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## HAPPINESS PROSPERS IN DEMOCRACY

(Received 21 September 1999; Accepted 26 October 1999)

**ABSTRACT.** An econometric analysis of a happiness function, based on a survey of 6,000 persons in Switzerland, indicates that:

- (1) the more developed the institutions of direct democracy, the happier the individuals are;
- (2) people derive procedural utility from the possibility of participating in the direct democratic process over and above a more favorable political outcome;
- (3) the unemployed are much less happy than the employed, independent of income;
- (4) higher income is associated with higher levels of happiness.

The consideration of institutional differences in cross-regional data offers important new insights into happiness research.

**KEY WORDS:** institutions, direct democracy, procedural utility.

### 1. INTRODUCTION

Over the last few years, extensive econometric research has convincingly demonstrated the beneficial effects of democratic institutions on political outcomes. The more developed the possibilities for direct political participation via popular initiatives and referenda are, the more strongly government policy reflects the preferences of the voters. These results are mainly based on cross-sectional data for the United States and Switzerland, the two countries with by far the greatest number of referenda (Butler and Ranney, 1994).

We aim to show in this paper that this result goes further still: the more developed (direct) democracy is, the *happier* the citizens are. Moreover, our analysis suggests that the higher level of happiness associated with more extensive democracy is partly due to the utility produced by the political *process* itself, and not only due to favorable political outcomes.

A third goal of our paper is to analyze the influence of economic variables on happiness. We show that unemployment lowers happiness considerably. Higher income raises subjective well-being, but not by very much. We relate these results to popularity and election functions, and find that they go well together.

We also indicate the effects of demographic variables such as age, sex and family status – which in our estimates are used as controls – on happiness. These results correspond to those found on the basis of happiness functions estimated for other countries and periods.



*Journal of Happiness Studies* 1: 79–102, 2000.

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Our research on the effects of direct democratic institutions on happiness is related to cross-country analysis for political institutions. The latter has for example been done by Veenhoven (1984, 1993, 2000) and by Diener et al. (1995). It is, of course, difficult to isolate the effect of particular institutions on subjective well-being because the countries differ in a great variety of aspects. This problem is less acute for institutional variation within a (federal) country. As far as we know, this is the first paper using cross-regional variations in a happiness study.

Section 2 sets the stage by discussing the effect of direct democracy on political outcomes, both theoretically and empirically. Hypothesis 1 extends the relationship to happiness. Section 3 emphasizes the utility gained by participating in the political process and its effect on happiness by distinguishing between citizens and foreigners who are excluded from this source of utility (Hypothesis 2). The following section 4 deals with the effects of unemployment (Hypothesis 3) and income (Hypothesis 4) on happiness. Section 5 presents the data for the Swiss sample of 6,134 persons used, as well as the estimation procedure. Section 6 presents and discusses the estimation results. Section 7 shows the conclusions.

## 2. EFFECTS OF DIRECT DEMOCRACY

### 2.1. Stages of Democracy

Three revolutionary stages in the development of democracy may be distinguished (for the first two, see Dahl, 1994).

The first is *Athenian Democracy*, characterized by the citizens' assembly (see e.g. Bonner, 1967). The second was brought about by the French revolution. Its principle of *representation* allowed democracy to extend over a wide area. The third stage is (semi-) *direct* democracy, in which the citizens may decide on political issues via initiatives and referenda (see e.g. Cronin, 1989; Budge, 1996 or, from the point of view of Public Choice, e.g. Schneider, Pommerehne and Frey, 1981; Frey, 1994). Parliament and government make most current decisions, but the voters always have the final say, and must always support proposed changes in the constitution as well as major laws. The professional politicians are thus the agents, and the voters are the principals.

Politicians do not pursue the wishes of the voters (except under the ideal case of perfect political competition, as in Downs, 1957) for

three reasons:

- (1) Politicians' preferences differ systematically from those of the ordinary voters. They can attain substantial rents in the political process, ranging from high incomes and privileges of all sorts to outright corruption.
- (2) Politicians are subject to discontinuous reelection (mostly every 3 to 5 years), but in between they can pursue their own goals.
- (3) Even 'benevolent' politicians do not know the exact wishes of the voters, but must make a more or less informed guess.

As a result of these deviations, one observes e.g. political business cycles in macro-economic variables (see e.g. Schneider and Frey, 1988). Government is a potential and actual 'exploitative' force (Brennan and Buchanan, 1980). One may also speak of an implicit and sometimes even explicit coalition of the 'classe politique', composed of politicians and parties against the voters. Constitutional economics (Buchanan and Tullock, 1962; Mueller, 1995) has suggested various solutions of controlling such mechanisms of exploitation, one of which is intensifying party competition, while another is the establishment of constitutional and other courts from which the voters may seek help. However, in both cases the solution is entrusted to the members of the political class (in the broad sense), whose very power is at the center of the problem. Direct democracy offers a radically different solution. The power to challenge and check the political class is given to the citizens themselves (who, with few exceptions, are not members of this class). The existence of direct participation rights of the citizens via initiatives and referenda can therefore be expected to lead to political decisions more in line with the voters' preferences than is the case in a representative democracy.

