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June 2005 Discussion paper no. 2005-12

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Electronic Publication: http://www.vwa.unisg.ch

Is It Culture or Democracy?

The Impact of Democracy, Income, and Culture on Happiness*

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* This paper was presented at the Workshop on Happiness, Economics and Interpersonal Relationships (04/12/2004), the International Conference of Panel Data Users in Switzerland (26/02/2005), the American Public Choice Society Conference (10/03/2005), the Annual Conference of the Swiss Society for Statistics and Economics (17/03/2005), and the European Public Choice Society Conference (03/04/2005). We would like to thank conference participants and particularly Alois Stutzer for helpful comments.
This study has been realized using the data collected in the "Living in Switzerland Survey" by the Swiss Household Panel (SHP), Université de Neuchâtel. This project is financed by the Swiss National Science Foundation (Grant-No. 5004-53205/5004-57894/5004-67304/10FI11-103293). We also thank the Swiss National Science Foundation for financial support of our research (Grant-No. 5004-58524)..

Abstract

We look at the relation between democracy and perceived subjective well-being, taking also into account the impact of income and culture. After briefly reviewing the empirical results for Switzerland, we re-estimate this relationship allowing for the relative income position of individuals and also using a new more recent data from the Swiss Household Panel. No robust relationship between the extent of (direct) democracy and happiness can be observed. In a second step, we conduct a cross-national analysis, covering 28 countries with data from the 1998 International Social Survey Programme (ISSP). There we observe a robust positive and significant relationship between democracy and happiness.

Keywords

Culture, Democracy, Direct Democracy, Happiness, Institutions, Utility

JEL Classification

I31, H10, D02

Is It Culture or Democracy?
The Impact of Democracy, Income, and Culture on Happiness

1 Introduction

A more democratic system, especially a system with direct popular rights, is likely to produce political outcomes that are closer to the preferences of the median voter than a less democratic system.[1] Consequently, *ceteris paribus*, a greater exposure to democracy can be expected to raise individuals' well-being. Not only does such exposure lead to political results that are acceptable to a large part of a population, but citizens' well-being may also arise from their participation in the political decision-making process and from the perceived extent of the procedural fairness of this process. In fact, the utility gained from procedural fairness can be much larger than the utility gained from a (democratic) political outcome.[2]

Therefore, we expect empirical research to show that a higher level of democratization of a country leads to a higher level of self-reported happiness. However, the limited empirical evidence from international cross-sectional studies only partly supports this proposition. Based on a sample of about 40 nations drawn from the World Values Survey, SCHYNS (1998) and VEENHOVEN (2000) find a positive and significant correlation between the Freedom House Democracy Index and self-reported happiness. However, this correlation becomes insignificant once the different national income levels are controlled for.[3] In another study based on the World Values Survey, INGLEHART and KLINGEMAN (2000) note that "[our] findings undermine any simplistic assumption that democratic institutions are the main determinant of human happiness" (p. 180).

Simplistic relations between income and happiness are, however, also questionable. As earlier papers by ABRAMOVITZ (1959) and EASTERLIN (1974) already indicate, income growth may have a positive effect on personal happiness in the short run but not in the long run. As soon as individuals adjust to their new situation, the level of happiness may settle down to the old equilibrium.[4] Consequently, during recent decades, the average level of life satisfaction has remained constant in many countries despite considerable economic growth. Several studies

[1] See, e.g., POMMEREHNE (1978) or, for a theoretical model, FELD and KIRCHGÄSSNER (2001).

[2] See STUTZER and FREY (2003).

[3] See also BJØRNSKOV (2003) for a similar result.

[4] See, e.g., EASTERLIN (2001, 2003).

provide evidence for this observation.[5] Moreover, EASTERLIN (1974) shows that countries with rather different GNP per capita – for example, West Germany and Nigeria, to mention the two most extreme examples – had nearly the same average personal happiness rating (p. 106).[6] Further, JUNGEILGES and KIRCHGÄSSNER's (2002) international study finds that higher income per capita and especially higher income growth lead to higher suicide rates of both sexes and in nearly all age groups. If suicide is interpreted as a measure of ill-being, this finding clearly contradicts the idea of a positive relation between personal income and happiness.[7] On the other hand, differences in economic status within a country have a clear and consistent impact on personal happiness.[8] Thus, to correctly capture the impact of income on happiness, it is necessary to distinguish between the general income level (or average income) within a society (and its development), and the relative economic position that an individual or family occupies in this society.[9]

Besides political freedom and economic well-being, the culture in which a person resides could also influence subjective well-being. For example, people in different cultures may value certain aspects of life differently and could, therefore, have different perceptions of their own individual well-being under the same objective circumstances.[10] This possibility is also noted by EASTERLIN (1974, p. 108). Several more recent papers examine this relationship.[11] STUTZER and FREY (2000, 2003), for example, use language as a proxy for culture, and the resulting coefficients are typically highly significant. The use of language variables to reflect culture can be justified because in society, language serves as an important transmission channel of culture and its embedded view of the world, the social system, and customs. At the individual level, the language spoken shapes human patterns of thought.[12] Moreover, as

[5] See, e.g., the papers cited in FREY and STUTZER (2002, p. 413), and also FRANK (1997), OSWALD (1997), MCBRIDE (2001), and EASTERLIN (2003). The long-term impact may even go in the reverse direction, from happiness to economic growth. See for this KENNY (1999).

[6] See also the graph in FREY and STUTZER (2002, p. 417), which appears to indicate that poorer countries have lower happiness ratings but that above a level of about 5,000 US dollars per capita (in 1995 PPP), there exists no obvious relation between GNP per capita and personal happiness.

[7] On the other hand, they found that – once income effects are controlled for – higher civil liberty consistently leads to lower suicide rates.

[8] For the impact of relative income on happiness see, e.g., D'AMBROSIO and FRICK (2004). That absolute income might, nevertheless, also have an impact on happiness is shown, e.g., by SCHYNS (2002).

[9] Another question is whether it is really income and not wealth together with income that matters. For this, see HEADY and WOODEN (2004) or HEADEY, MUFFELS and WOODEN (2004).

[10] For this, see, e.g., LIJPHART (1979) or the difference between Europeans and Americans with respect to (economic) inequality shown in ALESINA, DI TELLA and MACCULLOCH (2004).

[11] See, e.g., the contributions in DIENER and SUH (2000).

[12] See, e.g., ALLIOT (1999) or LAZEAR (1999).

shown in other studies, cultural differences represented by languages have strong impacts on political behavior.[13] Consequently, such cultural variations may not only be reflected in institutional differences but also in how individuals value the contributions of political institutions to their individual welfare. Among other factors that are closely related to culture and that might have an impact on people's happiness are religion and the amount of social capital available in a society.[14]

The only scholars who, after controlling for income (and sometimes also for language), find a positive influence of democracy on subjective life satisfaction are FREY and STUTZER in their analyses for Switzerland.[15] The Swiss federal structure allows for considerable variation in political institutions, especially in direct popular rights, between the 26 cantons. Thus, Switzerland can be (and has been) perceived as a laboratory to study the effects of various degrees of political institutions on political and social outcomes.[16] Other factors that are difficult to measure and make comparisons among countries problematic are irrelevant for an analysis within one country. Therefore, Switzerland seems very well suited for testing the impact of institutional differences and cultural background on perceived happiness. The only disadvantage in this respect is that the variation in level of democracy (and in other political institutions) is certainly much smaller among Swiss cantons[17] than among countries in an international sample that includes, for example, established democracies like Great Britain or the United States, as well as relatively weak democracies such as Russia. Measured on an international scale, the extent of democratic rights (as well as the degree of federalism) is very high for all Swiss cantons. Thus, the fact that a significant impact of democracy is observed within Switzerland but not in a cross-national setting is surprising.

[13] See, e.g. LIJPHART (1979), who in a study of the structure of party affiliations in four multilingual countries (including Switzerland) concluded that "because language is a crucial differentiator among nations, it is bound to be a major cleavage and a main source of partisan differences in 'nations' that are not linguistically homogeneous" (p .453).

[14] See, e.g., FERRISS (2002) or BJØRNSKOV (2003).

[15] See, e.g., FREY and STUTZER (2000, 2000a, 2000b), as well as STUTZER and FREY (2003).

[16] See, e.g., FELD and SAVIOZ (1997) for the impact of direct democracy on economic welfare, FELD and KIRCHGÄSSNER (2001, 2004) for its effect on public finances, or FELD et. al. (2004) for the effect of direct democracy on income (re)distribution. While possible cultural impacts are not at the centre of these studies, all use a dummy for the French- and Italian-speaking cantons to take possible cultural differences into account.

[17] In addition, political rights of Swiss citizens vary only with respect to the cantonal and local levels. At the federal level, citizens from all cantons have the same political rights, i.e. with regard to such important policy fields as foreign policy, trade, defense, etc. Among the important fields of politics at the cantonal level are education, welfare, and police.

