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ABSTRACT

What Buys Happiness? Analyzing Trends in Subjective Well-Being in 15 European Countries, 1973-2002*

Trends in life satisfaction are examined across 15 European countries employing a modified version of Kendall's Tau. Analyses show that GDP growth relative to growth in the preceding period is a significant determinant of the trends; the same holds for the growth in life expectancy while the contemporaneous growth in the current account balance exerts a positive influence. Relative unemployment growth becomes significant when interacted with a measure of the long-run political ideology of the median voter. The effects of relative GDP growth vary with the political ideology variable.

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For aught I see, they are as sick that surfeit with too much as they that starve with nothing.[1]

1. Introduction

Few goals in life are shared by so many as the pursuit of happiness, a pursuit as old as mankind itself. In economics, it is a standard assumption that happiness – individual utility in the economic vocabulary - depends on income, leisure and sometimes a few other factors. Yet, although mainstream models would predict that higher income leads to greater happiness, most earlier empirical research has been unable to find a sufficiently strong correlation between subjective well-being and per capita income in rich countries to support the standard utility assumption. In fact, a positive association has been shown to hold only at certain points in time within particular countries and not for the group of high-income countries as a whole (Frey and Stutzer, 2002). The usual explanations given for this paradox are either that individuals compare with their peers and neighbours (Duesenberry, 1949; Easterlin, 1995) or that as incomes increase, so do individuals' income aspirations (Irwin, 1944; Stutzer, 2004); both these factors are assumed to be present already at fairly modest levels of per-capita income. However, one recurring problem with previous studies is that conclusions on the absence of an effect of economic performance on well-being have typically been based on either limited cross-sectional samples which may be contaminated by a strong time-constant cultural component (Kenny, 1999) or on sparse and incomplete longitudinal data. For example, Frey and Stutzer (2002) analyze differences in subjective well-being among Swiss cantons only. Helliwell (2003) and others use the World Values Survey (WVS) data (Inglehart et al. 2004) to analyze this question. While the WVS provides ample cross-sectional observations on a large number of countries, only limited longitudinal information is available as the existing four waves are spaced rather far apart in time, 1980-82, 1990-91, 1995-97 and 1999-2001. Heady et al. (2004) analyse household panel data for five countries and find the happiness measure to be considerably more affected by economic factors than found in most of the earlier literature. The economic factors in the study include wealth and consumption expenditures and among the

[1] The quote is from William Shakespeare's The Merchant of Venice, Act 1, Scene 2.

findings are that wealth has a stronger impact on happiness than income and that non-durable consumption expenditures are as important for happiness as income.

In this paper, we revisit the question of the effect of economic performance on happiness by exploiting a long and relatively complete set of time series data, the semi-annual Eurobarometer Survey which has been collected from 1973. This allows us to analyse trends over time in an indicator of subjective well-being and income in 15 European countries: Austria, Belgium, Denmark, Finland, France, (West) Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom. Missing observations and considerable noise makes standard trends measures infeasible. In order to overcome these problems we use a modified version of Kendall's Tau to measure trends. We regress these trends on the growth rate of a number of variables considered by the happiness literature. Our analyses show that current GDP growth does not affect the trends but growth relative to growth in the preceding period does. The same impact from acceleration in the variable holds for the growth in life expectancy while the growth in the current account balance also exerts a positive influence. Surprisingly, relative unemployment growth does not exert an influence in itself, but only becomes significant when interacted with a measure of political ideology of the median voter explained in Section 2. We also find that the effects of relative GDP growth vary with median ideology. Since accelerated growth is needed to influence trends in life satisfaction, the results therefore provide support for Easterlin's (1995) conjecture that people's aspirations change over time, thereby accounting for the relatively stable long-run levels of satisfaction.

The rest of the paper is structured as follows. Section 2 describes the data and Section 3 outlines the trend measure used and the trends obtained through this measure. Section 4 analyses the determinants of these trends while Section 5 concludes.