## **2.2. Existing Empirical Evidence**

A large number of econometric studies have convincingly shown that the institutions of direct democracy lead to outcomes that benefit the voters. Most of these studies refer to the United States and Switzerland. There is no need to give a full account of these results here because they have been the subject of various surveys (e.g. Feld and Savioz, 1998; Kirchgässner et al., 1999). For the United States, recent studies by Matsusaka (1995) and Rueben (2000) establish e.g. that government expenditure and government revenues are lower in institutions of direct democracy. McEachern (1978) shows that the per capita debt is substantially lower with a referendum requiring a qualified majority. In

contrast, educational public expenditures are higher when a referendum is possible (Santerre, 1989, 1993). For Switzerland, the econometric evidence is even more compelling, one reason being that the institutions of direct democracy are more developed than in the U.S., and their effect on political outcomes can be better identified. Schneider and Pommerehne (1983) find that public expenditures exhibit significantly lower growth in cities with well established direct democracy. Feld and Kirchgässner (1997) show that for 131 Swiss cities public expenditure is lower by 14%, but the median tax rate higher<sup>1</sup> by 14%, in cities with well developed institutions of direct referendum. Due to a 5% higher share of self-financing, the per capita debt is no less than 45% lower. Other studies (Pommerehne and Weck, 1996; Frey, 1997) conclude that tax evasion is significantly lower in cantons with a higher degree of direct participation rights for voters. Finally, Feld and Savioz (1997) establish that gross domestic product per capita is 5.4% higher in cantons with more established direct democratic institutions than in more representative ones. All these results are based on estimates which carefully control for influences unrelated to direct democracy, and establish a causal effect between that institution and political outcomes and their consequences in terms of behavior (tax evasion) or economic activity (income).

### **2.3. Hypotheses and Test Procedure**

If direct democracy does indeed produce political outcomes, and therefore with economic and social conditions more favorable to citizens, it can be expected that they enjoy a higher level of reported subjective well-being than in political jurisdictions with less extensive participation rights.<sup>2</sup> Hence we can formulate:

*Hypothesis 1.* The better developed the institutions of direct democracy (as measured by an index), the happier (as measured by a second index) people are.

## **3. PROCEDURAL EFFECTS ON HAPPINESS**

### **3.1. Utility of Democratic Process**

Citizens do not only gain utility from the outcome of the political process and its material consequences but also from the democratic process itself. Citizens value the possibility of engaging themselves directly

with politically relevant issues, quite irrespective of the outcome. The independent influence of procedural fairness on individual utility has been well established in laboratory and field experiments (Tyler, 1990, 1997).

The essence of procedural aspects in direct democracy (see Bohnet and Frey, 1994) lies in the discussion endogenously brought about by initiatives and referenda. A direct democracy produces the conditions for a serious discursive process (see Habermas, 1992, for a philosophical background, and Dryzek, 1990 and Elster, 1998, for politics) which is in principle (unlike most other discussions) open to the whole population, and which ends in a well-defined act of decision. The directly democratic discursive process is far from being ‘cheap talk’ (see Johnson, 1993), and does not end with the vote. The post-referendum discussion is devoted to an interpretation of the outcome, and possibly further referenda in the future. This ongoing political process is able to provide utility not only to the ‘winners’ but also to the ‘losers’, because both feel that their preferences have been seriously taken into account in a fair political process.

### **3.2. Hypothesis and Test Procedure**

*Hypothesis 2.* The utility derived from the possibility of participating in the direct democratic process supports the subjective well-being of the citizens. Any foreigners living in the same jurisdiction, who are excluded from this process, experience a lower level of happiness than the citizens.

The hypothesis can be tested by using an interaction term joining the variables ‘foreigner’ and the extent of ‘direct democratic rights’. According to hypothesis 2, a statistically significant negative coefficient for the interaction variable is expected *cet. par.*

## **4. ECONOMIC DETERMINANTS OF HAPPINESS**

### **4.1. Vote and Popularity Functions**

The evaluation of the state of the economy by the voters has been the subject of an immense literature, surveyed e.g. by Paldam, 1981, Schneider and Frey, 1988, and Nannestad and Paldam, 1994. According to the last survey, among macro-economic variables, unemployment and inflation are ‘the big two’ (p. 216). Their effect on votes for the

government, and the popularity of the government, is of similar size. As an average over the many econometric estimates, a one percentage point increase in the rate of unemployment lowers the vote or popularity share of the government by between 0.4 and 0.8 percentage points. The same holds for a one percentage point increase in the rate of inflation.