It might be argued that a cross-national analysis of subjective well-being is difficult because countries vary with regard to a variety of determinants, especially (as mentioned above) culture, that might influence individual happiness. Switzerland, however, is also divided into four different language regions with rather different cultures, with the borderline being mainly between the German- and the French- or Italian-speaking regions.[18] Thus, cultural aspects, which have previously been shown to be a main source of differences in the political behavior in different countries, also play a major role within Switzerland. In fact, voting patterns in recent public elections reveal substantial differences among the different language regions within Switzerland. As in international studies, an analysis of the effects of democracy on happiness in Switzerland must therefore control for culture.

This paper takes a closer look at the relation between democracy and perceived subjective well-being, while also taking into account the impact of income and culture. First, we briefly review the empirical results for Switzerland obtained by FREY and STUTZER in their various contributions (*section 2*). Using a similar model as that of FREY and STUTZER (2000), we re-estimate this relationship allowing for the relative income position of the individuals and also using new, more recent data from the Swiss Household Panel (SHP) (*section 3*). Using this dataset and panel techniques that control for individual heterogeneity, no robust relationship is observed between democracy and happiness in Switzerland. In a second step, we conduct a cross-national analysis covering 28 countries, using data from the 1998 International Social Survey Programme (ISSP) (*section 4*)[19]. Even after controlling for numerous aspects, especially culture and income, we observe a positive and significant relationship between democracy and happiness. Section 5 concludes.

2 Previous Empirical Research for Switzerland

All empirical studies by STUTZER and FREY are based on a cross-section of approximately 6,000 households from a 1992 dataset collected by LEU et al. (1997) that is a representative

[18] The share of those speaking the fourth language, Rhaeto-Romanic, is about 1 percent of the Swiss population and, therefore, in our context negligible. Moreover, practically all of these people speak fluent German, the main language of *Graubünden*, which is the only canton where Rhaeto-Romanic is spoken.

[19] An important advantage of the ISSP data is that they allow definition of income variables on the individual level. In the previous research cited above, based on the World Values Survey data, (average) GDP per capita is used as a proxy for individual income.

sample of the Swiss population.[20] The dependent variable in these studies measures general life satisfaction on a scale from 1 to 10.[21] The set of explanatory variables, which is very similar across their various contributions, includes economic, sociodemographic, and institutional variables. In most of their studies, cultural determinants and/or macroeconomic variables are included for robustness checks. These cultural variables are either the language of the commune of residence, as in STUTZER and FREY (2000), or the main language of the respective canton, as, e.g., in FREY and STUTZER (2000, 2000a, 2003). However, cultural variables are sometimes missing (FREY and STUTZER, 2000b or FREY et al., 2001).

The main variable of interest among the explanatory variables is an institutional variable that measures a canton's level of direct democracy with an index ranging from 1 to 6[22]. In accordance with the literature mentioned above, the authors assume that increased exposure to direct democracy leads to policy outcomes that are closer to citizens' preferences[23]. This proximity should, in turn, make them happier. The primary estimation method used in their analyses is a weighted ordered probit model with robust standard errors obtained through clustering at the cantonal level.[24]

In several contributions the authors show that the index of direct democracy appears to be robust to different estimation methods and to the inclusion of additional control variables; the positive coefficient of direct democracy stays significant at least at the 5 percent significance level.[25] In FREY and STUTZER (2000b), it is shown that the impact of direct democracy is also robust to controlling for those five cantons in which direct democratic rights are exerted

[20] Actually, there is oversampling of two groups, the elderly and the poor. However, a representative sample can be obtained by either weighting the different groups, as FREY and STUTZER do in all their papers, or by eliminating the oversampled observations (which is possible due to the construction of the dataset). As will be shown below, these two methods can lead to quite different results.

[21] The first three categories are aggregated to increase the number of observations for the lowest category.

[22] This nonweighted composite index developed by STUTZER (1999) is comprised of four separate indices for (i) the constitutional initiative, (ii) the statutory initiative, (iii) the statutory referendum, and (iv) the fiscal referendum. (See STUTZER (1999) or STUTZER and FREY (2000) for a detailed explanation of the construction.) FREY and STUTZER (2000, p. 937), as well as STUTZER and FREY (2000b, p. 32f.), present tables that show the distribution of this index over all Swiss cantons.

[23] In addition, in some of their papers (e.g. FREY and STUTZER 2000a), they tested the impact of fiscal federalism which is also predicted to be utility increasing. They found the degree of federalism to serve as a "transmission mechanism of direct democracy's beneficial effects" (p. 157) (i.e. the variable turned out not to be significant in combination with direct democracy). See also FREY and STUTZER (2000, p. 928).

[24] In some papers, they also present weighted OLS estimations.

[25] See, e.g. FREY and STUTZER (2000a). In this paper, they report the estimates when all possible cantonal determinants of happiness taken into consideration are simultaneously included in the model, i.e. besides others, national income per capita or the main language of the canton. The (positive) coefficient of direct democracy remains significant.

through an open vote (*Landsgemeinden*). Measured by the index employed, these cantons are identical to those that enjoy the highest level of direct democracy. In a variation of this approach, a regression excluding these cantons is carried out that also results in the same positive finding for direct legislative rights.[26] As STUTZER and FREY (2000) show, the impact of the existence of direct democracy is also robust to controlling for measures of the actual use of these institutions, proxied by the number of cantonal referenda. Moreover, the inclusion of interaction variables between dummies for personal characteristics and the index of direct democracy reveals that the gains in happiness are quite evenly distributed among different socioeconomic groups[27]. In FREY and STUTZER (2000, p. 927), the problem of causality concerning direct democracy is addressed through economic historical reasoning.

In their most recent contribution to the analysis of direct democracy and happiness in Switzerland, STUTZER and FREY (2003) focus on procedural utility. They test the existence of procedural utility in the political process, which only Swiss citizens should be able to enjoy. Again, the happiness enhancing impact of direct democracy is observed. They also separate the gain in outcome utility from the gain in procedural utility by estimating separate but identical models for both Swiss citizens and foreign residents. They find that the increase in happiness attributed to procedural utility is more than three times greater than the experienced increase in outcome utility.[28]

3 New Estimates for Switzerland

We re-estimate the FREY and STUTZER (2000) model but deviate from their approach in two respects. First, following the literature mentioned in the introduction, we do not look only at the effect of (absolute) personal income but rather distinguish between the income level within a canton on the one hand and the relative income position of the individual on the other. Second, we do not use only the LEU (1997) dataset but also new data from the Swiss

[26] See STUTZER and FREY (2000b, footnote 18).

[27] See FREY and STUTZER (2000) and FREY and STUTZER (2000b) regarding the poor.

[28] In the second part of this paper, they use the first wave of the SHP (1999) to test the hypothesis that greater direct democratic power of citizens in a canton leads to the belief that they have greater political influence. Thus foreigners, who do not have these political participation rights, should believe less in their political influence. To test this hypothesis, they included an interaction term between the variables 'political participation possibilities' and 'foreigner'. The authors find this hypothesis supported by their results.

Household Panel (SHP), a longitudinal panel survey whose data are gathered annually using computer-assisted telephone interviewing (CATI). In this survey, the primary household representative must answer all questions on the personal questionnaire, while the remaining household members are only asked a particular selection of questions. For the first wave, a representative sample of 5,074 households from the Swiss population was recruited, and a total of 12,937 individuals were personally interviewed in the autumn of 1999. For 2002, the sample size of the panel was 3,690 households, comprising 9,544 individuals. A total of 5,705 individuals were personally interviewed. The response rate was between 84 and 89 percent of all individuals contacted. As the information on life satisfaction is only available for the last three waves, i.e. for the years 2000 to 2002, our analysis is restricted to these three waves.

To make this analysis compatible with the FREY and STUTZER (2000) study, we restrict the sample to individuals older than 20. For the balanced panel, we also eliminate observations with missing values in the control variables; e.g. occupational status, age, or family type, as well as disabled status. Once missing income variables in one wave are replaced by values in the previous or subsequent wave(s), and negative income values are set to zero, the number of remaining observations in the panel declines from 5,362 individuals in 2000 to 4,534 individuals in 2002.

Two measures of individual happiness are often encountered in the literature. While nearly all authors speak of happiness, only some surveys truly question respondents about their personal happiness; the others ask about personal satisfaction or well-being. This latter holds true for all Swiss surveys. However, personal satisfaction on the one hand and happiness on the other may represent quite different aspects of personal life,[29] particularly (but not exclusively) for speakers of the German language. Nevertheless, the literature usually assumes that these two personal emotions are comparable insofar as they are both highly correlated with themselves and with other explanatory variables.[30] Therefore, and in accordance with the usual practice, the two terms are used interchangeably in this study.

The dependent variable depicting individual happiness is derived from a question on general satisfaction with whose exact wording is as follows:

[29] For the difference between satisfaction and happiness see, e.g., LANE (1991, chapter 22) or VEENHOVEN (2000a).

[30] See, e.g. VEENHOVEN (2000).

In general, how satisfied are you with your life if 0 means 'not at all satisfied' and 10 means 'completely satisfied'?

