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Satisfaction with Life, Happiness, and Inequality – a Pseudo-Panel Study

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DISCUSSION PAPER SERIES

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FEBRUARY 2020

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ABSTRACT

Satisfaction with Life, Happiness, and Inequality – a Pseudo-Panel Study

The hypothesis tested in this paper is whether the increasing inequality in recent years has had a significant impact on well-being among the population in Denmark. After a survey of the literature we use attitude variables from the European Social Survey in a pseudo-panel setting covering the years 2002 – 2014. We cover respondents from Denmark and supplement the survey data with variables from administrative registers. We find a significant effect from the increasing Gini coefficient since 2002.

JEL Classification: D31, H53, I31

Keywords: pseudo-panel, well-being, inequality

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“However, there is as yet no clear evidence to show that inequality as such affects the happiness of individuals in a community” (Layard, 2005, p.52).

1. Introduction/motivation

In recent decades inequality has been increasing in most countries. In the rich OECD countries, the increase has been dramatic in a number of cases, especially so in the USA. In other countries, the increase has been more moderate but even in the – traditionally – egalitarian Nordic countries inequality has gone up. This has led to discussions of whether increasing inequality has derived implications, i.e. reducing solidarity between different groups, leading to less general confidence or to less social mobility.

The topic in the present study is to evaluate the eventual impact from inequality in the distribution of disposable income on self-reported individual well-being. We do this below by combining survey and register data in an analysis built in a pseudo-panel context. While individual income usually is assumed to be an indicator of utility or well-being, it is theoretically less clear whether inequality should be expected to have an impact on individual well-being. An impact from inequality could for instance be caused by not just individual absolute income but also relative income having an impact on utility. In such a situation, prior expectations regarding the impact from inequality on utility or well-being could be positive or negative depending on the specific setting. High and increasing inequality could relate positively to well-being if individual incomes were increasing fast in a setting with low national income per capita. High and increasing inequality could have the opposite impact on well-being in a setting where a major part of aggregate income growth went to top earners while incomes were stationary or slowly growing for most of the population.

Pseudo-panels present a method to link independent cross-section surveys in a way making it possible to analyze the included data as if they originated in a genuine panel data set following the same individuals over time, see Deaton (1985) and Verbeek (2008). We use pseudo – panels based on the European Social Survey where individual data on reported satisfaction or happiness are used as a proxy variable for individual well-being. The method consists in grouping the individuals in the surveys, for instance by age and gender, and use conventional methods for panel data to analyze the pseudo-panel. These pseudo-panels are combined in the analyses with income data coming from administrative registers considered more precise than self-reported incomes from surveys. In the following, Section 2 summarizes results in earlier studies regarding the impact from inequality on

well-being. Over time and across countries at different levels of income, results differ quite much indicating that inequality seems mostly to influence well-being in a positive way at low and increasing levels of national income while most studies in rich countries find a negative impact on well-being from inequality. A possible interpretation, discussed further below, is a combination of a Kuznets type relationship at low levels of national income being replaced by a Piketty type relationship at high levels of national income, see Kuznets (1955) and Piketty (2014). Section 3 describes the survey data used in the present study and the variables derived from the European Social Survey along with an income variable coming from administrative registers in Statistics Denmark. Further, Section 3 describes the construction of the pseudo-panels. Section 4 presents the results from the regression analyses evaluating the impact from inequality – measured by the annual aggregate Gini coefficient – on individual well-being. Section 5 summarizes the results.