In contrast, a change in the growth rate of per capita real income often has no statistically significant effect on vote and popularity shares even though the coefficient is positive. Some studies have found statistically significant positive effects. However, these coefficients vary across a wider range than the ones for unemployment or inflation.<sup>3</sup> According to this view, voters express a general dissatisfaction with existing economic conditions, and make the government responsible for it (this is the ‘responsibility hypothesis’ in Nannestad and Paldam, 1994, p. 215). Empirical evidence generally supports this notion. Citizens tend to vote in a sociotropic way, i.e. based on their perception of the macro-economy rather than on their own economic experiences, and retrospectively (see e.g. Kinder and Kiewit, 1979; Fiorina, 1981).

#### **4.2. Hypotheses and Test Procedures**

We expect that individual unemployment and the level of income have a similar effect on subjective well-being as their macro-economic counterpart on government popularity. Only when people suffer seriously from unemployment, it is rational to worry about the risk of becoming unemployed and to react at the poll. In contrast, only when higher income buys little additional happiness, would the result fit with the above cited findings of a minor effect of economic growth on government popularity.

*Hypothesis 3.* Unemployed people have a much lower level of happiness than the employed.

*Hypothesis 4.* Higher income has little, if any, effect on happiness.

A test of the influence of inflation on happiness is not possible in our cross-section data for Switzerland, but results from other studies will be adduced.

### **5. DATA AND ESTIMATION EQUATION**

Our empirical work is based on survey results of more than 6,000 inhabitants of Switzerland, collected by Leu et al. (1997).<sup>4</sup> The dependent

variable called “happiness” is based on the answers to the following questions: “How satisfied are you with your life as a whole these days?”<sup>5</sup> Simultaneously, the respondents were shown a table with a ten point scale of which only the two extreme values (“completely dissatisfied” and “completely satisfied”) were verbalized. The survey reveals a high general life satisfaction in this country and period, on average 8.2 out of 10. No fewer than 29% of the interviewees reported a satisfaction level of 10 (“completely satisfied”), 17% reported 9, and 27% reported 8. At the lower end of the happiness-scale, score 1 (“completely dissatisfied”), score 2 and score 3, were indicated only by 0.4%, 0.5%, and 0.9%, respectively. As these categories of great unhappiness are sparse, they have been aggregated, leaving us with eight happiness categories.

The major explanatory variable upon which we focus in this paper are the institutional possibilities for individual political participation, which vary between the 26 Swiss cantons. Due to the federal structure of Switzerland, major competences remain with the cantons (states). As on the national level, strong direct democratic instruments exist besides representative democratic parliaments and governments. The most important direct democratic instruments in cantons are the popular initiative to change the canton’s constitution or laws, and compulsory and optional referenda to prevent new laws, or changing laws, and new state expenditure. Citizen’s access to these instruments differs from canton to canton. Thus, for example, the number of signatures required to launch an initiative or an optional referendum, or the time span within which the signatures are to be collected, vary. The referendum on public expenditures may be launched at different levels of additional outlays. In 1992, five cantons still had citizens’ meetings to discuss and to vote on legislative and financial issues. This traditional form of direct democratic participation (up till now, only two have maintained it) functions differently and is therefore considered separate from semi-direct democracy. For the remaining 21 cantons, we constructed an index designed to reflect the extent of direct democratic participation possibilities (see Appendix A). This index is defined over a six point scale with 1 indicating the lowest, and 6 the highest degree of participation possibilities for the citizens.

The purpose of our estimate is to show that the extent of direct democratic participation possibilities exerts a statistically significant, robust and sizeable effect on happiness *over and above* the demographic and economic determinants so far taken into account in the literature.

We thus argue that institutional determinants are important and should not be disregarded if a systematic estimation bias is to be avoided.

The estimation equations regress the indices of individual happiness on three sets of determinants:

### **Demographic Variables**

They describe the personal attributes of the respondents and comprise

- age. Six age groups are explicitly accounted for, ranging from 30 years to 80 years and older (the constant term includes the reference group “people younger than 30”);
- gender (male/female);
- citizenship (national/foreigner);
- extent of formal education (middle/high education) (in the reference group are “people with low education”);
- family setting (single woman or man; couple with children; single parent, other) (in the reference group are “couple”);
- type of household (private/collective);

### **Economic Variables**

Two influences are considered:

- equivalence income. Equivalence income is measured by household income after tax and social security contributions and after adjusting for household size. The applied equivalence scale is the square root of the number of household members (Atkinson et al., 1995). Five income groups are explicitly distinguished, ranging from CHF 2000 to CHF 6000 and more per month (approx. \$ 1,400 to \$ 4,300 and more) (the constant term includes the reference group “people with an equivalence income lower than CHF 2000”);
- unemployment.