To be able to compare the results with those of FREY and STUTZER (2000) and to avoid inference problems caused by too few observations, we aggregate the four lowest categories (0, 1, 2, 3) into a single category.[31] To make the coefficients of the income variables comparable to those in FREY and STUTZER (2000), which uses data of 1992, we deflate the income data of the SHP using the same year as base year. These steps reduce the sample to 3,301 individuals, i.e. 9,903 observations. To estimate the model, we first use an unweighted random-effects ordered probit model, thereby allowing for individual heterogeneity.[32] As a robustness test, we also carry out the identical estimation for the unbalanced panel, which leaves approximately 4,000 more observations. A fixed effects approach was not deemed appropriate because of the time invariance of the dependent variable for many individuals, as well as the de facto time invariance of the institutional variables of interest.[33] To control for other factors besides the income variables, we use the same explanatory variables as FREY and STUTZER (2000) and also include year dummies. In addition, however, we also employ dichotomous variables for various religious denominations and a dichotomous variable for poor health.

To test the relative income hypothesis and to allow for the likely nonlinearity of the income effect, we include subsistence income, measured as 40 percent of the average income in the respective canton; the difference between actual income and subsistence income; and the squares of these differences calculated separately for positive and negative differences. Assuming a positive but decreasing marginal utility of income, we expect a positive sign for the relative income and a negative sign for the (positive) difference between actual and

[31] As the scale ranges from 0 to 10, it includes one more category than the ones in the LEU-dataset used by FREY and STUTZER (2000). As the results in *Table A2* of the *Appendix* show, the distributions over the remaining groups are quite similar for the three waves of the panel, the panel altogether, and the LEU data set. (In calculating these statistics, the data are assumed to be cardinal and not ordinal, as they actually are. However, FERRER-I-CARBONELL and FRIJTERS (2004) have shown that assuming cardinality or ordinality makes little difference.) – Descriptions of the variables, the distribution of the observations of the life satisfaction variable, and descriptive statistics of the index of direct democracy are given in *Tables A2*, *A3* and *A4* of the *Appendix*.

[32] The calculations have been performed by using the reoprob command in Stata, Version 8.1. (See for this FRECHETTE (2001, 2001a).) Points for the Gaussian-Hermite quadrature approximation are set at 30. – Since the three waves are each representative for Switzerland, estimation without weights seemed appropriate. The reoprob command does not allow clustering of aggregate level variables. Estimation of the three single waves separately did not lead to significantly different results than the ones presented here for the panel.

[33] Furthermore, with only three time periods, the coefficients in a fixed effects ordered probit would have been subject to a very severe bias. See for this, e.g., GREENE (2004).

subsistence income.[34] If only relative income matters, the coefficient of subsistence income should be zero. If only absolute income matters, the coefficients of subsistence and relative income should be both positive and identical.

As is common in such studies, language – which can play an important role at different levels, institutional as well as individual – proxies for culture. Culture at the cantonal level can be represented by the dominant language, which may be a decisive covariate because it can, to a rather large degree, 'explain' the level of direct democracy,[35] meaning that cantonal culture might shape the very political institutions at the centre of this analysis. Because there are three dominant languages in Swiss cantons, three dummy variables are used. Similar arguments hold for local culture, but corresponding data are only available in the LEU dataset. Controlling for culture (i.e. language) at the individual level may also be important because the perception of the benefits of democratic institutions may vary with individual cultural background. Moreover, the perception of happiness and what contributes to personal satisfaction may differ among individuals with different cultural backgrounds. Because of the high percentage of foreigners in Switzerland (about 20 percent), increasing mobility across language regions, and a rising number of bilingual couples, the personal cultural background is frequently different from the dominant culture within a canton or local community. Therefore, we use the languages of the families as the main variables representing the personal cultural background for the analysis of the SHP data. As the corresponding data are not available in the LEU data set, we use the culture of the local community as the second cultural variable for this analysis[36].

Another possible variable to represent culture (that differs from language) is religion. In Switzerland, this holds because in both the German- and French-speaking parts there are regions with large majorities of either Catholic or Protestant populations. Thus, religion and language are not highly correlated. To account for religious denominations in the LEU data,

[34] Taking subsistence income and the difference between actual and subsistence income is under the null of the absolute income hypothesis observationally equivalent to using average income and the difference between actual and average income. Differences occur, however, with respect to the squared terms.

[35] An OLS regression of the index of direct democracy for the year 2000 on the three cantonal language variables yields the following result

$$\underset{}{DEMO} = \underset{(4.72)}{4.716\ German} + \underset{(2.75)}{2.753\ French} + \underset{(2.25)}{2.250\ Italian} + \hat{u},$$

with $R^2 = 0.612$ and 23 degrees of freedom. (The numbers in parentheses are the estimated t-statistics.)

[36] The definitions of all variables used in the following models are listed in *Table A4* of the *Appendix*. For reference categories and chosen weights, see there.

we use a dichotomous variable indicating whether an individual pays church taxes or not. The SHP data allow us to control for several individual religious denominations.

Following the HENDRY approach, we start with the comprehensive model, for both of whose datasets ordered probit estimates are given in *Table A2* of the *Appendix*. For the SHP data, we show the results for both the balanced and unbalanced panel.[37] For the LEU dataset, we present the results of weighted estimates that take into account the oversampling, as well as estimates for the reduced representative sample. In all four cases, the squared income variable for those below the poverty line does not prove significant. Therefore, this variable is deleted from further estimations. In all four estimations the variables controlling for religious denominations are either not significant or only weakly significant at the 10 percent level[38]. The subsequent discussion of the results is restricted to the balanced panel analysis of the SHP and the full LEU dataset.

Table 1a shows the results of the models with the SHP data.[39] If no language variables are included, the index of direct popular rights has a significant positive impact as in the models of FREY and STUTZER. However, as soon as language is taken into account, the significance vanishes completely. Thus, the significance in model (1) seems to be only a result of the omitted cultural variables.

It is hardly surprising that the effect of the index of direct popular rights is strongly reduced as soon as culture is included in the regression equation. The descriptive statistics in *Table A3* of the *Appendix* and a corresponding analysis of variance show that the main variance of this index is between and not within the three language groups.[40] Taking into account that the language of a canton is truly independent of its extent of direct popular rights, it becomes obvious that omitting the language variables from the estimated equation results is a serious specification error that inflates the coefficient of the index of direct democracy, as well as its estimated significance level.

[37] Similar results are obtained when the model is estimated for the three waves of the SHP separately. Additionally, testing for various functional forms of the index of direct democracy does not reveal a considerably significant effect when culture is controlled for.

[38] In both datasets the religious variables are also not jointly significant at the 5 percent level.

[39] We only present the results for the relevant variables. The complete results can be received from the authors on request.

[40] 61.3 percent of the variance of the index of direct democracy is between and only 38.7 percent is within the three language groups. Even if the French and Italian speaking cantons are considered as one language group, we still get 60.6 percent between and only 39.4 percent of the variance within the groups.

Table 1a: Personal Subjective Well-Being in Switzerland, 2000 – 2002
SHP Data, Balanced Panel, 9903 Observations
Ordered Probit

	Basic Model (1)	Model including cantonal language (2)	Model including household language (3)	Model including cantonal and household language (4)
Direct democracy	0.049* (2.55)	0.019 (0.69)	-0.009 (0.35)	0.008 (0.29)
Subsistence Income	0.094 (0.82)	0.054 (0.44)	0.014 (0.12)	0.062 (0.51)
Relative Income	0.052*** (5.15)	0.052*** (5.17)	0.052*** (5.13)	0.052*** (5.10)
Income above poverty line squared	-0.001** (2.76)	-0.001** (2.77)	-0.001** (2.74)	-0.001** (2.73)
French-speaking canton		-0.112 (1.61)		0.104 (0.94)
Italian-speaking canton		-0.117 (0.91)		0.325(*) (1.66)
French-speaking family			-0.212*** (3.28)	-0.273** (2.61)
Italian-speaking family			-0.336** (2.93)	-0.547** (3.12)
Log of likelihood	-14'375.227	-14'373.905	-14'368.221	-14'366.660
		Wald Tests		
Subsistence Income = Relative Income	0.13	0.00	0.10	0.01
Joint significance of cantonal language variables		2.65		3.12
Joint significance of family language variables			14.04***	14.50***
Joint significance of democracy and cantonal language variables		9.16*		3.24
Joint significance of democracy and family language variables			20.57***	14.97**
Joint significance of democracy and all language variables				23.69***

The number in parentheses are the absolute values of the z-statistics of the estimated parameters. '***', '**', '*' or '(*)' show that the corresponding null hypothesis can be rejected at the 0.1, 1, 5, or 10 percent level, respectively. The Wald tests are χ^2 with 1, 2, 3, or 5 degrees of freedom, respectively.

Relative income is always highly significant while subsistence income is not. This finding is evidence in favor of the relative income hypothesis. However, when testing for the equality of the coefficients of subsistence and relative income, the null hypothesis can never be rejected. Thus, the results do not allow for a discrimination between the absolute and the relative income hypotheses. On the other hand, the coefficient of the squared relative income term is – as expected – always negative and statistically significant. This result is clear evidence for a decreasing marginal utility of income.

The signs of the language variables indicate that people in French- and Italian-speaking cantons and/or families are less satisfied with their overall situation than people living in German-speaking cantons and/or families (models (2) and (3)). However, in model (4), it becomes clear that it is the family language and not the language of the canton that matters. The results of the Wald tests confirm that French- and Italian-speaking people report a significantly lower satisfaction than German-speaking people.