2. Earlier studies

The empirical results in most earlier studies disagree regarding the impact from inequality on well-being. Ngamaba et al. (2018) summarizes the results in a Cochrane analysis of a selection of studies finding no significant impact from inequality when taking all studies together. In the present context this lack of any significant impact in a global sense is less relevant as it turns out that the sign and significance is highly context dependent. The majority of studies based on data from rich OECD countries find a significant negative impact from inequality on well-being, while lack of significance or a significantly positive impact is concentrated to studies either in less affluent or emerging economies or to global studies including a very big number of countries. The studies included in Ngabama et al. (2018) use different measures of inequality. Based on their broad survey of results we first focus on analyses of most relevance for the present study, summarizing results from high income countries followed by results for middle- and low-income countries. The study by Alesina et al. (2004) using US and European data find a significant negative impact in both the USA and Europe with the biggest impact in Europe. Supporting evidence for this difference is found by Ebert and Welsch (2009) in a study of inequality aversion which is strong using European data. Beja (2014) is a clear example of the context dependence, i.e. finding a significant negative impact from inequality working with data for 14 industrialized countries while the impact is found positive when analyzing 19 emerging economies. Blanchflower and Oswald (2004) are using annual US and UK data for 26 years finding a negative impact in both countries. They are not using the Gini coefficient as inequality indicator but apply the 75/25 ratio in the distribution of reported incomes, i.e. an endogenous inequality indicator. Fahey and Smyth (2004) are using European data

and find a negative impact from the Gini coefficient on life satisfaction. Hagerty (2000) is using 7 years of US data. The inequality measure is the 80/20 ratio finding a negative impact on happiness from the 80 percentile and a positive significant impact from the 20 percentile. Hajdu and Hajdu (2014) use data from the European Social Survey for 6 years finding a significant negative impact on life satisfaction from inequality measured by the Gini coefficient. Schwarze and Harpfer (2007) are using data from the German Socioeconomic Panel covering 13 years and find a significantly negative impact on life satisfaction using an Atkinson inequality measure. Finally, Oishi et al. (2011) are using US annual data for 36 years finding a significantly negative impact from the Gini coefficient on happiness. Oishi and Kesebir (2015) are using data on 16 high income countries covering 47 years finding a significantly negative impact on different measures of well-being. There are few exceptions to the sign and significance found in studies using data for rich OECD countries. Clark (2003) is an exception finding a positive impact from Gini using British panel data for 11 years.

Next, we summarize results in studies using data from low income countries and emerging economies surveyed in Ngabama et al. (2018). Senik (2004) using Russian data found a positive impact on life satisfaction from the Gini coefficient. Knight and Gunatilaka (2010) and Jiang et al. (2012) are using Chinese data on individual happiness and both studies find a positive impact from inequality. Wang et al. (2015) is also working with Chinese data finding an interesting non-linearity in the impact from inequality with a maximum at a Gini coefficients value about 0,4. Finally, Ngabama (2016) using data from Rwanda, finds a significant positive impact which however is sensitive to inclusion of controls.

Next, we go on to studies not covered by the survey in Ngabama et al. (2018) In a study based on data from a global selection of countries, Diener et al. (1995) using life satisfaction found dominantly a negative impact from the Gini coefficient. Helliwell (2003) using global data on life satisfaction found no significant impact from the Gini coefficient. Helliwell and Huang (2008), however, find a significantly positive impact from inequality on life satisfaction in Latin American countries and in low income economies. Haller and Hadler (2006) work with worldwide data on life satisfaction and happiness and find dominantly a significantly positive impact from inequality. Berg and Veenhoven (2010) work with data for 119 countries and find an interesting sign pattern, i.e. a negative impact from inequality in Western, rich countries, while the Gini coefficient is found to have a positive impact in Eastern Europe, Asia and Latin America. No significant impact is found for African countries. Bjørnskov et al. (2013) analyze data for 87 countries and present results for