The above two sets of variables are used as *controls*. While they are of obvious interest in themselves, they mainly serve to isolate the unbiased influence of the third set of variables.

### **Political Institutions**

Here, the main institutional differences between cantons is focused upon, captured by

- a composite index for direct democratic rights, and
- a dummy variable for citizens’ meeting (existing or not).



## 6. ESTIMATION RESULTS

Since the dependent variable “happiness” is ordinal, the estimation is undertaken using the ordered probit maximum likelihood methods. The estimates are weighted. The weighting variable applied allows representative results for the level of individuals for Switzerland.<sup>6</sup> The following tables only present the coefficients and marginal effects of the variables relating to the specific hypotheses. But it should be understood that these are only partial estimates controlled for the variables shown in the complete estimates given in Appendix B.

### 6.1. Hypothesis 1: Direct Democratic Participation Rights

Table I presents the results of estimating the effect of institutionalized participation possibilities on reported subjective well-being.<sup>7</sup> The index of the extent of direct democracy has a statistically highly significant positive effect on happiness, *cet. par.* The same holds for the influence of citizens’ assemblies. These results are consistent with Hypothesis 1.

Table I also shows the marginal effects. For the index direct democratic rights, the value of 0.027 in the last column can be interpreted in the following way. An increase in the value of the direct democracy index by one unit (out of a possible six point scale) raises the share of persons stating themselves to be ‘completely satisfied’ (score 10) by 2.7 percentage points. In the case of a citizens’ assembly, the respective share of persons who are ‘completely satisfied’ is 23.2 percentage

TABLE I  
Partial Effects of Democracy Variables on Satisfaction with Life in Switzerland

Independent variable	Marginal effects					
	Coef.	<i>T</i> -value	Score 1, 2 or 3	Score 4	Score 9	Score 10
Direct democratic rights	0.080**	11.715	−0.003	−0.002	0.005	0.027
Citizens’ meeting	0.685**	11.449	−0.022	−0.020	0.041	0.232
Observations	6134					

*Notes:* Weighted ordered probit estimation model. Dependent variable: level of satisfaction on an eight point scale (scores of 1, 2 and 3 were aggregated). Additionally, demographic and economic variables are included in the estimation equation.

Significance levels: (\*) $0.05 < p < 0.10$ , \* $0.01 < p < 0.05$ , \*\* $p < 0.01$ .

*Data sources:* Leu et al. (1997) and Stutzer (1999).

points higher than if no citizens' assembly existed. The marginal effect for a score of 9 has to be interpreted as a net effect. Category 9 loses a share of 2.7 percentage points to the top category, when the democracy index increases by one unit, but "wins" 3.2 percentage points from the lower category (not shown), resulting in a 0.5 percentage points net increase. If one looks at the persons with a low level of happiness (score 1, 2 or 3), a one index point increase in the extent of direct participation possibilities reduces the share of persons reporting to be unhappy by one fourth of a percentage point. (The same holds for a score of 4.) The respective number of unhappy persons with a citizens' assembly (instead of none) falls by 2.2 percentage points, or 2.0 percentage points for a score of 4. These results strongly suggest that the institutions of direct democracy indeed make people happier.

*Digression 1: Discrimination of the poor?*

A favorable outcome that raises happiness on average, does not exclude the possibility that the beneficial effects of direct democracy are restricted to some privileged groups' e.g. the rich. To investigate this important question of equality, the influence of direct democracy for five income groups is analyzed. Therefore, interaction terms are included in the estimation model.<sup>8</sup> The estimation results, however, do not show any statistically significant differences for the interaction variables.<sup>9</sup> The positive effect on subjective well-being of direct democracy thus does not rise with income class.

*Digression 2: Alternative explanations?*

Two alternative explanations are often put forward against the empirical findings described above. These explanations emphasize the possibility of spurious regression due to missing variables, in our case the income level and the degree of urbanization in a canton.

(1) *Income level in cantons:* It is hypothesized that in cantons where inhabitants are richer than the Swiss average, the public provision of goods can be quantitatively or qualitatively augmented. Thus, if the index of direct democratic rights and the income level in Swiss cantons are highly correlated, the former variable just captures different wealth levels in Swiss cantons.<sup>10</sup> However, the inclusion of national income per capita in the estimation equation does not change the results significantly (see Appendix C). The aggregate income variable itself is significantly negatively correlated with subjective well-being. The coefficient itself is small.