2. Data

The data on life satisfaction derive from the semi-annual Eurobarometer surveys that in most years have asked the question "On the whole how satisfied are you with the life you lead?" The answers are given on a Likert scale from one to four where the possible

answers are: 4 - very satisfied; 3 – fairly satisfied; 2 – not very satisfied; and 1 – not at all satisfied. This and similar questions have been used in numerous studies, giving birth to a large literature. The national average scores are used in the next section to form the life satisfaction trends across four-year periods. For the sake of exposition, Figure 1 illustrates the levels at the end of the period analysed in the present paper, the autumn of 2002. On the four-point scale, the average happiness in the 15 'old' EU countries is 3.05. Portugal has the least satisfied population in our sample with an average level of 2.52 while the Danes are the most satisfied with a score of 3.61 and a quite substantial margin to Sweden as number two. These widely different levels are (more or less) the levels around which our trends in life satisfaction occur, hence it should be remembered in the following that the marginal effect of a given trend is likely to vary across countries.

Figure 1. Life satisfaction, late 2002

A large set of indicators have been used to explain such cross-country differences in life satisfaction; Oswald (1997) and Diener and Seligman (2004) give comprehensive surveys. Other studies have focused on subjective well-being for specific groups in the population. A recent very broad survey by Bjørnskov et al. (2005) with focus on groups in the population based on data for 73 countries found that only a small number of factors influence life satisfaction across countries while the importance of many factors

analysed earlier in the literature is rejected. In a more specific group related approach Mullis (1992) studied a sample of 55 – 69 years old American men and found an impact on well-being from income and wealth interacted with other variables for this group. Bingley et al. (2005) in a retirement study found for another specific group, people 60 – 66 years old, that the opening of a non-health related early retirement option in 1979 had a clear impact on reported well-being in the affected group. For low wage earners benefits in the program nearly compensated the loss of earnings so that the impact on well-being relates to a jump in leisure time.

For the purpose of exploring the determinants of our trends in the present paper, we employ the growth rates of a set of indicators that are often found to matter in cross-sectional studies and for which we have sufficiently long series from all 15 countries in our sample; these data are summarized in Table 1. We use both the growth rates of any variable X (except ideology) in the same period as trends are measured, and the growth rates relative to growth in the preceding period. We denote these variables D X and RD X, respectively. First of all, we employ GDP per capita and trade (imports plus exports as percentage of GDP) data from the Penn World Tables, Mark 6.1 (Heston et al., 2002): GDP per capita is central to the happiness literature and openness to trade is meant to capture the heavily disputed effects of globalization. Further, we use the growth rate in the current account relative to GDP, which has often been considered as an important indicator for the success or not of economic policy. We supplement this with data on five other areas that could also be expected to influence average life satisfaction: 1) life expectancy as an indicator of health; 2) inflation used as a proxy for economic stability; 3) government consumption in percent of GDP, which provides a crude measure of the comprehensiveness of the 'welfare state';[2] 4) the unemployment rate; and 5) tax revenue as a percent of GDP. These data derive from World Bank (2004). As di Tella and MacCulloch (2004) find evidence that the effects of income, unemployment and inflation are mediated by individuals' political convictions, we employ a measure of median political ideology. As we only use ideology in interaction

[2] As a measure of the welfare state, government consumption makes sense in this sample. The average over all periods ranges from 14% of GDP in Greece to 28% in Sweden. The traditional welfare states Sweden, Denmark and the Netherlands form the top three.

with other variables, it is in levels instead of growth rates. The ideology indicator is related to that employed in Bjørnskov (2004) but with the important difference that the ideology measure used here is the average of the ideology of the three largest government parties over the whole period. Parties are coded -1 if leftwing, 0 if centre, and 1 if rightwing based on the categorization in Beck et al. (2001) and are weigted by their share in parliament. We average this measure over all years for which data are available (1975-2000) to obtain a measure of the long-run ideology of the median voter.[3]

In Section 4, we explore what causes life satisfaction to vary over time across the 15 countries. As our dependent variable is trends in life satisfaction, we employ changes of the variables listed in Table 1. Before employing the data, we next turn to the construction of our dependent variable, the trends in life satisfaction, in Section 3.

[3] In order to capture potential effects of governments' ideology, we have also tried using the average ideology in the four-year periods employed in the following. However, we only report results using the 25-year average as it clearly outperforms the shorter-run measure of ideology.