the impact from inequality, potentially influenced by the perceived fairness of the distribution of incomes. Subjective inequality has a positive impact on life satisfaction. The Gini coefficient has a negative impact on happiness, decreasing in perceived fairness of the actual distribution. Finally, Rozer and Kraaykamp (2013) working with global data on life satisfaction and happiness find a positive impact from inequality which however is smaller when a measure of “trust” is included in the analysis. Verme (2011) using global data on life satisfaction is the exception to the dominant finding of a positive impact from inequality in the global analyses. The results in Verme is the finding of a significantly negative impact from the Gini coefficient. In absolute terms, the impact is stronger in rich countries. Oshio and Urakawa (2014) is a test of whether individuals in a study on Japanese survey data have knowledge about the actual level of inequality. They base their analysis on the perception of inequality among the respondents. They find a negative relationship between well-being and perceived inequality which becomes weaker when they control for income status. The most recent study with a global approach is Katic and Ingram (2018). They estimate a multi-level model on data on well-being from the World Value Survey including tests for mechanisms in the interaction between inequality and well-being. These mechanisms are preferences for equality, perceptions regarding fairness in the generation of the distribution of income and regarding social mobility along with concern about social comparison. In contrast to most studies, Katic and Ingram (2018) find a significant positive linear relationship between inequality and well-being. Summing up, the dominant result from this survey seems to be a context dependence in the impact from inequality on well-being with positive impact in low-income countries and a negative impact in high-income countries.

3. Methods and Data

In the statistical analyses a so-called pseudo-panel is used. A pseudo-panel is composed of a series of cross section samples that can be analyzed by the same econometric methods as conventional panel data. Here, only the main principles of the method are explained while referring to the original article for the details (Deaton, 1985 and Verbeek, 2008).

The samples must be independently and randomly collected at different times. The "trick" that allows the pseudo-panel to be analyzed in the same way as conventional panels is that all samples are divided into cohorts. As opposed to the conventional panel, where individuals make up the analytical units, the cohorts are *groups* of individuals with specific characteristics. In the present

study gender and five-years age groups are used, i.e. men 25-29 years, women 25-29 years, men 30-34 years, women 30-34 year and so on until men 60-64 years and woman 60-64 years. Thus, the samples consist of 16 cohorts, and each person in each sample is represented only in one cohort. The cohorts must meet two requirements. The first is that they must be homogeneous in each year. For example, the 25-29 age male cohort in all surveys must have roughly the same characteristics - in terms of ethnic background, education, labor market status etc. The second requirement is that the cohorts must have an appropriate size to ensure consistent and efficient estimates. In the literature, fifty people is recommended as the lower limit to reduce the impact from eventual measurement errors (Guillerm, 2017). With regard to an upper limit, cohorts should not be so big that variations in average values over time become very small making estimates less precise. The European Social Survey (ESS) is the basis for the pseudo-panel constructed for this study. ESS is a cross-national survey that has been conducted across several European countries since 2001. The fundamental purpose for the ESS is to measure the attitudes, beliefs and behavior patterns of the populations. (www.europeansocialsurvey.org). It is conducted every two years with newly selected, cross-sectional samples (ibid). Denmark has participated in the years 2002-2014, and all these samples are included in the pseudo-panel used here. Table A1 shows the number of individuals in each cohort in each year. Detailed analyses show that they have approximately the same characteristics over time (not included here). Their size also complies with the requirements of getting consistent and efficient estimates. Two of the questions in the ESS-survey are used as the dependent variables in the analyses: how happy and satisfied people are. The other source of data used in the analysis is Statistics Denmark, see below.

4. Approach and results

The eventual impact from inequality on individual well-being is evaluated by estimating a regression

$$y_{ct} = X_{ct}\beta + \alpha_{ct} + u_{ct}, c = 1 \dots C; t = 1 \dots T$$

where y are average values of the well-being variables within each cohort c in each time period t . X consists of both average values and cohort-specific and general variables. Finally, α_{ct} , is the cohort effect and u is an error term. Fixed effect, random effect and ordinary least square regressions on pseudo-panels is carried out in the same way as on conventional data set. The dependent variables

are included in the same way as in a conventional regression analysis, i.e. as the cohort specific average of the reported satisfaction or happiness values from the ESS. The independent variables fall into three categories. A category (a) consist of the average of the individual observations within the cohorts. Another category (b) consist of cohort specific observations and finally a category (c) are general observations that apply to all cohorts. An example of (a) is average income, of (b) the rate of unemployment in the cohort and of (c) GDP. The key variable of interest in the present study, the Gini-coefficient, is from Statistics Denmark. Other variables from Statistics Denmark are per capita income, the share of immigrant/descendants and the share of unemployed. Next, the various variables are explained in more detail, together with their range in the analyses.