Table 1b shows the corresponding results based on the LEU dataset,[41] which are quite different from those obtained using the SHP data. The effect of direct democracy is more robust in this dataset. When cultural variables are omitted, the coefficient of the index of direct democracy is significantly different from zero even at the 1 percent level. If only local culture is included, the significance vanishes (model (7)). However, if both sets of cultural variables are included, it is significant at the 10 percent level (model (8)). If only the cantonal variables are included, it is still significant at the 5 percent level (model (6)).[42] As the results of the Wald tests show, contrary to the results for the SHP dataset, both sets of cultural variables should be included. Thus, one interesting result of this analysis is that the index of direct popular rights is (at least marginally) significant if the full LEU dataset is used but not significant at all when more recent SHP dataset is used.

[41] Model (5) corresponds to the second equation in FREY and STUTZER (2000, *Table 2*, p. 927); however, variables for health status and religious denomination have been added. Using the same specification, we were able to exactly replicate their results. Thus, differences between their results and model (5) are due to the inclusion of the additional variables and due to a different specification of the income variable.

[42] The significance is approximately the same if the fiscal decentralization variable is included in the model, but it increases if the individual health status is omitted, giving z-values of 3.19, 2.37, 1.60, and 2.17 in models (5) to (8), respectively. On the other hand, the significance vanishes if the smaller, representative dataset is used. This gives the following z-values: 2.50, 1.67, 1.18, and 1.44. Thus, once individual culture is included, the index of direct popular rights never proves significant at any conventional level of significance.

Table 1b: Personal Subjective Well-Being in Switzerland, 1992

LEU Data, Full Cross Section, 6127 observations

Ordered Probit

	(5)	Model including cantonal culture (6)	Model including local culture (7)	Model including cantonal and local culture (8)
Direct democracy	0.080** (2.91)	0.050* (1.98)	0.042 (1.58)	0.041(*) (1.77)
Subsistence Income	-0.133 (1.35)	-0.210* (2.13)	-0.211* (2.05)	-0.219* (2.21)
Relative Income	0.024** (2.83)	0.025** (2.95)	0.024** (2.91)	0.025** (2.95)
Income above poverty line squared	-0.001*** (3.45)	-0.001*** (3.74)	-0.001*** (3.64)	-0.001*** (3.75)
French-speaking canton		-0.194** (3.09)		-0.047 (0.30)
Italian-speaking canton		0.190* (2.55)		0.436*** (3.34)
French-speaking local community			-0.224*** (4.47)	-0.185 (1.33)
Italian-speaking local community			0.157* (1.99)	-0.274** (3.02)
Log of likelihood	-10'032.007	-10'014.004	-10'011.961	-10'011.223
		Wald Tests		
Subsistence Income = Relative Income	2.61	5.89*	5.35*	6.29*
Joint significance of cantonal language variables		86.22***		14.00***
Joint significance of local language variables			158.60***	9.49**
Joint significance of democracy and cantonal language variables		87.22***		14.01**
Joint significance of democracy and local language variables			160.87***	11.17*
Joint significance of democracy and all language variables				261.84***

The number in parentheses are the absolute values of the z-statistics of the estimated parameters. '***', '**', '*' or '(*)' show that the corresponding null hypothesis can be rejected at the 0.1, 1, 5, or 10 percent level, respectively. The Wald tests are $\chi 2$ with 1, 2, 3, or 5 degrees of freedom, respectively. Full LEU sample has been estimated with individual weights. Robust standard errors obtained through clustering of cantons.

Table 2: Results for Different Population Groups

	German-speaking cantons	French-speaking cantons	German-speaking families	French-speaking families
	SHP Data 2000 – 2002, balanced panel			
Direct democracy	-0.004 (0.14)	0.256** (2.66)	-0.006 (0.22)	0.050 (0.68)
Subsistence Income	0.117 (0.89)	0.040 (0.10)	0.144 (1.11)	-0.235 (0.66)
Relative Income	0.046*** (3.86)	0.074** (3.17)	0.044*** (3.72)	0.078*** (3.34)
Income above poverty line squared	-0.001* (2.48)	-0.000 (0.20)	-0.001* (2.42)	-0.000 (0.20)
Log of likelihood	-9'600.8689	-4'038.6533	-9'495.1812	-4'052.0114
Number of observations	6716	2748	6670	2755
	Wald Tests			
Subsistence Income = Relative Income	0.29	0.01	0.58	0.76
	German-speaking cantons	French-speaking cantons	German-speaking community	French-speaking community
	LEU Data, 1992			
Direct democracy	0.029 (1.10)	0.054 (0.95)	0.039 (1.32)	0.039 (0.73)
Subsistence Income	-0.191(*) (1.82)	-1.000* (2.28)	-0.186(*) (1.73)	-0.729* (2.18)
Relative Income	0.024* (2.46)	0.061(*) (1.77)	0.025* (2.50)	0.060(*) (1.81)
Income above poverty line squared	-0.001*** (3.73)	-0.003*** (3.35)	-0.001*** (3.71)	-0.003*** (3.20)
Log of likelihood	-7'108.1302	-2'397.8161	-7'201.1989	-2'293.8294
Number of observations	4466	1378	4531	1308
	Wald Tests			
Subsistence Income = Relative Income	4.43*	5.50*	4.02*	5.40*

The number in parentheses are the absolute values of the z-Statistics of the estimated parameters. '***', '**', '*' or '(*)' show that the estimated parameter is significantly different from zero at the 0.1, 1, 5, or 10 percent level, respectively. The Wald tests are χ^2 with 1 degree of freedom. See also *Tables 1a* and *1b*.

In addition, in model (5), subsistence income has an insignificant coefficient, but in a Wald test for equality of the coefficients of subsistence relative income, the null hypothesis cannot be rejected. If culture is included in the following models (6), (7) and (8), however, the coefficient of subsistence income always has a (wrong) negative sign and is significant at the 5 percent level. The equality of the coefficients of subsistence and relative income, however, can always be rejected at the 5 percent level. This result, again, does not allow discrimination between the absolute and the relative income hypothesis. As in the SHP dataset, we also find decreasing marginal utility of income.

There are also some differences between the results of the two datasets with respect to the impact of the language variables. Notably, whereas cantonal culture is insignificant in the SHP data, in the LEU data, both group indicators prove (jointly) significant (model (8)). This outcome might, however, be due to the fact that the language of the local commune is not a sufficiently appropriate substitute for the family language, which is only in the SHP data directly measured. More surprising is the second difference. Taking the results of the SHP data, both French and Italian cantonal, as well as personal, cultures lead, *ceteris paribus*, to a lower degree of subjective well-being, if included separately in the model (models (2) and (3)). In the LEU data, the result is identical for the French cantons and local communities but not for the Italian-speaking individuals or cantons, who seem happier than their French- and German-speaking counterparts (models (6) and (7))[43].

Finally, we split the datasets and conduct separate estimations for German- and French-speaking cantons and families.[44] These results for the SHP panel, as shown in *Table* 2, seem to confirm that direct democracy has a life satisfaction increasing impact in cantons whose majority language is French but an insignificant one in German-speaking cantons. Splitting the SHP data according to languages of the household questionnaire, however, shows no significant impact of the degree of direct democracy on any cultural subpopulation. In the LEU dataset, direct democracy exerts no significant impact on personal well-being in either German or French speaking cantons or local communes, even if the coefficients of the estimated parameters are positive in all four regressions.

[43] In model (8), however, also Italian-speaking communes appear to have less happy residents, as observed in the SHP data.

[44] Estimating separate equations for Italian culture is not possible as there is only one canton, *Tessin (Ticino)*, in which the main language is Italian. Moreover, because most Italian-speaking Swiss people live in this canton, the equation for the subsample with Italian family culture is also dropped.

In summary, both datasets yield similar findings with regard to the effect of income and culture (languages) on well-being. The results are neither fully compatible with the relative income hypothesis, nor with the absolute income hypothesis. Individuals in French speaking cantons, communities and families tend to be consistently less satisfied compared to their German speaking counterparts. For the small Italian speaking portion of the population, which is mainly concentrated in a single canton, results are rather ambiguous. However, with respect to (direct) democracy, major differences exist. While the SHP results strongly suggest that democracy has no statistically significant effect on happiness in Switzerland[45], results for the LEU data indicate a possible independent impact of direct democracy on personal well-being, even if the significance is fragile and strongly dependent on the respective specifications.

The question remains as to why this difference between the two datasets exists. There are at least two possible reasons. One is that the weighting procedure in the LEU data does not really produce a representative sample. This presumption is supported by the fact that results obtained with a representative reduced sample of the LEU data do not indicate a significant impact of direct democracy on well-being, which is again compatible with the SHP results. The second possible reason is that the perception of the Swiss population with respect to their valuation of the benefits of direct democracy might have changed between 1992, when the LEU data were collected, and the years 2000 to 2002, as represented by the SHP data. In any case, as earlier mentioned, the failure to find a significant impact of direct popular rights on personal well-being in this Swiss microdata does not necessarily imply that, in Switzerland, democracy has no impact on happiness at all. First, the most important direct democratic rights of Swiss exist at the federal level, and they are identical for all Swiss citizens. Second, as mentioned previously, measured on an international scale, the extent of democratic rights in all Swiss cantons is extremely high. Thus, it may well be the case that democracy, and especially direct democracy, has a positive impact on the personal subjective well-being of the whole Swiss population, even though no statistically significant effect is found at the sub-federal level.