- (2) *Urbanization*: If direct democracy were a phenomenon restricted to rural areas, the index for direct democratic rights might just capture a negative effect of urbanization, rather than the beneficial outcome and process due to political participation rights. To separate these two possible sources of individual utility and disutility, the variable ‘urbanization’ is included in the microeconomic happiness function. This dummy variable takes the value one for people living in an urban area. The results (see Appendix C) show that the positive effect on happiness of direct democracy does not change significantly and that people living in urban areas are somewhat less happy.

Direct democracy thus has a robust and sizeable effect on satisfaction with life over and above differences of cantons with regard to wealth and urbanization.

## 6.2. Hypothesis 2: Procedural Utility

Do citizens derive procedural utility from being able to participate in the directly democratic process? To investigate this question, a control group has to be found. An optimal control group are foreigners because they have on the one hand in general no political participation rights. On the other hand, they cannot be discriminated from the favorable outcome of direct democracy (outcome utility). Due to the reason that foreigners can not reap procedural utility from political participation, they are expected to gain less from direct democracy than Swiss citizens. This is tested by considering the interaction effect between direct democracy and being a foreigner.

Table II indicates that the coefficients for the index of direct democracy and for citizens’ assembly display only slight changes compared to Table I. The coefficients remain positive and statistically highly significant. These effects account for everybody, whether a Swiss citizen or a foreigner. Foreigners’ reported well-being is on average lower than that of Swiss citizens (statistically significant). The interaction variable suggests that foreigners are *cet. par.* relatively less happy compared to Swiss citizens in cantons in which the institutions of direct democracy are well developed. This effect is statistically highly significant. (The same holds for the citizens’ assembly, but the effect is not statistically significant.) This result suggests that procedural utility is reaped from direct democracy. It is consistent with Hypothesis 2.

The marginal effects for the index of direct democracy are also similar to Table I. Among foreigners living in Switzerland, a 3.8 percentage

TABLE II  
 Partial Interaction Effect Between Direct Democracy and Being a Foreigner on Satisfaction with Life in Switzerland

Independent variable	Marginal effects					
	Coef.	T-value	Score 1, 2 or 3	Score 4	Score 9	Score 10
Direct democratic rights (DDR)	0.094**	10.668	-0.003	-0.003	0.006	0.032
Citizens' meeting (CM)	0.729**	11.184	-0.023	-0.021	0.043	0.247
Foreigner	-0.111(*)	-2.125	0.004	0.003	-0.007	-0.038
DDR × foreigner	-0.059**	-4.357	0.002	0.002	-0.004	-0.020
CM × foreigner	-0.099	-0.487	0.003	0.003	-0.006	-0.033
Observations	6134					

*Notes:* Weighted ordered probit estimation model. Dependent variable: level of satisfaction on an eight point scale (scores of 1, 2 and 3 were aggregated). Additionally, demographic and economic variables are included in the estimation equation. In the reference group are 'Swiss'.

Significance levels: (\*) $0.05 < p < 0.10$ , \* $0.01 < p < 0.05$ , \*\* $p < 0.01$ .

*Data sources:* Leu et al. (1997) and Stutzer (1999).

points lower share than the Swiss *cet. par.* report to be 'completely satisfied' (score 10). The size of the procedural utility gained from being able to participate in the direct democratic process can also be assessed. Comparing the positive marginal effect for direct democracy of 3.2 percentage points (for a score of 10), which accounts for all the residents of a canton, with the negative marginal effect of 2.0 percentage points for the interaction term, indicates that two thirds of the gain in well-being is due to the application of a favorable process in political decision-making. This suggests, firstly, that foreigners are still better off in a more direct democratic canton and, secondly, that procedural utility, in addition to outcome utility, is an important source of satisfaction related to direct democracy.

### 6.3. Hypothesis 3: Unemployment

Table III reports the effect on happiness of being unemployed. People without employment indicate a statistically highly significant lower level of subjective well-being than those who are employed. It should be remembered that this coefficient captures the state of being unemployed, and not the resulting lower income level. Not having a job imposes non-pecuniary stress and unhappiness. This is consistent with Hypothesis 3 and with estimates of happiness functions for other

TABLE III  
Partial Effects of Economic Variables on Satisfaction with Life in Switzerland

Independent variable	Coef.	T-value	Marginal effects			
			Score 1, 2 or 3	Score 4	Score 9	Score 10
Unemployed	-0.833**	-19.842	0.027	0.024	-0.049	-0.282
Equivalence income in CHF						
2,000–3,000	0.088*	2.193	-0.003	-0.003	0.005	0.030
3,000–4,000	0.190**	4.834	-0.006	-0.006	0.011	0.064
4,000–5,000	0.298**	7.461	-0.010	-0.009	0.018	0.101
5,000–6,000	0.366**	8.500	-0.012	-0.011	0.022	0.124
6,000 and more	0.281**	6.641	-0.009	-0.008	0.017	0.095
Observations	6134					

Notes: Weighted ordered probit estimation model. Dependent variable: level of satisfaction on an eight point scale (scores of 1, 2 and 3 were aggregated). Additionally, demographic and institutional variables are included in the estimation equation. In the reference group are 'people with an equivalence income lower than CHF 2,000'.