Happiness, as mentioned is one of the dependent variables. Respondents were asked to indicate on a ten-point scale “how happy would you say you are, taking all things together”. 0 stands for “extremely unhappy” and 10 for “extremely happy”. Table A2 in the appendix shows the average of the responses for each cohort lying between 8 and 9. *Satisfaction*, the alternative dependent variable is also measured on a ten-point scale where 0 corresponds to “extremely dissatisfied” and 10 to “extremely satisfied”. The specific question respondents were asked was: “All things considered, how satisfied are you with your life as a whole nowadays”. The values for the cohorts shown in Table A3 are at the same level as for happiness. The *Gini-coefficient*, the key independent variable, is a type c variable based on disposable income after taxes and income transfers from the public sector. Table A4 shows that the Gini coefficient increases quite strongly between 2002 and 2014 - from about 23 to 29. Thus, Denmark follows the common trend in most rich OECD countries. Whether this increase affects the happiness and satisfaction of the respondents in a significant way is the main topic in the present study. *Per capita income* is a type c variable. The prior expectation is that happiness and satisfaction will increase due to higher per capita income. *The share of immigrants and descendants*, is a type b variable. The share is of potential interest because the average income for this group is lower than for native Danes which suggests that their happiness and satisfaction levels may be lower. *The share of unemployed* is a type b variable. It is included in the analysis because a general finding in the literature is that unemployment has a negative impact on happiness and satisfaction (Winkelmann and Winkelmann, 1998 and Winkelmann, 2014). *The 2008 crisis* is a dummy variable set at 1 for the years before 2008 and at 2 for later years. The prior expectation is that the Great Recession has a negative impact on happiness and satisfaction. The results from regressions on satisfaction with life and happiness are reported in Tables 1 – 6. To evaluate the robustness of the results we are using three different estimation methods for each of the

attitude variables, i.e. fixed effects, random effect and ordinary least squares (OLS) estimation. The effect in focus is the eventual impact from the Gini coefficient on the attitude variables. Here we find a significant impact in all regressions on both satisfaction with life and on happiness. Overall, the other variables have a stronger impact on satisfaction with life than on happiness. This is the case for the income variable which is significantly positive in all estimations on satisfaction with life. The impact on happiness is positive, but significant only at between 5 and 10 per cent significance. The dummy variable for the Great Recession, set at 1 for $t < 2008$ and at 2 for $t \geq 2008$ is significant and positive at the 5 per cent level in all specifications of satisfaction with life. The impact on happiness is negative but with significance only between 5 and 10 per cent. The rate of unemployment has the clearest impact on happiness in the random effect and the OLS regressions while only the OLS regression finds negative significance relative to satisfaction with life. We thus find a dominantly negative impact from unemployment on the attitude variables confirming the findings and survey in Winkelmann and Winkelmann (1998) and Winkelmann (2014). Public consumption, as a measure of in-kind benefits, has positive significance at the 5 per cent level concerning satisfaction with life but less or no significance regarding happiness. Finally, the share of immigrants and descendants is found to be insignificant.