[45] In the unbalanced SHP panel a statistical significance at the 10 percent level is reached (see *Table A2* of the *Appendix*). Since in this estimation standard errors are not corrected according to the MOULTON (1990) critique , however, significance levels might be inflated.

4 International Analysis

The effect of democracy on subjective well-being (if any) may also be identified in a cross-national setting, in which sufficient variation in exposure to democracy can be observed. Obviously, as discussed above, such cross-national analyses require a rich set of available conditioning variables to control for the multifaceted happiness-influencing differences among countries.

An appropriate dataset for this purpose is the 1998 International Social Survey Program (ISSP), an ongoing annual program of cross-national collaboration that started in 1985. Topics covered by the data, which are collected by independent institutions in several countries, change from year to year by agreement with a view to replication approximately every five years. In the 1998 wave of the ISSP, the survey's first question was as follows:

> *If you were to consider your life in general these days, how happy or unhappy would you say you are, on the whole?*

Respondents could rate themselves as 'very happy', 'fairly happy', 'not very happy', or 'not happy at all'. *Table A5* in the *Appendix* shows the distribution of these answers in the 28 countries. In all countries but Latvia, more than half the population consider themselves as either 'very happy' or 'fairly happy', with 'fairly happy' being the most frequent happiness assessment in all but two countries. Nevertheless, some considerable differences between countries can be observed; for example, 44.1 percent of the Irish consider themselves 'very happy', whereas this figure is as low as 4.6 percent for Latvia and 4.7 percent for Hungary and Russia.

To capture the impact of the political system on the measure of self-reported happiness, we use two different measures of democracy: the Polity IV index by MARSHALL and JAGGERS (2003) and the Freedom House index by KARATNICKY (2000). The Polity IV democracy index, which is based on a relatively narrow definition of democracy, assesses the openness of democratic institutions on a scale from 0 to 10. Components of the index include the extent to which political executives are chosen through competitive elections and the opportunity of non-elites to access institutional structures for political expression and to attain political office. In contrast, the Freedom House democracy index uses a broader concept of democracy; it measures a wide array of political rights and civil liberties on a 7-point scale.

These include basic economic and social freedoms, such as the right to establish a private business or the right of gender equality.

Based on each of these indices, two variables are defined: one for the democracy level in 1988, and a second for the increase in democracy level between 1988 and 1998. This structure takes into account that the ISSP includes various transitional countries in which democratic structures have only been established very recently, i.e. between 1988 and 1998.[46] It seems plausible to assume that these new democratic structures would not have the same impact on happiness as the structures already established a decade or more ago, i.e. before 1988.

The equivalence income is computed in U.S. dollars using purchasing power parity data from Penn World Table and the modified OECD equivalence scale.[47] Since data on the exact household composition is unavailable, it is assumed that at least one person in each household is an adult, while the remaining household members are equally divided into adults and children. Two income variables are constructed: the subsistence income of the respective country and the difference between the equivalence income of the individual household and the subsistence level in the respective country. These variables allow differentiation between the general level of economic well-being in a country and the relative economic position of a household in that country.

Culture is again represented by the main language of a country.[48] Binary variables are defined for 'English', 'German', 'North Germanic' (Scandinavian), 'Romance', 'Balto-Slavic, Uralic and Greek' and 'Asian' (Japanese and Filipino) languages. In the regressions, English is used as the reference group.

To make the international model as comparable as possible to the Swiss model, we use the same set of additional explanatory variables except for two aspects whose definition the 1998 ISSP data do not allow – being a foreigner and household composition. As regards the latter, measures of household size and marital status are included as a substitute for household composition variables.[49] Using ordered probit with standard errors clustered by countries, we

[46] It should be noted that the sample includes no countries in which the Polity IV democracy level decreased between 1988 and 1998. In the same period, the Freedom House democracy score slightly declined in three countries of the sample. The variable 'Increase in Freedom House Democracy Score 1988-1998' assumes a negative value for these countries.

[47] See HESTON, SUMMERS and ATON (2002) and VAN DOORSLAER and MASSERIA (2004, p. 12).

[48] Moreover, all estimations include a set of dummy variables that control for the religion of the survey respondents.

[49] The variables used in the international model are listed in *Table A7* of the *Appendix*.

again begin with the comprehensive model, given in *Table A6* of the *Appendix* for both democracy indices. In both models, the coefficients of the squared relative income variables for individuals below the poverty line is not significant and this variable is no longer included in the following estimations. The results for the variables of interest are given in *Table 3*. Established democratic structures represented by the Polity IV democracy index for the year 1988 have a significant positive impact on happiness. This effect can be observed even though many relevant sociodemographic and economic factors, including religion and individual household income, have been controlled for. Contrary to the Swiss results, this finding is robust with respect to the inclusion of language variables. Moreover, if the Freedom House democracy index is used instead of the Polity IV, the results change only slightly (with the Freedom House index, the significance levels of the democracy variables are generally a bit lower). These results support the hypothesis that a higher degree of democracy in a country yields political outcomes that are judged more favorably by the people. The marginal effect of democracy on happiness is sizable: one additional point on the Freedom House scale increases the probability that a subsistence income earner is 'very happy' by as much as an increase of the equivalence income by 7,000 U.S. dollars per year.[50]

Democratic structures that were newly acquired between 1988 and 1998 have a positive, but in most specifications insignificant impact on happiness. The Wald tests show that this effect tends to be significantly smaller than for older, and therefore more established, democratic structures.[51] Between 1988 and 1998, several countries in the sample – predominantly in Eastern Europe – went through a transition from very authoritarian to democratic systems. However, despite the democratic structures, residents of these countries do not (yet) benefit as much from democracy as do residents of countries with longer democratic traditions. The reason may be that the democratic structures have not been in place long enough to permit substantial change toward more broadly accepted policies. Moreover, it has been observed in transitioning countries that the introduction of democracy often creates overly optimistic expectations with regard to the future that later may not be fulfilled, thus resulting in decreasing happiness during at least a part of the transition process.[52]

[50] In the model that includes controls for languages and religion, the marginal effects for being 'very happy' are 0.0279 for the Freedom House democracy level 1988, 0.0040 for relative income measured in $K, and minus 0.0017 for (relative income/10) squared. One additional point on the Polity index scale has the same effect as an additional income of $4,500. The full list of marginal effects can be obtained from the authors.

[51] Note that in every model of *Table 3*, additional Wald tests consistently reject the null hypothesis that the coefficients of the two democracy variables are jointly equal to zero at least at the 10 percent level.

[52] See MOLLER and DICKOW (2002) for South Africa or VEENHOVEN (2001) for Russia.

Table 3: Personal Subjective Well-Being in 28 Countries, 1998
ISSP Data, Cross Section, 25937 Observations
Ordered Probit

	Models with the Polity IV Index		Models with the Freedom House Index	
Democracy in 1988	0.067* (2.10)	0.068* (2.14)	0.114 (1.54)	0.110* (1.87)
Change in Democracy from 1988 to 1998	0.038 (1.17)	0.051* (2.06)	0.049 (0.67)	0.066 (1.09)
Subsistence income	0.038(*) (1.87)	-0.002 (0.11)	0.036 (1.58)	-0.004 (0.23)
Relative income	0.015** (6.81)	0.016** (7.35)	0.016** (6.61)	0.016** (7.32)
(Income above poverty line/10) squared	-0.006** (3.22)	-0.006** (3.45)	-0.006** (3.16)	-0.006** (3.42)
German		-0.252** (2.68)		-0.224* (2.60)
North-Germanic languages		-0.261** (2.71)		-0.264** (2.77)
Romance languages		-0.565** (4.60)		-0.556** (4.57)
Balto-Slavic and Uralic Languages, Greek		-0.654** (4.73)		-0.634** (4.37)
Asian languages		-0.354** (3.67)		-0.337** (3.63)
Log of pseudo-likelihood	-26'272.02	-26'063.46	-26'275.38	-26'064.83
		Wald Tests		
Joint significance of democracy variables	6.05*	6.74*	5.36(*)	6.58*
Joint significance of language variables		29.96**		33.36**
Democracy 1988 = change in democracy 1988-1998	3.06(*)	2.12	4.27*	3.84*
Subsistence income = relative income	1.28	0.91	0.82	1.18

The numbers in parentheses are the absolute values of the z-values of the estimated parameters. '**', '*', and '(*)' show that the estimated parameter is significantly different from zero at the 1, 5, or 10 percent level, respectively. Controls for the type of commune are included but not reported. The Wald tests are χ^2 with 1, 2, or 7 degrees of freedom, respectively.