Significance levels: (\*)0.05 <  $p$  < 0.10, \*0.01 <  $p$  < 0.05, \*\*  $p$  < 0.01.

Data sources: Leu et al. (1997) and Stutzer (1999).

countries and periods (see Clark and Oswald, 1994; Di Tella et al., 1999; Oswald, 1997; Winkelmann and Winkelmann, 1998).

The size of the drop in happiness due to unemployment is substantial. Comparing the people looking for a job with other respondents, a 2.7 percentage points higher share reports to be deeply unhappy (score 1, 2 or 3). Interestingly enough, the effect on the upper range of happiness is huge: 28.2 percentage points less indicate to be completely satisfied. In other words, very few people seem to really enjoy the state of being unemployed (independent of the income level effects).

#### 6.4. Hypothesis 4: Income

Table III also reports the coefficients and marginal effects of being in a particular income group (rather than being in the lowest group, with an equivalence income of less than CHF 2000 per month). Higher income correlates positively with higher happiness in a statistically significant way. However, the differences in subjective well-being are not very large. Consider, for example, the highest income group with a monthly equivalence income above CHF 6,000. Compared to persons with low income, only a 9.5 percentage points larger share reports being "completely satisfied". Interestingly enough, an even larger additional share of persons (namely 12.4 percentage points), belonging to the

second highest income group, reports that it is ‘completely happy’. However, the marginal effects are much smaller than the one for being unemployed. This illustrates that employment is far more important than income for perceived satisfaction with life.

These results are in line with Hypothesis 4, with the results of election and popularity functions mentioned above, as well as with happiness functions for other periods and countries (see the extensive survey in Diener and Oishi, 2000).

### 6.5. Demographic Influences

The full estimates reported in the appendix show the impact of a variety of additional variables on happiness:

- *age*: people aged between 30 and 60 report lower subjective well-being than those younger than 30. Even more satisfied with life than the under 30’s are the over 60’s.
- *sex*: women report significantly higher happiness levels than men.
- *education*: the level of educational achievement has a statistically significant positive effect on happiness, independent of income.
- *family setting*: couples without children are happier than singles, single parents and persons living in collective households.

These results are quite similar to those found by other researchers on happiness for other countries and periods (see the extensive surveys by Diener et al., 1999 and Veenhoven, 1997; Oswald, 1997, for the United States and the United Kingdom; and Di Tella et al., 1999, for the countries of the European Union).

## 7. CONCLUSIONS

The results of our empirical analysis of 6,000 reports of subjective well-being for Switzerland are consistent with the four hypotheses:

- (1) The better developed the institutions of direct democracy, the happier are the individuals.
- (2) People derive procedural utility from the possibility of participating in the directly democratic process, over and above the utility gained from the more favorable political outcome.
- (3) Unemployed persons are much less happy than all the others, keeping income level (as well as other influences) constant.
- (4) Income is associated with higher life satisfaction.

Due to the use of cross-section data, the influence of inflation on happiness could not be tested here. Di Tella et al. (1999), employing happiness data for the United States (1972–1990) and 12 European countries (1975–1991), find that “... inflation is an important determinant of well-being” (p. 13). They are able to establish the following subjective trade-offs (p. 13):

- A one percentage point rise in the rate of inflation must be compensated by about \$ 150 (in 1985 dollars) in additional per capita income.
- A one percentage point rise in the rate of unemployment must be compensated by about \$ 165 (in 1985 dollars) in additional per capita income.

The cost of a one percentage point increase in inflation or in unemployment is thus quite similar. This corresponds to the results in the literature on election and vote functions discussed in section 4.1 (Nannestad and Paldam, 1994, p. 216). This concurrence is not self-evident, because these estimates of the cost of inflation deviate strongly from the traditional partial equilibrium approach based on the area under the money demand function (see Di Tella et al., 1999, p. 13). On the basis of this approach, Lucas (1981) and Fischer (1981) estimated the cost of a one percentage point higher inflation to amount to only 0.05 and 0.03 percent of national income (\$ 4.8 to \$ 8 for a per capita income of approximately \$ 16,000 in 1981 (in 1985 dollars)).