Table 1. Descriptive statistics

Variable	Average	Standard deviation	Observations
Life satisfaction, late 2002	3.05	0.28	15
Life satisfaction trend	0.06	1.46	158
Political ideology	0.00	0.35	15
D GDP per capita	0.09	0.09	180
RD GDP per capita	-0.08	2.81	173
D Current account	-0.83	11.54	176
D trade	0.06	0.13	195
RD trade	0.90	4.10	163
D inflation	0.14	2.68	186
RD inflation	3.08	37.81	171
D life expectancy	0.01	0.006	195
RD life expectancy	1.03	1.72	180
D government consumption	0.02	0.08	195
RD government consumption	-0.07	5.09	180
D Unemployment	0.04	0.25	143
RD unemployment	0.56	7.95	127
D tax	0.03	0.08	195
RD tax	-0.10	8.21	193

Note: D denotes growth rate and RD denotes growth rate relative to growth in the preceding period.

3. Measuring trends in life satisfaction

Measuring a trend is usually trivial: one subtracts the level at the starting point of any period in which one wants to measure the trend from the ending point of that period. However, the existing data on life satisfaction presents any researcher with a set of specific problems of which two are particularly worrisome. Firstly, there are often missing observations in the data, which naturally is problematic when starting and ending points are missing. This is nonetheless a problem that under most circumstances can be dealt with by e.g. inserting estimates or informed guesses. Secondly, there is the problem of noise in the data. Life satisfaction data are obtained from surveys where respondents rate their satisfaction with life on a discrete scale, in our case the Eurobarometer surveys. If, for example, the survey is conducted in a period of particularly good weather, people's ratings may be biased upwards compared to a situation of normal weather, resulting in what is known as "sunshine effects" in the

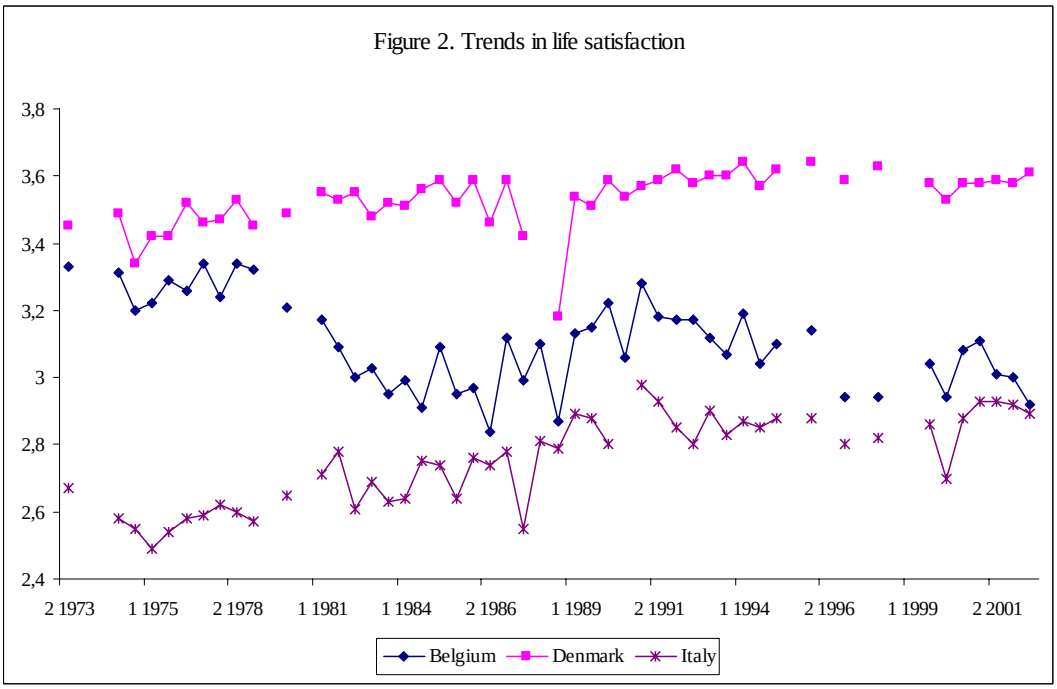
finance literature (Saunders, 1993; Hirshleifer and Shumway, 2003). Many other events can be expected to exert entirely spurious influences on people's subjective perception of their quality of life, inducing a substantial uncertainty in the data. Such uncertainty makes any trends measure very sensitive to which precise starting and ending points one chooses. If the starting point observation derives from a survey conducted in a period of good weather, we risk observing a negative trend when there is none, i.e. when the 'true' starting point observation equals the ending point. As noted above, we might even not have a trend at all, if one of the observations is missing since considerable uncertainty also to some extent invalidates standard solutions to the first problem.