Relative income is always highly significant, while subsistence income is usually insignificant. This finding provides evidence in favor of the relative income hypothesis. However, when testing for the equality of the coefficients of relative and subsistence income, the null hypothesis can never be rejected at the 10 percent level. The coefficient of the squared (positive) income term is always highly significant, but it is rather small compared to the coefficient of the linear term; the maximum level of happiness would only be reached with a yearly equivalence income that exceeds the poverty line by about 125,000 U.S. dollars. As there are only a few observations of such high incomes in the sample, this actually implies a positive but decreasing marginal utility of income.

Culture, as measured by the language variables, has a very strong impact on subjective well-being. *Ceteris paribus*, residents of predominantly English-speaking countries report much higher levels of life satisfaction than residents from countries with other cultures. Given the marginal effects, the most negative impact is observed in countries outside the Germanic language tradition, i.e. where neither English, German, nor North-Germanic (Scandinavian) languages are spoken. In countries with a Balto-Slavic, Uralic, or Greek language, the predicted probability that a survey respondent be 'very happy' is more than 16 percentage points lower than in a country where English is spoken.[53] Such large differences might result from two factors: first, in some cultures, it may be more usual for individuals to call themselves 'happy' or 'very happy' than in other cultures. Moreover, it is possible that the pursuit of happiness does not have the same importance as a goal of life in every culture.[54]

5 Summary and Concluding Remarks

In this paper, we analyze the impact of democracy on subjective well-being both in Switzerland and in an international comparison of 28 countries. Whereas FREY and STUTZER (2000, 2000b, 2003) show a positive influence of democracy on happiness in Switzerland, to our knowledge no other analysis of this relationship exists that uses a microdata-based

[53] The marginal effects of the language variables on the probability of being 'very happy' are (in comparison to English) -0.064 for German, -0.066 for North Germanic languages, -0.143 for Romance languages, -0.166 for Balto-Slavic, Uralic, and Greek languages, and -0.090 for Asian languages. The reported values refer to the model that uses the Polity IV democracy index; however, almost identical marginal effects are obtained with the Freedom House index.

[54] For this, see, e.g., AHUVIA (2002).

international regression analysis. In addition, by including language and religion variables, we control not only for various sociodemographic and economic determinants of life satisfaction but also for cultural influences.

Results for the two different datasets for the 26 Swiss cantons revealed that inter-cantonal differences in the levels of direct democracy no longer show a significant impact on personal happiness once cultural differences among the different Swiss regions are controlled for. On the other hand, the analysis of an international cross section of 28 countries reveals a significant influence of democracy on peoples' subjective well-being; a result that is robust to the inclusion of income and cultural (i.e. language and religion) variables. This result is consistent with the hypothesis that higher levels of democracy will, *ceteris paribus*, lead to policies that correspond more closely to voters' preferences and thus increase people's happiness. This proximity will, in turn, increase their subjective well-being. This finding is highly significant in the international comparison. The lack of significance in the Swiss case is not surprising and probably due to extensive democratic rights in Switzerland.

The question of whether or not democracy increases happiness is especially timely in view of the transitioning of many countries from authoritarian to democratic structures within the past twenty years. Our results show that, compared to countries with a longer democratic tradition, the positive effect of democracy on life satisfaction is smaller in these transitioning countries. Thus, after the introduction of democratic structures, it may take some time before the full benefits of democracy (in the form of higher individual life satisfaction) can be reaped.

In both investigations, culture as measured by language has a considerable impact on subjective well-being, which in most cases is highly significant. With regard to cultural background, it appears that the happiest people live in English-speaking nations, followed by individuals in German-speaking and Scandinavian nations. The results for Switzerland are consistent with those of the international analysis, as individuals speaking French or Italian seem less happy than those speaking German.

Finally, relative income has a positive impact on happiness, but with diminishing returns. This finding is consistent with the usual assumption of decreasing marginal utility. Whether the absolute income of a person also has an impact on happiness cannot be unambiguously determined by this study. However, even if absolute income has an additional impact on happiness, the effect of relative income clearly dominates.

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Appendix

Table A1: Distribution of Life Satisfaction in the Balanced Panel,
Index of Direct Democracy in 2000

Canton	Categories								CS	DD
	10	9	8	7	6	5	4	3		
Aargau	18.1	20.7	37.8	14.4	3.1	4.0	1.0	0.9	8.9	5.46
Appenzell Innerrhoden	0.0	0.0	20.0	40.0	20.0	20.0	0.0	0.0	0.1	5.44
Appenzell Ausserrhoden	25.3	13.8	40.2	13.8	4.6	2.3	0.0	0.0	0.9	5.50
Bern	19.1	19.2	40.7	14.5	2.1	3.3	0.7	0.4	11.2	3.02
Basel-Stadt	18.9	21.5	40.7	10.4	3.0	4.7	0.3	0.3	3.0	5.48
Basel-Landschaft	23.8	18.8	35.8	13.3	3.4	4.3	0.6	0.0	3.3	4.40
Freiburg	14.3	16.0	39.3	15.5	6.8	5.8	1.5	0.8	4.0	2.79
Genf	16.6	12.6	38.4	17.9	6.7	5.7	0.4	1.7	4.8	1.75
Glarus	31.1	11.5	36.1	14.8	0.0	6.6	0.0	0.0	0.6	5.75
Graubünden	25.6	23.2	36.3	12.5	1.2	1.2	0.0	0.0	1.7	4.83
Jura[1]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.71
Luzern	17.1	21.5	37.7	13.0	4.2	4.8	0.5	1.2	5.7	4.42
Neuenburg	18.0	16.1	38.7	14.6	5.9	5.0	1.0	0.6	6.3	2.19
Nidwalden	10.7	0.0	57.1	21.4	7.1	3.6	0.0	0.0	0.3	4.44
Obwalden	29.8	15.8	35.1	14.0	5.3	0.0	0.0	0.0	0.6	4.63
St. Gallen	22.2	21.1	35.2	13.5	3.9	3.3	0.6	0.2	4.9	3.46
Schaffhausen	9.8	20.6	44.1	18.6	1.0	3.9	1.0	1.0	1.0	5.21
Solothurn	16.2	20.1	38.3	16.6	3.5	3.0	1.6	0.7	4.4	5.25
Schwyz	19.4	20.0	40.6	13.3	1.1	5.0	0.0	0.6	1.8	4.93
Thurgau	14.4	19.5	40.1	18.3	3.1	3.9	0.4	0.4	2.6	4.33
Tessin	17.2	19.0	34.8	14.5	5.4	6.1	0.9	2.0	4.4	2.25
Uri	33.3	23.8	28.6	4.8	4.8	4.8	0.0	0.0	0.2	5.13
Waadt	14.5	20.5	40.4	13.5	4.6	4.2	1.0	1.3	9.5	2.50
Wallis	22.0	18.9	39.3	12.9	3.8	2.5	0.0	0.6	3.2	3.58
Zug	13.4	16.8	40.3	20.2	3.4	5.9	0.0	0.0	1.2	4.42
Zürich	17.6	19.7	37.6	15.4	4.3	3.6	0.6	1.0	15.5	3.50
Total Share	18.0	19.1	38.5	14.7	4.0	4.1	0.7	0.8		

CS is the cantonal share in observations in the balanced panel, and DD the value of the index of direct democracy for the year 2000.

[1] There are no observations from the canton *Jura* in the balanced panel.

Table A2: Results for Switzerland, Full Model

	SHP Data		LEU Data	
	Balanced Panel	Unbalanced Panel	Full Sample	Representative Sample
Direct democracy	0.008 (0.29)	0.039(*) (1.67)	0.042(*) (1.80)	0.025 (1.16)
Good or average health	Reference category			
Bad health	-0.536*** (12.79)	-0.562*** (15.22)	-0.703*** (16.93)	-0.713*** (18.89)
Age 20-29	Reference category			
Age 30-39	0.045 (0.74)	-0.027 (0.51)	-0.033 (0.38)	-0.095(*) (1.68)
Age 40-49	0.018 (0.27)	0.023 (0.42)	0.069 (0.90)	0.048 (0.76)
Age 50-59	-0.028 (0.41)	0.002 (0.03)	0.044 (0.73)	-0.024 (0.45)
Age 60-69	-0.046 (0.59)	-0.060 (0.92)	0.299*** (3.91)	0.255*** (5.80)
Age 70-79	-0.031 (0.34)	-0.136(*) (1.77)	0.413*** (4.69)	0.398*** (5.01)
Age 80 and older	-0.186 (1.29)	-0.272* (2.22)	0.422*** (4.60)	0.492*** (6.00)
Male	Reference category			
Female	-0.082(*) (1.73)	-0.008 (0.19)	0.062(*) (1.65)	0.070* (2.12)
Swiss	Reference category			
Foreigner	-0.302*** (3.90)	-0.317*** (5.08)	-0.233*** (4.02)	-0.186** (3.16)
Low education	Reference category			
Middle education	0.095(*) (1.71)	0.029 (0.63)	0.051 (1.23)	0.080*** (3.18)
High education	0.029 (0.42)	0.016 (0.27)	0.044 (0.79)	0.106** (2.57)
Single woman	-0.355*** (4.51)	-0.426*** (6.24)	-0.272*** (5.45)	-0.177*** (3.80)
Single man	-0.446*** (5.25)	-0.365*** (5.01)	-0.211*** (3.54)	-0.269*** (6.44)

