	53.2	43.1
Turning point using three ages	76.7	84.3	75.2	71.1

Age curves for females (upper curve) and males calibrated to the happiness difference by the model. The left panel and right panel are from model C and model D, respectively.





Minimum ages and turning point ages by gender (NS = no plausible estimate)

	Model C (Income, Education))			Model D (Health included)		
	2 ages	3 ages	Turning	2 ages	3 ages	Turning
Female	64.5	64.7	NS	46.4	43.2	80.7
Male	56.3	51.7	73.9	43.8	39.7	66.5

Estimated average ages and the turning point ages of different models in 28 ESS countries. The countries are sorted by the conventional model C estimates.

Country	Minimum of three models			Turning point
	D	C	D	D
Denmark	26.0	37.7	30.9	64.8
Ireland	36.5	40.9	35.2	63.4
Sweden	34.1	41.3	34.0	NS
Switzerland	22.3	41.7	32.1	57.0
United Kingdom	37.6	42.1	38.5	59.2
Belgium	32.4	46.9	33.9	NS
Norway	41.6	47.2	40.2	NS
Germany	41.3	48.5	38.8	71.1
Turkey	46.0	51.4	39.0	57.5
The Netherlands	43.7	51.9	38.1	58.4
Finland	41.4	52.1	41.2	NS
Cyprus	38.6	55.8	35.9	61.0

Country	Minimum of three models			Turning point
France	50.9	58.7	46.9	82.4
Czech	38.0	60.6	36.5	67.9
Slovakia	48.3	61.4	43.1	67.3
Hungary	46.0	62.3	40.6	64.0
Greece	50.3	63.0	43.9	65.6
Slovenia	50.6	63.0	48.6	NS
Estonia	46.0	63.1	48.8	NS
Bulgaria	52.6	63.9	48.0	73.7
Russia	48.3	65.5	42.9	66.7
Spain	46.8	67.5	40.1	60.4
Poland	47.2	70.4	54.6	NS
Lithuania	50.4	73.7	43.3	63.9
Croatia	51.4	74.5	43.3	61.3
Ukraine	58.7	82.0	57.3	NS
Portugal	62.4	87.1	52.8	63.2
Israel	49.3	90.6	41.9	62.6

If you like to look at many details and theoretical points, go on here

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A Research Note: Happiness by Age is More Complex than U-Shaped

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