Figure 2 illustrates these problems by plotting the life satisfaction scores over time for the three atypical countries in our sample, Belgium, Denmark and Italy. Both Denmark and Italy seem to have had positive trends over the period 1973-2002 while the Belgian trend seems to have been negative, at least until the early 1980s. However, missing observations is clearly a problem if one wants to measure short-term trends. The considerable noise in the data is also quite obvious, illustrating our second problem. Our approach to solving these problems is to use an alternative trends measure. Specifically, we use the modification of Kendall's Tau outlined in Equation (1). Put verbally, our trends are constructed by taking the average of all differences between all data points within the trend period. Firstly, by employing all available information within the period this makes the measure insensitive to missing observations, even at the start or end of the period; hence, it solves the first problem outlined above. Secondly, by averaging all differences within the period, we gain a measure that is much less sensitive to random fluctuations such as e.g. the weather that induces noise in our data. The modification solves a problem with Kendall's original indicator, which is calculated as the average of up or down movements, where upward trends are given the value 1, and downward trends the value -1. Instead, we use the average of the actual percentage increases between any two observations within the period from time *i* to *j* as in equation (1). By doing so, we construct a trends measure that not only can be interpreted quantitatively, which Kendall's Tau cannot, but moreover has an intuitively simple interpretation as the trends multiplied by 60 measure the approximate average yearly percentage increase within the given four-year period that we use.

$$\tau_i = \frac{\sum_{j,k\in\Theta_i}\left(x_j - x_k\right)/x_k}{K_{\#\Theta_i,2}}, \quad \Theta_i = \left\{x_i \ldots x_j \middle| i < j, x \neq \emptyset\right\} \tag{1}$$

This trends measure is the dependent variable in the rest of the paper. We use periods overlapping two years (e.g. 1980-1984, 1982-1986), which gives us 158 observations. The trends range from a minimum of -4.48 – Belgium in the period 1978-1982, which is clearly visible in Figure 2 - to a maximum of 3.86 (Ireland, 1988-1992) with an average of 0.06.

Figure 2. Trends in life satisfaction



4. Results

Turning to our empirical findings, Table 2 reports the results of entering the contemporaneous growth rates of the control variables.[4] Column 1 first of all shows that there is some persistence in the trends measures, which is due to our using overlapping periods. The coefficient on twice-lagged trends is negative as would be expected when life satisfaction fluctuates around a stable level or stable long-run trend, yet this effect is rather weak. The absence of a strong regression-to-mean (regression-to-zero) effect thus indicates that the effects of shocks to life satisfaction trends are probably not fully transitory.

When turning to the control variables, one of the first things to note is that current income growth (D GDP per capita) does not influence the life satisfaction trends. Indeed, only two variables come close to significance at conventional levels. The growth of the current account on the other hand is close to significance ($p<0.12$) and does raise the explanatory power ($F=3.52$, $p< 0.000001$). Inflation growth exerts a negative influence on the trends ($p<0.12$) and is also close to significance, but including it does not increase the explanatory power of the regression. The remaining variables – trade, life expectancy, government consumption, unemployment and taxes - are far from being significant. As a response to this lack of significance, we include the relative growth rates instead as a way to check whether accelerating growth – i.e. surprise improvements – provide any explanation of the trends in life satisfaction. In other words, the results reported in Table 3 answer the question whether improvements beyond the adaptively warranted expectation of individuals matter.

[4] All results in the following are estimated using OLS, which is a valid estimation strategy here as tests reject the three standard problems of autocorrelation, heteroscedasticity and contemporaneous correlation. In Table 3, column 2 - that will be used as a baseline specification – the Durbin-Watson test rejects problems of autocorrelation (DW = 2.129), White's general test for heteroscedasticity clearly rejects that the residuals are heteroscedastic (χ^2 (10) = 6.32; $p<0.79$), and contemporaneous correlation seems not to be a problem as the correlation between the trend in a country and the average trend in its neighbouring countries is weak ($r=0.28$).