On the whole, our analysis suggests that the combination of cross-regional data on subjective well-being and institutional variables offers important new insights in happiness research.

#### ACKNOWLEDGEMENT

We are grateful to Iris Bohnet for helpful remarks and especially to Lorenz Götte for supporting us with the econometric estimation procedures.

#### APPENDIX A

##### **Index for Direct Democratic Rights in Swiss Cantons**

Direct democracy is here defined in terms of individual political participation possibilities. In Switzerland, institutions for the direct political participation of citizens exist on the level of the federal state as well

as on the level of cantons. However, the direct democratic rights on the level of cantons are very heterogeneous. Therefore, an index is constructed to measure the different barriers for citizens entering the political process, apart from elections. The index reflects average direct democratic rights in the period 1970 to 1996. It is based on data collected in Trechsel and Serdült (1999) (for details see Stutzer, 1999).

The four main legal instruments to directly influence the political process in Swiss cantons are

- a) the initiative to change the canton's constitution,
- b) the initiative to change the canton's law,
- c) the compulsory and optional referendum to prevent new or changing law, and
- d) the compulsory and optional referendum to prevent new state expenditure.

Barriers are in terms of

- a) the necessary signatures to launch an instrument (absolute and relative to the number of citizens with the right to vote),
- b) the legally allowed time span to collect the signatures, and
- c) the level of new expenditure per head allowing a financial referendum.

(Compulsory referenda are treated like referenda with the lowest possible barrier.)

Each of these restrictions is evaluated on a six point scale: "one" indicates a high barrier, "six" a low one. From the resulting ratings, a non-weighted average is calculated, which represents the measure of direct democratic rights in Swiss cantons. The results are presented in the table below.

Index for Direct Democratic Rights in Swiss Cantons

Canton	Index	Canton	Index	Canton	Index
Aargau	4.60	Graubünden	4.83	Schwyz	4.85
Appenzell i. Rh.	CM	Jura	3.64	Thurgau	4.42
Appenzell a. Rh.	CM	Luzern	4.01	Ticino	2.20
Bern	3.39	Neuchâtel	2.72	Uri	5.27
Basel Land	5.57	Nidwalden	CM	Vaud	1.96
Basel Stadt	4.99	Obwalden	CM	Valais	3.46
Fribourg	2.39	Sankt Gallen	3.46	Zug	4.32
Genève	1.58	Schaffhausen	4.77	Zürich	4.27
Glarus	CM	Solothurn	5.46		

Note: CM for citizens' meeting.



## APPENDIX B

## Determinants of Satisfaction with Life in Switzerland

Independent variable	Model 1			Model 2		
	Coef.	T-value	Marginal effect	Coef.	T-value	Marginal effect
Constant	1.782**	32.825	0.603	1.733**	28.913	0.587
<i>(1) Demographic variables</i>						
Age 30–39	-0.095**	-3.842	-0.032	-0.095**	-3.805	-0.032
Age 40–49	-0.039	-1.511	-0.013	-0.034	-1.299	-0.012
Age 50–59	-0.086**	-3.500	-0.029	-0.084**	-3.374	-0.028
Age 60–69	0.136*	2.510	0.046	0.136*	2.525	0.046
Age 70–79	0.195**	3.208	0.066	0.197**	3.253	0.067
Age 80 and older	0.177(*)	2.056	0.060	0.177(*)	2.064	0.060
Female	0.080**	4.777	0.027	0.081**	4.819	0.028
Foreigner	-0.315**	-17.197	-0.107	-0.111(*)	-2.125	-0.038
Middle education	0.090**	4.771	0.031	0.088**	4.630	0.030
High education	0.079**	2.884	0.027	0.077*	2.846	0.026
Single woman	-0.272**	-9.162	-0.092	-0.272**	-9.147	-0.092
Single man	-0.156**	-4.718	-0.053	-0.156**	-4.698	-0.053
Couple with children	-0.012	-0.565	-0.004	-0.014	-0.654	-0.005
Single parent	-0.312**	-5.181	-0.106	-0.311**	-5.152	-0.105
Other private household	-0.167**	-5.270	-0.057	-0.165**	-5.205	-0.056
Collective household	-0.381**	-4.489	-0.129	-0.386**	-4.548	-0.131