Table 1. Fixed effect estimation of impact on satisfaction with life

stflife	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
GNP per cap.	7,291	1,843	3,960	0,000	3,630	10,953
Gini coeff.	-0,343	0,082	-4,210	0,000	-0,506	-0,181
2008 Crisis	-0,835	0,237	-3,530	0,001	-1,305	-0,365
Share unempl.	-0,708	0,648	-1,090	0,278	-1,996	0,580
Share immig.	0,013	0,603	0,020	0,983	-1,184	1,210
Public consump.	0,102	0,032	3,230	0,002	0,039	0,166
_cons	-26,051	8,973	-2,900	0,005	-43,878	-8,225

$R^2=0,1809$. No. of observations = 112, no. of groups = 16

Table 2. Random effect estimation of impact on satisfaction with life

stflife	Coef,	Std. Err.	z	P>z	[95% Conf,	Interval]
GNP per cap.	7,247	1,859	3,900	0,000	3,604	10,890
Gini coeff.	-0,340	0,082	-4,120	0,000	-0,501	-0,178
2008 Crisis	-0,834	0,238	-3,500	0,000	-1,301	-0,366
Share unempl.	-1,058	0,619	-1,710	0,087	-2,272	0,155
Share immig.	-0,278	0,565	-0,490	0,622	-1,386	0,829
Public consump.	0,103	0,032	3,230	0,001	0,041	0,166
_cons	-2,589	9,049	-2,860	0,004	-43,625	-8,155

R²=0,1940. No. of observations = 112, no. of groups = 16

Table 3. OLS estimation of impact on satisfaction with life

stflife	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
GNP per cap.	7,214	2,006	3,600	0,000	3,235	11,192
Gini coeff.	-0,337	0,089	-3,790	0,000	-0,513	-0,160
2008 Crisis	-0,833	0,257	-3,240	0,002	-1,344	-0,323
Share unempl.	-1,355	0,633	-2,140	0,035	-2,611	-0,099
Share immig.	-0,502	0,569	-0,880	0,379	-1,630	0,626
Public consump.	0,104	0,035	3,020	0,003	0,036	0,173
_cons	-2,577	9,769	-2,640	0,010	-45,142	-6,404

Adj. R²=0,1510. No. of observations = 112, no. of groups = 16

Table 4. Fixed effect estimation of impact on happiness

happy	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
GNP per cap.	3,602	1,914	1,880	0,063	-0,201	7,406
Gini coeff.	-0,173	0,085	-2,040	0,044	-0,342	-0,005
2008 Crisis	-0,433	0,246	-1,760	0,082	-0,921	0,055
Share unempl.	-1,073	0,673	-1,590	0,115	-2,411	0,265
Share immig.	0,806	0,626	1,290	0,201	-0,437	2,050
Public consump.	0,047	0,033	1,440	0,154	-0,018	0,113
_cons	-8,570	9,320	-0,920	0,360	-27,086	9,946

R²=0,105. No. of observations = 112, no. of groups = 16

Table 5. Random effect estimation of impact on happiness

happy	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]
GNP per cap.	3,607	1,901	1,900	0,058	-0,119 7,334
Gini coeff.	-0,173	0,084	-2,060	0,040	-0,338 -0,008
2008 Crisis	-0,438	0,244	-1,800	0,073	-0,916 0,040
Share unempl.	-1,250	0,629	-1,990	0,047	-2,482 -0,018
Share immig.	0,806	0,572	1,410	0,159	-0,316 1,928
Public consump.	0,048	0,033	1,480	0,140	-0,016 0,113
_cons	-8,615	9,256	-0,930	0,352	-26,757 9,527

$R^2=0,107$. No. of observations = 112, no. of groups = 1

Table 6. OLS estimation of impact on happiness

happy	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]
GNP per cap.	3,612	2,004	1,800	0,074	-0,360 7,585
Gini coeff.	-0,173	0,089	-1,950	0,054	-0,349 0,003
2008 Crisis	-0,442	0,257	-1,720	0,088	-0,951 0,068
Share unempl.	-1,371	0,633	-2,170	0,032	-2,625 -0,117
Share immig.	0,814	0,568	1,430	0,155	-0,313 1,940
Public consump.	0,049	0,034	1,420	0,158	-0,019 0,117
_cons	-8,653	9,755	-0,890	0,377	-28,000 10,690