When compared to growth in the previous period income (RD GDP per capita) provides some explanation for the trends. What matters is therefore not growth per se, but accelerating growth – in other words, surprise changes in income growth materialize in the trends, which is consistent with theories of aspirations in which individuals get used to a certain continuous improvement. The effect is moreover of considerable size: a one standard deviation shock to this variable generates an increase of 28% of a standard deviation in the yearly trend. Entering the contemporaneous growth of the current account once again adds to the explanatory power, and the variable remains significant at $p<0.10$ throughout most specifications.[5]

As in Table 2, the relative growth rates of most of the remaining variables explain nothing. Only one variable, the relative growth of life expectancy has a t-statistic above one but it is not near significance ($p<0.22$) although its inclusion raises the explanatory power slightly ($F=1.49$, $p<0.02$). Again, trade, inflation, government consumption, unemployment and taxes fail to contribute to explaining the trends. Table 4 explores whether this is due to outliers concealing a general picture. The results in the table are obtained by excluding observations with a residual above ±2 standard deviations. It is first of all clear that the effects of current account growth are less significant although the coefficient remains of about the same size throughout. The relative GDP growth rate remains significant at $p<0.01$ throughout, indicating that without outliers the effect of a one standard deviation shock to relative growth is 34-40% of a standard deviation of the trends. This corresponds roughly to a 3% increase in life satisfaction over a four-year period. The only other result to come out of Table 4 is that the relative growth of life expectancy now is strongly significant, indicating that the absence of an effect in Table 3 is due to outliers. The size of this effect is moreover comparable to that of GDP growth.

An interesting (and maybe also provocative) set of results is reached by di Tella and MacCulloch (2004) who show that the effects of income, unemployment and inflation on individuals' subjective well-being differ depending on their political convictions.

[5] It should be noted that the relative growth of the current account is never significant. This result is hence contrary to our general findings regarding the dimension of the variables.

Their findings clearly point to an influence of either different preference structures or different weights attached to issues, depending on individuals' political ideology. As a final issue, we therefore allow the effects of all potential determinants to vary according to the ideology of the country by entering an interaction term with ideology. The results are reported in Table 5 where column 1 repeats the baseline specification from Tables 3 and 4. Although we have run regressions with all variables interacted with political ideology, we only report results that are either individually significant or jointly with the uninteracted variable.

The first of the two results emerging from this analysis is that the effect of relative GDP growth varies with ideology. Although the interaction term is not individually significant, the joint effect of relative GDP growth on its own and its interaction with political ideology is strongly significant ($F=1.78$, $p<0.002$). At the average, a one standard deviation shock to GDP growth leads to a 25% of a standard deviation increase in the life satisfaction trend, corresponding to a 2% increase in life satisfaction over a 4-year period. However, one standard deviation to the right of the political average, the same shock to growth would create an additional 20% of a standard deviation annual increase in life satisfaction over a given 4-year period, which would yield approximately a 3.5% increase. The second result is that relative unemployment growth also varies with the political ideology of the median voter. Without an interaction term, relative unemployment growth is far from being significant indicating that the average effect is zero while the interaction term in Table 5 is highly significant. Specification tests clearly indicate that only the interaction term should go into the equation, i.e. there is no pure effect of unemployment growth. The effect is comparable in size to that of GDP, as a one standard deviation shock to relative unemployment growth generates a downwards trend 25% of a standard deviation in countries lying a standard deviation to the right of the political middle. In column 6 we introduce a neighbour country variable defined as the acceleration in GDP in any given country in relation to its geographic neighbours, i.e. for Spain this would be relative to France and Portugal. The coefficient to this variable is positive and significant indicating that a relative cyclical upswing in the form of an acceleration in GDP faster than the neighbours has an impact on well-being in line with predictions based on Duesenberry (1949).

In column 7 we introduce a variable interacting the relative acceleration variable introduced in column 6 with the ideology variable[6]. In columns 8 and 9 we re-enter the interaction variables between RDunemployment and ideology which turns out to be robust in relation to the specification changes. Finally, we introduce in column 9 a variable measuring the growth in relative government compared with neighbours. It seems to imply a significant positive impact on well-being from expanding government faster than your neighbours. This is however an effect only in the expansionary phase and the results in Bjørnskov et al. (2005) point instead to the long-run impact from relative government size tending to be negative in a study including 73 countries.

[6] The coefficient is not significant by itself but is jointly significant at $p<0.01$, $F= 3.108$.