***Table A2: Results for Switzerland, Full Model** (cont.)*

	SHP Data		LEU Data	
	Balanced Panel	Unbalanced Panel	Full Sample	Representative Sample
Couple without children	Reference category			
Couple with children	-0.140** (2.82)	-0.142*** (3.38)	-0.142*** (3.47)	-0.078** (2.68)
Single parent	-0.704*** (7.53)	-0.603*** (7.86)	-0.378*** (3.68)	-0.350*** (3.52)
Other private household	-0.311(*) (1.96)	-0.276 * (2.16)	-0.168 * (2.33)	-0.171*** (3.53)
Collective household	-0.136 (0.74)	-0.262(*) (1.89)	-0.382*** (3.25)	-0.267** (3.01)
Employed	Reference category			
Self-employed	0.126(*) (1.77)	0.114(*) (1.82)	0.054 (1.22)	0.064(*) (1.67)
Housewife	0.332*** (5.18)	0.313*** (5.46)	0.130** (2.57)	0.056 (1.11)
Other employment status	0.429*** (8.27)	0.375*** (8.64)	-0.037 (0.55)	-0.053 (0.83)
Unemployed	-0.504*** (3.21)	-0.572*** (4.24)	-0.778*** (4.99)	-0.681*** (6.24)
Subsistence Income	0.061 (0.51)	-0.033 (0.42)	-0.223* (2.27)	-0.399*** (3.79)
Relative Income	0.052*** (5.07)	-0.043*** (5.03)	0.030** (2.88)	0.029*** (3.26)
Income above poverty line squared	-0.001** (2.74)	-0.001*** (3.21)	-0.001*** (3.46)	-0.001** (3.17)
Income below poverty line squared	0.033 (0.23)	0.003 (0.02)	0.127 (1.33)	0.031 (0.38)
German-speaking canton	Reference category			
French-speaking canton	0.105 (0.95)	0.033 (0.35)	-0.040 (0.25)	-0.126 (0.73)
Italian-speaking canton	0.325(*) (1.66)	0.065 (0.42)	0.434*** (3.28)	0.270*** (3.67)
German-speaking household/ German-speaking local community	Reference category			

***Table A2: Results for Switzerland, Full Model** (cont.)*

	SHP Data		LEU Data	
	Balanced Panel	Unbalanced Panel	Full Sample	Representative Sample
French-speaking household/ French-speaking local community	-0.274** (2.62)	-0.233** (2.59)	-0.189 (1.36)	-0.112 (0.63)
Italian-speaking household/ Italian-speaking local community	-0.547** (3.12)	-0.342** (2.59)	-0.268** (2.93)	-0.127(*) (1.90)
Protestant (SHP)/ dummy for paying church taxes	0.101 (0.92)	0.074 (0.81)	0.047 (0.85)	0.086(*) (1.94)
Catholic (SHP)	0.072 (0.65)	0.059 (0.65)		
Christ-catholic (SHP)	0.117 (0.81)	0.078 (0.64)		
Other Christian religion (SHP)	0.241(*) (1.93)	0.206(*) (1.90)		
Other denomination/ Jewish / Muslim (SHP) / dummy for not paying church taxes	Reference category			
No religion (SHP)	-0.000 (0.00)	-0.045 (0.46)		
Dummy for the year 2000	0.218*** (7.88)	0.219*** (8.70)		
Dummy for the year 2001	0.114*** (4.22)	0.121*** (4.85)		
Dummy for the year 2002	Reference year			
Number of observations	9'903	12'967	6'127	5'107
Log of likelihood	-14'366.633	-19'335.282	-10'009.338	-8'531.3623
Rho	0.533***	0.545***		
Adjusted Mac Fadden's R^2	0.015	0.016	0.040	0.036

The numbers in parentheses are the absolute values of the z-values of the estimated parameters. '***', '**', '*' or '(*)' show that the estimated parameter is significantly different from zero at the 0.1, 1, 5, or 10 percent level, respectively. Controls for the type (and size of) of commune are included but not reported. Full LEU sample has been estimated with individual weights. Both LEU samples also with robust standard errors obtained through clustering of cantons.

Table A3: Descriptive Statistics of the Index of Direct Democracy

	Mean	Standard Deviation	Median	Minimum	Maximum
All cantons	4.168	1.182	4.420	1.750	5.750
German-speaking cantons	4.716	0.765	4.830	3.020	5.750
French-speaking cantons	2.753	0.773	2.645	1.750	3.710
Italian-speaking canton	2.250	0.000	0.250	2.250	2.250
French- or Italian-speaking cantons	2.681	0.731	2.500	1.750	3.710

Table A4: Description of the Variables from the Swiss Household Panel

Variable	Definition	Based on / Source
Life satisfaction	8 categories, with the original categories 0, 1,2, and 3 forming the lowest	p0Xc44
Bad health	1 if subjective state of health is not good, 0 otherwise	1 if P0Xc01 >=3
Age	Year of interview - birth year of interviewee	200X – birth year
Age 30 – 39	1 if age is between 30 and 39, 0 otherwise	
Age 40 – 49	1 if age is between 40 and 49, 0 otherwise	
Age 50 – 59	1 if age is between 50 and 59, 0 otherwise	
Age 60 – 69	1 if age is between 60 and 69, 0 otherwise	
Age 70 – 79	1 if age is between 70 and 79, 0 otherwise	
Age 80 and older	1 if age is older than 80, 0 otherwise	
Female	1 if person is female, 0 otherwise	sex = 2
Foreigner	1 if person is foreigner, 0 otherwise (single, double or triple citizenship)	nat_1_X, nat_2_X, and nat_3_X
Middle education	1 if person completed secondary II education, 0 otherwise	educat0X = 4, 5, 6, or 8
High education	1 if person completed a tertiary education (university, university of applied science, Higher Master Craftsman's Diploma)	educat0X = 7, 9, 10
Single woman	1 if a single is female, 0 otherwise	Single = 1 & Sex = 2
Single man	1 if a single is male, 0 otherwise	Single = 1 & Sex = 1
Single	1 if a person lives alone without children, 0 otherwise	hldtyp0X = 1, 2 or 3
Couple with children	1 if an unmarried couple with children lives in the same household, 0 otherwise	hldtyp0X = 8, 9, 10 or 11
Single parent	1 if a single parent with child(ren) lives in this household, 0 otherwise	hldtyp0X = 4 or 5

***Table A4: Description of the Variables from the Swiss Household Panel** (cont.)*

Variable	Definition	Based on / Source
Collective household	1 if household is a collective household, 0 otherwise	hldtyp0X = 13
Self-employed	1 if a person is self-employed or employed in own company, 0 otherwise	p0Xw29 =3 or 4 & ┐ (unemployed = 1, housewife = 1, or occupa0X = 3, 7, 8, or 10)
Housewife	1 if person is a housewife or a houseman, 0 otherwise	occupa0X = 6
Other employment status	1 if person works in the family, is an apprentice or a student, does military service, is retired or other	1 if (self-employed = 0 & housewife = 0 & unemployed = 0 & employed = 0)
Unemployed	1 if person is unemployed and either officially recorded or not, 0 otherwise	occupa0X = 9
Income	Monthly net income of the household, deflated to the reference year 1993 with the GDP deflator, divided by the equivalence scale of the Swiss Conference for Public Assistance.	i0Xeqsn /12*inflation index
Direct democratic rights	Index of direct democracy of the year of interview	Own calculations, based on STUTZER (1999)
French, Italian or German household language	Interview language of household questionnaire	hlingu0X (1 = French, 2 = German, 3 = Italian)
Protestant	1 if person is a Protestant, 0 otherwise	p0Xr01= 1
Catholic	1 if person is a Catholic, 0 otherwise	p0Xr01= 2
Christian Catholic	1 if person is a Christian Catholic, 0 otherwise	p0Xr01= 3
Other Christian denomination	1 if person has another Christian denomination, 0 otherwise	p0Xr01= 4
No denomination	1 if person has no official denomination or religion, 0 otherwise	p0Xr01= 8

X stands for the year in which the person or household was interviewed (X = 0, 1, or 2, i.e. 2000, 2001 or 2002), p for personal and h for household questionnaire. Detailed information on the nomenclature used in the SHP surveys can be found at www.swisspanel.ch/shpdata/var_nom.php?lang=en&pid=25 (18.02.2005).