Adj $R^2=0,056$. No. of observations = 112, no. of groups = 16

5. Conclusions

Inequality is low in Denmark as in the other Nordic countries in international comparison. Still, inequality has gone up quite strongly also in Denmark since the turn of the century. Using a pseudo-panel approach combining attitude data from the European Social Survey with administrative data from Statistics Denmark for the years 2002 – 2014 we find that inequality measured by the national Gini coefficient has had a significantly negative impact on well-being measures. The impact is stronger on “satisfaction with life” than on “happiness”, but significant using both well-being measures. A dummy variable indicating the Great Recession beginning in 2008 is significant, especially regarding “satisfaction with life”. The rate of unemployment is also found to have a significantly negative impact on well-being. Finally, public consumption is found to have a significantly positive impact on “satisfaction with life”. Most citizens hardly follow the Gini

coefficient over time. A more intuitive interpretation of the results are that they reflect a general feeling of inequality getting out of line with acceptable changes based on concepts of fairness.

Appendix tables

Table A1. Number of individuals in cohorts

Cohort		Year							Average
		2002	2004	2006	2008	2010	2012	2014	
25-29	M	44	51	36	41	32	39	67	47
-	W	70	50	38	37	35	39	36	47
30-34	M	73	49	70	51	54	44	41	57
-	W	66	66	69	65	40	51	56	61
35-39	M	68	66	51	63	52	47	64	60
-	W	72	74	66	65	71	52	52	66
40-44	M	70	67	77	78	74	66	47	70
-	W	70	88	66	77	66	76	63	73
45-49	M	58	74	66	56	85	72	75	71
-	W	59	57	61	87	79	83	81	74
50-54	M	85	51	74	69	69	89	64	74
-	W	78	67	71	65	66	66	62	68
55-59	M	74	74	62	87	70	82	62	74
-	W	61	78	76	73	58	77	67	71
60-64	M	58	62	79	86	72	57	46	68
-	W	51	55	88	75	77	61	62	69
I alt		1057	1029	1050	1075	1000	1001	945	

Table A2. Average value of happiness in cohorts.

Cohort		Year							Average
		2002	2004	2006	2008	2010	2012	2014	
25-29	M	8,00	8,29	8,72	8,1	7,97	8,25	8,19	8,22
-	W	8,12	8,31	8,45	8,14	7,85	8,61	8,44	8,29
30-34	M	8,25	8,32	8,44	8,13	8,25	8,61	8,44	8,29
-	W	8,36	8,32	8,00	8,53	8,26	8,25	8,39	8,40
35-39	M	8,37	8,28	8,23	8,57	8,25	8,09	8,14	8,29
-	W	8,31	8,38	8,27	8,56	8,28	8,37	8,15	8,32
40-44	M	8,34	8,00	8,26	8,12	7,73	8,06	8,08	8,09
-	W	8,23	8,34	8,51	8,70	8,23	8,34	8,01	8,42
45-49	M	8,34	8,41	8,14	8,23	8,30	8,31	8,44	8,26
-	W	8,42	7,91	8,06	8,36	8,37	8,01	8,02	8,17
50-54	M	8,32	8,58	8,20	7,80	8,22	8,45	7,84	8,29
-	W	8,41	8,40	8,14	8,29	8,48	8,55	8,56	8,41
55-59	M	8,36	8,24	8,13	8,26	8,10	8,43	7,91	8,28
-	W	8,57	8,15	8,14	8,64	8,05	8,40	8,10	8,76
60-64	M	8,19	8,37	8,54	8,45	8,62	8,09	8,40	8,29
-	W	8,29	8,38	8,44	8,48	8,44	8,49	8,37	8,37
Average		8,31	8,30	8,44	8,50	8,23	8,33	8,21	8,43