Table 2. Determinants of life satisfaction trends, contemporaneous growth rates

	1	2	3	4	5	6	7	8	9
Lagged trend	0.231**	0.229**	0.231**	0.220**	0.225**	0.232**	0.213**	0.208**	0.233**
	(2.543)	(2.526)	(2.455)	(2.397)	(2.416)	(2.568)	(2.308)	(2.106)	(2.491)
Twice-lagged trend	-0.151*	-0.148	-0.147	-0.149	-0.134	-0.176*	-0.162*	-0.122	-0.149
	(-1.658)	(1.628)	(-1.545)	(-1.639)	(1.444)	(-1.910)	(-1.777)	(-1.261)	(-1.618)
D GDP per capita		-0.091							
		(1.041)							
D Current account			0.143						
			(1.577)						
D Trade				0.077					
				(0.879)					
D Inflation					-0.140				
					(-1.571)				
D Life expectancy						0.123			
						(1.389)			
D Government consumption							-0.100		
							(-1.120)		
D Unemployment								0.090	
								(0.963)	
D Tax									0.008
									(0.090)
Observations	128	128	118	128	121	128	128	114	128
Pseudo R Square	0.041	0.041	0.061	0.039	0.045	0.048	0.043	0.031	0.033
F statistic	3.698	2.829	3.521	2.719	2.901	3.127	2.889	2.200	2.449
SEE	1.451	1.450	1.472	1.452	1.464	1.445	1.449	1.443	1.456

Note: all regressions include a constant term; coefficients are standardized. *** denotes significance at p<0.01; ** denotes significance at p<0.05; * denotes significance at p<0.1.

Table 3. Determinants of life satisfaction trends, relative growth rates

	1	2	3	4	5	6	7	8
Lagged trend	0.247***	0.249***	0.220**	0.226**	0.228**	0.249***	0.157	0.249***
	(2.770)	(2.710)	(2.313)	(2.357)	(2.451)	(2.694)	(1.505)	(2.690)
Twice-lagged trend	-0.211**	-0.197**	-0.146	-0.161	-0.161	-0.197**	-0.151	-0.197**
	(-2.307)	(-2.090)	(-1.501)	(-1.623)	(-1.631)	(-2.062)	(-1.393)	(-2.076)
RD GDP per capita	0.283***	0.286***	0.286***	0.272***	0.277***	0.285***	0.319***	0.285***
	(3.323)	(3.223)	(3.140)	(2.921)	(3.129)	(3.201)	(3.194)	(3.195)
D Current account		0.149*	0.156*	0.189**	0.151*	0.149*	0.197*	0.149*
		(1.687)	(1.730)	(1.999)	(1.717)	(1.679)	(1.945)	(1.679)
RD trade			0.012					
			(0.128)					
RD inflation				0.077				
				(0.827)				
RD life expectancy					0.112			
					(1.224)			
RD government consumption						-0.002		
						(-0.019)		
RD unemployment							-0.074	
							(-0.728)	
RD tax								-0.004
								(0.041)
Observations	125	116	107	108	116	116	95	116
Pseudo R Square	0.104	0.131	0.106	0.120	0.135	0.124	0.118	0.124
F statistic	5.803	5.352	3.677	3.925	4.601	4.243	3.524	4.244
SEE	1.404	1.419	1.409	1.443	1.416	1.425	1.422	1.425

Note: all regressions include a constant term; coefficients are standardized. *** denotes significance at p<0.01; ** denotes significance at p<0.05; * denotes significance at p<0.1.

Table 4. Determinants of life satisfaction trends, robustness

	1	2	3	4	5	6	7	8
Lagged trend	0.247***	0.309***	0.260***	0.258***	0.243***	0.293***	0.174*	0.309***
	(2.679)	(3.374)	(2.729)	(2.681)	(2.657)	(3.169)	(1.658)	(3.055)
Twice-lagged trend	-0.178*	-0.222**	-0.180*	-0.130	-0.167*	-0.212**	-0.117	-0.222**
	(-1.882)	(-2.358)	(-1.853)	(-1.303)	(-1.750)	(-2.207)	(-1.075)	(-2.348)
RD GDP per capita	0.384***	0.379***	0.399***	0.340***	0.380***	0.369***	0.402***	0.379***
	(4.362)	(4.325)	(4.438)	(3.658)	(4.466)	(4.164)	(4.097)	(3.355)
D Current account		0.156*	0.119	0.203**	0.111	0.153*	0.224*	0.159*
		(1.789)	(1.343)	(2.166)	(1.320)	(1.740)	(2.243)	(1.788)
RD trade			0.033					
			(0.369)					
RD inflation				0.097				
				(1.053)				
RD life expectancy					0.235***			
					(2.666)			
RD government consumption						-0.002		
						(-0.028)		
RD unemployment							-0.108	
							(-1.077)	
RD tax								0.008
								(0.090)
Observations	117	109	107	103	109	110	91	109
Pseudo R Square	0.153	0.210	0.180	0.172	0.250	0.186	0.187	0.202
F statistic	8.006	8.169	5.651	5.230	8.199	5.998	5.136	6.474
SEE	1.137	1.168	1.149	1.222	1.136	1.197	1.223	1.173