Table A5: Shares of Self-Reported Happiness in 28 Countries (in percent),
Indices for Democracy

	Very happy	Fairly happy	Not very happy	Not at all happy	Mean Score	Polity IV Index		Freedom House Index	
						1988	Change 1988-1998	1988	Change 1988-1998
Austria	22.6	67.8	8.6	0.9	3.12	10	0	7.0	0.0
Bulgaria	8.7	45.1	28.7	17.4	2.45	0	8	1.0	4.5
Canada	25.4	57.8	14.5	2.2	3.06	10	0	7.0	0.0
Chile	27.5	32.3	34.8	5.4	2.82	2	6	3.5	2.0
Cyprus	21.7	50.6	22.5	5.2	2.89	10	0	6.5	0.5
Czech Republic	8.9	71.3	17.9	1.8	2.87	0	10	1.5	5.0
Denmark	31.8	57.7	8.7	1.8	3.19	10	0	7.0	0.0
France	14.1	65.1	17.8	3.0	2.90	9	0	6.5	0.0
Germany (West)	17.7	66.2	13.5	2.6	2.99	10	0	6.5	0.0
Germany (East)	9.3	61.2	25.3	4.2	2.76	0	10	1.5	5.0
Hungary	4.7	45.1	39.6	10.6	2.44	2	8	3.5	3.0
Ireland	44.1	50.9	4.4	0.6	3.38	10	0	7.0	0.0
Italy	12.4	65.9	18.2	3.5	2.87	10	0	7.0	-0.5
Japan	14.3	74.1	10.0	1.6	3.01	10	0	7.0	-0.5
Latvia	4.6	43.9	45.0	6.5	2.47	0	8	2.5	4.0
New Zealand	33.0	59.9	6.4	0.6	3.25	10	0	7.0	0.0
Norway	22.1	66.6	10.4	0.9	3.10	10	0	7.0	0.0
Philippines	27.8	53.3	15.0	3.9	3.05	8	0	5.5	0.0
Poland	19.0	63.0	15.3	2.7	2.98	0	9	3.0	3.5
Portugal	19.5	37.5	34.9	8.0	2.69	10	0	6.5	0.5
Russia	4.7	49.4	37.1	8.8	2.50	0	4	2.5	1.5
Slovak Republic	7.1	58.3	26.2	8.4	2.64	0	9	1.5	4.5
Slovenia	9.3	58.6	28.8	3.3	2.74	1	9	3.0	3.5
Spain	19.2	68.1	11.1	1.6	3.05	10	0	6.5	0.0
Sweden	24.4	61.2	12.8	1.6	3.08	10	0	7.0	0.0
Switzerland	28.4	62.1	8.5	0.9	3.18	10	0	7.0	0.0
United Kingdom	35.1	58.1	5.7	1.1	3.24	10	0	7.0	-0.5
United States	36.7	52.4	8.9	2.0	3.24	10	0	7.0	0.0

The mean score is obtained by transforming the ordinal scale to a cardinal scale (score 4 for ‘very happy'', score 3 for ‘'fairly happy’, score 2 for ‘not very happy’, score 1 for ‘not happy at all’). The Polity IV democracy index is measured on a 10-point scale and the Freedom House Index is measured on a 7- point scale. In the case of both indices, higher scores represent higher levels of democracy.

Table A6: International Results, Full Model

	Model with the Polity IV Index	Model with the Freedom House Index
Democracy in 1988	0.068* (2.54)	0.110(*) (1.87)
Change in democracy from 1988 to 1998	0.051* (2.06)	0.066 (1.09)
Age < 30	Reference category	
Age 30-39	-0.096* (2.46)	-0.096* (2.43)
Age 40-49	-0.216** (5.30)	-0.214** (5.29)
Age 50-59	-0.233** (4.58)	-0.232** (4.51)
Age 60-69	-0.131* (2.15)	-0.127* (1.40)
Age 70-79	-0.087 (1.43)	-0.085 (1.40)
Age 80 and older	0.099 (1.35)	0.103 (1.39)
Male	Reference category	
Female	0.018 (1.00)	0.018 (0.99)
Low education	Reference category	
Middle education	0.106** (3.60)	0.094** (2.80)
High education	0.147** (4.20)	0.134** (3.48)
Single	0.038 (1.03)	0.054 (1.41)
Married / living together	Reference category	
Divorced or separated	-0.334** (9.76)	-0.338** (10.22)
Widowed	-0.318** (7.87)	-0.321** (7.74)
Household with one person	-0.277** (5.45)	-0.289** (5.80)

Table A6: International Results, Full Model *(cont.)*

	Model with the Polity IV Index	Model with the Freedom House Index
Household with 2 persons	Reference category	
Household with more than two persons	0.142** (6.16)	0.142** (6.06)
Employed	Reference category	
Self-employed	0.063* (2.34)	0.061* (2.24)
Unemployed	-0.351** (6.47)	-0.342** (6.27)
Housewife / houseman	0.087** (2.62)	0.086* (2.58)
Other employment status	0.034 (1.12)	-0.032 (1.12)
Subsistence income	-0.003 (0.15)	-0.005 (0.27)
Relative income	0.016** (7.09)	0.016** (6.98)
(Income above poverty line/10) squared	-0.007** (3.46)	-0.067** (3.43)
(Income below poverty line/10) squared	0.116 (0.84)	0.111 (0.77)
English	Reference category	
German	-0.250** (2.66)	-0.222** (2.58)
North-Germanic languages	-0.258** (2.67)	-0.261** (2.73)
Romance languages	-0.564** (4.56)	-0.556** (4.54)
Balto-Slavic and Uralic languages, Greek	-0.653** (4.71)	-0.633** (4.35)
Asian languages	-0.353** (3.63)	-0.336** (3.59)
Protestant	Reference category	

***Table A6: International Results, Full Model** (cont.)*

	Model with the Polity IV Index	Model with the Freedom House Index
Catholic	-0.004	-0.003
	(0.06)	(0.05)
Anglican	-0.001	0.008
	(0.01)	(0.08)
Orthodox	-0.120	-0.130
	(1.10)	(1.16)
Other Christian church	-0.122	-0.131
	(1.27)	(1.30)
Non-Christian religion	-0.182**	-0.176**
	(2.68)	(2.70)
No religion	-0.199**	-0.193**
	(3.94)	(3.84)
Number of observations	25'937	25'937
Log of likelihood	-26'063.01	-26'064.48
Adjusted McFadden's R^2	0.079	0.079

The numbers in parentheses are the absolute values of the z-values of the estimated parameters. '**', '*', '(*)' show that the estimated parameter is significantly different from zero at the 1, 5, or 10 percent level, respectively.

Table A7: Description of the Variables used in the International Analysis

Variable	Definition
Happiness	4 categories
Age 30 - 39	1 if age is between 30 and 39, 0 otherwise
Age 40 - 49	1 if age is between 40 and 49, 0 otherwise
Age 50 - 59	1 if age is between 50 and 59, 0 otherwise
Age 60 - 69	1 if age is between 60 and 69, 0 otherwise
Age 70 - 79	1 if age is between 70 and 79, 0 otherwise
Age 80 and older	1 if age is older than 80, 0 otherwise
Female	1 if person is female, 0 otherwise
Intermediate education	1 if person has incomplete or completed secondary II education, 0 otherwise
High education	1 if person has incomplete or completed tertiary education, 0 otherwise
Single	1 if marital status is single, 0 otherwise
Widowed	1 if marital status is widowed, 0 otherwise
Divorced or separated	1 if marital status is divorced or separated, 0 otherwise
Household size 1 person	1 if person is living in a one-person household, 0 otherwise

***Table A7: Description of the Variables used in the International Analysis** (cont.)*

Variable	Definition
Household size 3 or more persons	1 if person is living in a household with three or more persons, 0 otherwise
Self-employed	1 if a person is self-employed or employed in her own company, 0 otherwise
Housewife	1 if person is a housewife or a houseman, 0 otherwise
Other employment status	1 if person works in a family business, is an apprentice or a student, does military service, is retired or has a not classified status
Unemployed	1 if person is unemployed and either officially recorded or not, 0 otherwise
Subsistence income	40 percent of the national average equivalence income, measured in units of 1000 Dollars per year (PPP adjusted). Source: Heston et al. (2002).
Relative income	Individual deviance from national subsistence income, measured in units of 1000 Dollars per year (PPP adjusted)
(Income above poverty line/10) squared	Relative income divided by 10, squared (if relative income has a positive value)
(Income below poverty line/10) squared	Relative income divided by 10, squared (if relative income has a negative value)
German	1 if main language of country is German, 0 otherwise
North Germanic languages	1 if main language of country is a North Germanic (Scandinavian) language, 0 otherwise
Romance languages	1 if main language of country is a Romance language, 0 otherwise
Balto-Slavic, Uralic, Greek languages	1 if main language of country is Balto-Slavic, Uralic or Greek language, 0 otherwise
Asian languages	1 if main language of country is an Asian language, 0 otherwise
Catholic	1 if a person is a Catholic, 0 otherwise
Anglican	1 if a person is an Anglican, 0 otherwise
Orthodox	1 if a person is an Orthodox Christian, 0 otherwise
Other Christian church	1 if a person is associated with Christian church other than Protestant, Catholic, Anglican, or Orthodox, 0 otherwise
Non-Christian religion	1 if a person has a non-Christian religion, 0 otherwise
No religion	1 if a person has no religion, 0 otherwise
Polity IV democracy index 1998	Polity IV democracy index on a scale from 0 (lowest level of democracy) to 10 (highest level of democracy)
Increase in Polity IV democracy index 1988-1998	Polity IV democracy score 1998 minus Polity IV democracy score 1988. Source: Marshall and Jaggers (2003).
Freedom House democracy index 1998	Freedom House democracy index on a scale from 0 (lowest level of democracy) to 7 (highest level of democracy)
Increase in Fr. H. democracy index 1988-1998	Freedom House democracy score 1998 minus Freedom House democracy score 1988. Source: Karatnicky (2000).