Table A3 – Average value of satisfaction in cohorts

Cohort		Year							Average
		2002	2004	2006	2008	2010	2012	2014	
25-29	M	7,95	8,35	8,47	8,39	8,07	8,54	8,48	8,31
-	W	8,13	8,50	8,50	8,24	7,97	8,64	8,28	8,32
30-34	M	8,30	8,35	8,20	8,76	8,28	8,43	8,30	8,37
-	W	8,27	8,45	8,60	8,31	8,15	8,62	8,05	8,35
35-39	M	8,51	8,31	8,21	8,45	8,30	8,40	8,11	8,33
-	W	8,19	8,27	8,21	8,55	8,23	8,80	8,23	8,36
40-44	M	8,49	8,19	8,38	8,14	8,01	8,14	8,30	8,24
-	W	8,44	8,61	8,41	8,84	8,33	8,45	8,48	8,51
45-49	M	8,40	8,61	8,36	8,51	8,41	8,28	8,12	8,38
-	W	8,51	8,00	8,11	8,43	8,33	8,43	8,12	8,23
50-54	M	8,47	8,72	8,12	8,26	8,25	8,49	8,06	8,34
-	W	8,63	8,43	8,18	8,38	8,31	8,45	8,51	8,42
55-59	M	8,45	8,50	8,80	8,39	8,23	8,43	8,24	8,41
-	W	8,64	8,61	8,46	8,70	8,02	8,56	8,42	8,49
60-64	M	8,36	8,55	8,91	8,97	8,71	8,44	8,12	8,55
-	W	8,63	8,69	8,76	8,79	8,57	8,69	8,63	8,70
Average		8,40	8,44	8,41	8,50	8,27	8,50	8,28	8,40

Table A4. Average annual values of independent variables.

Year	GNP per capita (ln)	Gini coefficient	Rate of Unemployment	Immigrant / Descendants Share of pop.	Public consumption. Share of GNP
2002	5,57	24,23	0,04	0,07	21,51
2004	5,63	24,80	0,05	0,05	19,44
2006	5,73	26,60	0,03	0,06	17,67
2008	5,79	26,00	0,02	0,06	20,67
2010	5,79	27,14	0,03	0,08	22,28
2012	5,82	27,77	0,04	0,08	23,53
2014	5,86	29,14	0,05	0,07	24,50

References

- Alesina, A., R. Di Tella and R. MacCulloch. 2004. Inequality and happiness: Are Europeans and Americans different? *Journal of Public Economics*, 88, 2009-2042.
- Beja, E.L. 2014. Subjective well-being analysis of income inequality: Evidence for the industrialized and emerging economies. *Applied Research in Quality of Life*, 9(2), 139-156.
- Berg, M. and R. Veenhoven. 2010. Income inequality and happiness in 119 nations: in search for an optimum that does not appear to exist. In B. Greve (ed.) *Happiness and social policy in Europe*, pp. 174-194. Edward Elgar.
- Bjørnskov, C., A. Dreher, J.A.V. Fischer, J. Schnellenbach and K. Gehring. 2013. Inequality and happiness: When perceived social mobility and economic reality do not match. *Journal of Economic Behavior & Organization*, 91, 75-92.
- Blanchflower, D.G. and A.J. Oswald. 2004. Well-being over time in Britain and the USA. *Journal of Public Economics*, 88(7-8), 1359-1386.
- Clark, A. 2003. *Inequality-aversion and income mobility: A direct test*. DELTA Working Papers Series. Paris.
- Deaton, A. 1985. Panel data from time series of cross-sections. *Journal of Econometrics*, vol.30, issue 1-2, 109-126.
- Diener, E., M. Diener and C. Diener. 1995. Factors predicting the subjective well-being of nations. *Journal of Personality and Social Psychology*, 69(5), 851-864.
- Ebert, U. and H. Welsch. 2009. How do Europeans evaluate income distributions? An assessment based on happiness surveys. *The Review of Income and Wealth*, Series 55, Number 3, 803-819.
- Fahey, T. and E. Smyth. 2004. The link between subjective well-being and objective conditions in European societies. In W.A. Arts and L. Halman (eds.) *European values at the turn of the millennium*. Brill, Leiden.
- Guillerm, M. 2017. Pseudo-panel methods and an example of application to Household Wealth data. *Economics and Statistics*, No. 491-492.
- Hagerty, M.R. 2000. Social comparisons of income in one's community: Evidence from national surveys of income and happiness. *Journal of Personality and Social Psychology*, 78(4), 764-771.