Note: all regressions include a constant term; coefficients are standardized. *** denotes significance at p<0.01; ** denotes significance at p<0.05; * denotes significance at p<0.1. Observations with a residual above ±2 standard deviations are excluded from the analyses.

Table 5. Determinants of life satisfaction trends, effects of ideology

	1	2	3	4	5	6	7	8	9
Lagged trend	0.249***	0.266***	0.137	0.164	0.197*	0.226**	0.207**	0.133	0.185*
	(2.710)	(2.886)	(1.349)	(1.617)	(1.975)	(2.425)	(2.209)	(1.306)	(1.773)
Twice-lagged trend	-0.197**	-0.197**	-0.135	-0.093	-0.075	-0.164*	-0.150	-0.073	-0.078
	(-2.090)	(-1.888)	(-1.276)	(-0.879)	(-0.710)	(1.754)	(-1.600)	(-0.691)	(0.749)
RD GDP per capita	0.286***	0.245***	0.321***	0.251**	0.342***	0.174*	2.024*	0.205*	0.217*
	(3.223)	(2.615)	(3.287)	(2.443)	(3.410)	(1.771)	(2.046)	(1.853)	(1.935)
D current account	0.149*	0.156*	0.159	0.167*	0.189**	0.175**	0.159*	0.173*	0.183*
	(1.687)	(1.771)	(1.611)	(1.716)	(2.003)	(2.006)	(1.817)	(1.781)	(1.892)
RD GDP per capita * ideology		0.125		0.205*	0.204*	0.181*	0.235**	0.296**	0.287**
		(1.333)		(1.921)	(1.957)	(1.877)	(2.293)	(2.528)	(2.457)
RD unemployment * ideology			-0.200**	-0.252**	-0.270***			-0.228**	-0.216**
			(-2.038)	(-2.507)	(2.761)			(-2.270)	(2.162)
RD GDP per capita relative to neighbour						0.195**	0.142	0.135	0.133
						(2.053)	(1.403)	(1.220)	(1.191)
RD GDP relative to neighbours * ideology							0.160	0.119	0.087
							(1.485)	(0.988)	(0.718)
D Government relative to neighbours									0.224**
									(2.348)
Observations	116	116	95	95	90	116	116	95	92
Pseudo R Square	0.131	0.138	0.154	0.178	0.263	0.62	0.171	0.194	0.232
F statistic	5.352	4.667	4.387	4.382	6.303	4.706	4.393	3.835	4.053
SEE	1.419	1.413	1.394	1.373	1.151	1.394	1.386	1.359	1.325

Note: all regressions include a constant term; coefficients are standardized. *** denotes significance at p<0.01; ** denotes significance at p<0.05; * denotes significance at p<0.10.

5. Discussion and conclusions

Economic theory usually assumes that individual utility is determined by income, leisure and a few other factors. The recent literature on subjective well-being has questioned this assumption by finding that above some level of average national income, average self-reported life satisfaction does not increase with income. A number of explanations have been proposed to solve this dilemma.

Psychologists interested in subjective well-being have for more than half a century operated with aspiration theory, a kind of thinking that has only had rather limited influence in economics (e.g. Irwin, 1944).[7] According to this theory, individuals' life satisfaction is determined not by the absolute level of objective welfare but by the gap between their aspirations and their actual achievements. That individual life satisfaction is significantly affected by aspirations has recently received direct statistical support by e.g. Stutzer (2004). To explain the absence of any trend in life satisfaction in most of the 15 countries considered in this paper, we need one more piece to solve the puzzle: that people change their aspiration levels over time. Psychologists and sociologists define such adaption as reducing the hedonic effect of constant stimuli. Hence, if people adapt not only to, for example, their new income level but also to a situation in which this level grows constantly over time, their aspirations will also grow constantly, which explains the surprisingly constant levels of life satisfaction across most rich countries.