## Appendix B (Continued)

Independent variable	Model 1		Model 2	
	Coef.	T-value	Coef.	T-value
<i>(2) Economic variables</i>				
Unemployed	-0.833**	-19.842	-0.832**	-19.815
Equivalence income				
CHF 2,000-3,000	0.088*	2.193	0.087(*)	2.159
CHF 3,000-4,000	0.190**	4.834	0.188**	4.776
CHF 4,000-5,000	0.298**	7.461	0.296**	7.385
CHF 5,000-6,000	0.366**	8.500	0.366**	8.493
CHF 6,000 and more	0.281**	6.641	0.280**	6.588
<i>(3a) Institutional variables</i>				
Direct democratic rights (DDR)	0.080**	11.715	0.094**	10.668
Citizens' meeting (CM)	0.685**	11.449	0.729**	11.184
<i>(3b) Interaction variables</i>				
DDR × foreigner			-0.059**	-4.357
CM × foreigner			-0.099	-0.487
Observations	6134		6134	
Log likelihood function	-10244.91		-10243.02	
Likelihood ratio index	0.024		0.024	

Notes: Weighted ordered probit estimation model. Dependent variable: level of satisfaction on an eight point scale (scores of 1, 2 and 3 were aggregated). Marginal effects for a score of 10. In the reference group are 'people younger than 30', 'men', 'Swiss', 'people with low education', 'couples', 'people with an equivalence income lower than CHF 2,000'.  
Significance levels: (\*)0.05 < p < 0.10, \*0.01 < p < 0.05, \*\* p < 0.01.  
Data sources: Leu et al. (1997) and Stutzer (1999).

## APPENDIX C

## Robustness of the Effect of Direct Democracy on Satisfaction with Life

Independent variable	Model 1 augmented by			
	Model 1	National income per capita	Urbanization	National income and urbanization
	yes	yes	yes	yes
<i>Control variables for individual characteristics</i>				
<i>(3) Institutional variables</i>				
Direct democratic rights	0.080** (11.715)	0.090** (12.851)	0.081** (11.837)	0.089** (12.795)
Citizens' meeting	0.685** (11.449)	0.701** (11.679)	0.676** (11.246)	0.694** (11.525)
<i>(4) Additional control variables</i>				
National income per capita in canton (in CHF 1000)		-0.006** (-5.996)		-0.006** (-5.210)
Urbanization			-0.064** (-3.475)	-0.039* (-2.066)
Observations	6134	6134	6134	6134
Log likelihood function	-10244.91	-10239.20	-10242.72	-10238.43
Likelihood ratio index	0.024	0.024	0.024	0.024

Notes: Weighted ordered probit estimation model. Dependent variable: level of satisfaction on an eight point scale (scores of 1, 2 and 3 were aggregated). T-statistics in parentheses.

Significance levels: \* $0.05 < p < 0.10$ , \*\* $0.01 < p < 0.05$ , \*\*\* $p < 0.01$ .

Data sources: Leu et al. (1997), Stutzer (1999) and Swiss Federal Statistical Office (1994, 1995).

## NOTES

<sup>1</sup> There are two countervailing effects. Voters prefer lower taxes in order to have a higher disposable income. At the same time, they are prepared to tolerate higher taxes because they believe that they are more wisely and more efficiently spent. In the above case, the second effect is dominant.

<sup>2</sup> Critics may argue that it is quite possible to formulate a counter hypothesis: where direct democratic rights are more extended, local elites and interest groups abuse these instruments to attract more rents, and thus the political outcome lowers satisfaction with life. However, there is, at least for the United States, empirical evidence that direct legislation reduces the influence of interest groups (Gerber, 1999).

<sup>3</sup> For example, Inoguchi (1980) estimates a coefficient of 0.6 for Japan 1960–1976, Paldam and Schneider (1980) of 0.2 for Denmark 1957–1968, Frey and Schneider (1978a, 1978b) of 0.8 for the United Kingdom 1959–1974, and of 0.5 for the United States 1953–1976, Kirchgässner (1985) of 0.4 for Germany 1971–1982, and Hibbs and Vasilatos (1981) of 0.02 for France 1969–1978.

<sup>4</sup> The survey data were collected between 1992 and 1994 to investigate the problem of poverty in Switzerland. Information are from personal interviews and tax statistics.

<sup>5</sup> “Happiness” is used here interchangeably with the terms “reported subjective well-being” and “satisfaction with life”.

<sup>6</sup> Weights are proportional to the inverse of the probability of being sampled. In addition, the weights are adjusted to the demographic structure in 1992.

<sup>7</sup> A positive (negative) coefficient implies the following: the probability of stating a level of satisfaction with life greater or equal to any given level increases (decreases) with an increase in the independent variable, e.g. more extended direct democratic participation rights.

<sup>8</sup> The interaction variables are the product of dummy variables for income classes and the index for direct democratic rights.

<sup>9</sup> The full estimation results are available from the authors on request.

<sup>10</sup> As Feld and Savioz (1997) convincingly demonstrated, gross domestic product is higher in more directly democratic cantons.

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