- Hajdu, T. and G. Hajdu. 2014. Reduction of income inequality and subjective well-being in Europe. *Economics-the Open Access Open-Assessment Journal*, 8.
- Haller, M. and M.Hadler. 2006. How social relations and structures can produce happiness and unhappiness: An international comparative analysis. *Social Indicators Research*, 75(2), 169-216.
- Helliwell, J.F. 2003. How's life? Combining individual and national variables to explain subjective well-being. *Economic Modelling*, 20(2), 331-360.
- Helliwell, J.F. and H. Huang. 2008. How's your government? International evidence linking good government and well-being. *British Journal of Political Science*, 38, 595-619.
- Jiang, S., M. Lu and H. Sato. 2012. Identity, inequality, and happiness: Evidence from urban China. *World Development*, 40(6), 1190-1200.
- Katic, I. and P. Ingram. 2018. Income Inequality and Subjective Well-Being: Toward an Understanding of the Relationship and Its Mechanisms. *Business & Society*, Vol. 57(6), 1010-1044.
- Knight, J. and R.Gunatilaka. 2010. The rural-urban divide in China: Income but not happiness. *Journal of Development Studies*, 46(3), 506-534.
- Kuznets, S. 1955. Economic Growth and Income Inequality. *American Economic Review*, 45, march, 1-28.
- Layard, R. 2005. *Happiness. Lessons from a new science*. Penguin Books. London.
- Ngamaba, H.K. 2016. Happiness and life satisfaction in Rwanda. *Journal of Psychology in Africa*, 26(5), 407-414.
- Ngamaba, H.K. M. Panagioti and C. J. Armitage. 2018. Income inequality and subjective well-being: a systematic review and meta-analysis. *Quality of Life Research*, 27(3), 577-596.
- Oishi, S., S. Kesebir and E. Diener. 2011. Income inequality and happiness. *Psychological Science*, 22(9), 1095-1100.
- Oishi, S. and S. Kesebir. 2015. Income inequality explains why economic growth does not always translate to an increase in happiness. *Psychological Science*, 26(10), 1630-1638.
- Oshio, T. and K. Urakawa. 2014. The Association between Perceived Income Inequality and Subjective Well-being: Evidence from a Social Survey in Japan. *Social Indicators Research*, 116(3), 755-770.
- Piketty, T. 2014. *Capital in the Twenty-First Century*. Belknap. Harvard.
- Rozer, J. and G. Kraaykamp. 2013. Income inequality and subjective well-being: A cross-national study on the conditional effects of individual and national characteristics. *Social Indicators Research*, 113(3), 1009-1023.
- Schwarze, J. and M. Harpfer. 2007. Are people inequality averse, and do they prefer redistribution by the state? Evidence from German longitudinal data on life satisfaction. *Journal of Socio-Economics*, 36, 233-249.
- Senik, C. 2004. Income distribution and well-being: What can we learn from subjective data? *Journal of Economic Surveys*, 19(1), 43-63.
- Verme, P. 2011. Life satisfaction and income inequality. *Review of Income and Wealth*, 57(1), 111-137.
- Verbeek, M. 2008. Pseudo-Panels and Repeated Cross-Sections. Ch. 11 in M. Verbeek. *The Econometrics of panel data*, 269-383. Springer. Berlin, Heidelberg.
- Wang, P., J. Pan and Z. Luo. 2015. The Impact of Income Inequality on Individual Happiness: Evidence from China. *Social Indicators Research*, 121(2): 413-35.
- Winkelmann, L. and R. Winkelmann. 1998. Why are the unemployed so unhappy? Evidence from panel data. *Economica* 65: 257, 1-15.
- Winkelmann, R. 2014. Unemployment and happiness. *IZA World of Labor*.