The view that individuals dynamically adapt their aspirations and that the gap between these aspirations and the actual achievements determine life satisfaction is consistent with our findings in this paper. We find that GDP growth per se does not induce positive trends in life satisfaction in 15 European countries for which we have semi-annual observations since 1973. The obvious explanation for the absence of an effect is that individuals' aspirations simply grow with their income. We do, however, find that accelerating growth in both per capita GDP and life expectancy creates positive trends, consistent with the view that people get happier as their aspirations are more than met.

[7] For examples of aspiration theory in economics, see e.g. Duesenberry (1949) and Frank (1989).

In other words, only surprise improvements in individuals' health status are reflected in the life satisfaction trends.

This view must nevertheless be supplemented with two other observations. Firstly, we find that the contemporaneous growth of the current account balance is associated with our trends in life satisfaction. At first, this result seems rather puzzling since this should not affect individuals' lives or well-being in any direct manner. However, when the media reports on the state of the economy the current account often takes centre stage. We therefore hypothesize that it is seen as a signal of the future state of the economy, i.e. the development of the current account comes to be an indicator of economic optimism in the population. In most of the period we study, there has in a number of countries been an apparent trade-off between growth and unemployment on one hand and the current account on the other hand. What we find may therefore best be interpreted as an expectations effect implying room for future economic acceleration when the current account improves and vice versa.

Secondly, we find that two of the effects in the paper are mediated by the median political ideology of the population. Accelerating GDP growth contributes substantially more to life satisfaction in countries in which the population tends to vote for rightwing parties, which confirms the popular notion that people on the rightwing are more concerned with material conditions than people of a more leftwing/socialist political conviction. We also find that the effects of relative unemployment growth are entirely determined by the median political ideology of the population. The first finding thus replicates one of di Tella and MacCulloch's (2004) results while the second finding seems to be in contrast to their conclusions. Specifically, we find that rightwing populations are significantly hurt by relative unemployment growth while the reverse seems to be true for leftwing populations, although the lack of an average effect would indicate that leftwing populations are simply not affected. Conversely, Di Tella and MacCulloch (2004) reached the conclusion that individuals voting for the left wing are hurt more by unemployment than those on the right wing. Our final question is therefore if these apparently opposing findings can be reconciled.

The first possibility is that the median ideology in the long run has affected institutions such that rightwing countries provide less protection against unemployment or less generous income replacement during periods of joblessness. However, this seems somewhat unlikely, as an interaction term between relative unemployment growth and government consumption (our measure of welfare state) never comes near significance. We must nonetheless stress that this does not preclude any effect arising from the structure of the consumption of the public sector such as transfer incomes not captured by the government consumption variable. A second possibility is that the poor (i.e. unemployed) are hit harder in relative terms in rightwing countries that may have a higher level of income inequality. By including an interaction with a measure of income inequality, this explanation can also be rejected.[8] The third possibility is that political ideology captures work norms and merit assumptions as in Bjørnskov (2004). Work may for example be a larger part of life in more rightwing societies than more leftwing societies. Lalive and Stutzer (2004) for example show that individuals with a stronger social norm relating to work suffer more in terms of life satisfaction when becoming unemployed than other people. This effect could be reinforced if the stima of being unemployed is stronger in rightwing societies. Given that political ideology to some extent captures such norms and attitudes our finding that unexpected growth in the unemployment rate is more harmful in rightwing societies makes sense.

To summarize, our findings suggest that in order to understand the development of subjective well-being across countries one need to take three factors into account: 1) the well-being of individuals is partly determined by the gap between their aspirations and their actual achievements, not by their objective well-being; 2) individuals as well as entire populations adapt to growth by changing their aspirations, and 3) preferences vary considerably across national political institutions and attitudes. However, we end the paper by stressing the need to explore these effects further as this paper must only be seen as a preliminary foray into these questions.

[8] We included both relative unemployment growth and an interaction term with Gini coefficients from the early 1990's, taken from the LIS database. These variables were jointly significant at $p<0.10$, but never significant at any level once the interaction term with political ideology entered the specification.

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