DEPARTMENT OF ECONOMICS

UNIVERSITY OF MILAN BICOCCA

WORKING PAPER SERIES

The Geography of Economics and Happiness

Luca Stanca

No. 140 – June 2008

Dipartimento di Economia Politica
Università degli Studi di Milano Bicocca
http://dipeco.economia.unimib.it

The Geography of Economics and Happiness

Luca Stanca
Economics Department
University of Milan - Bicocca*

June 2008

Abstract

This paper investigates the spatial pattern of the effects of economic conditions on subjective well-being, using a large sample of individuals from 81 countries throughout the world. We find evidence of substantial spatial heterogeneity and spatial dependence in the cross-country distribution of the effects of income and unemployment on happiness. We examine the impact of macroeconomic conditions on country-level sensitivities of subjective well-being to microeconomic conditions. The effect of income on well-being is found to be significantly stronger in countries with lower GDP per capita and higher unemployment rate. The effect of unemployment on well-being is instead significantly stronger in countries with higher GDP per capita and higher unemployment rate.

JEL Classification: A12, D12, I31
Keywords: subjective well-being, economic geography, spatial econometrics.

*Piazza dell'Ateneo Nuovo 1, 20126 Milan, Italy. Telephone: #39 2 6448 3155. Fax: #39 2 6448 3085. E-mail: luca.stanca@unimib.it

1 Introduction

For a long time, economics has largely neglected the study of happiness and its causes. Most empirical investigations about the measurement and the determinants of happiness were made by psychologists, sociologists and political scientists (e.g. Diener et al., 1999, Veenhoven, 1993, and Lane, 2000, respectively). In recent years, following the seminal contribution by Easterlin (1974), a growing number of economists have investigated the impact of economic conditions on subjective well-being, measured as self-reported levels of happiness or life satisfaction (see Di Tella and MacCulloch, 2006, Blanchflower, 2008, Dolan et al., 2008, for recent reviews).[1] Research on economics and happiness has indeed provided many important policy implications (Frey and Stutzer, 2002b, Layard, 2005, Frey, 2008).

Several studies have focused on the effects of microeconomic conditions on happiness, while controlling for socio-demographic characteristics, factors related to personality and the external context.[2] The evidence indicates that income is positively and significantly related to well-being across individuals and across countries (see Clark et al., 2008, for a review). However, the effect is relatively small and diminishing. Individual unemployment is consistently found to have a large negative effect on individual well-being (e.g. Clark and Oswald, 1994). A number of studies have focused instead on the effects of macroeconomic conditions on individual well-being, indicating that both unemployment and inflation have significant adverse effects on individual happiness (Di Tella et al., 2001, 2003).

Most of the empirical literature on the economic determinants of well-being relies on observations that are collected with reference to different locations in space. However, with relatively few recent exceptions, existing analyses of the determinants of happiness have largely ignored the spatial dimension.[3] Two important issues that arise when sample data have a spatial dimension have therefore been generally overlooked: spatial heterogeneity in the relationships being modelled and spatial dependence between contiguous

[1] See also Oswald (1997) and Frey and Stutzer (2002a) for earlier comprehensive reviews.

[2] Blanchflower (2008, p. 7) summarizes the evidence as follows: "the main ceteris paribus findings from happiness and life satisfaction equations across countries and time [are that] well-being is higher among those who are women, married, highly educated, actively involved in religion, healthy, with a high income, young or old, self-employed, with low blood pressure, sexually active, without children".

[3] Aslam and Corrado (2007) investigate the effect of social interactions on well-being across European regions with a multilevel approach, controlling for socio-demographic factors at the individual level and contextual factors at the regional and national level. Brereton et al. (2008) use geographical information systems with data at the individual and local level for Ireland to examine the role played by location-specific characteristics, such as climate and environmental conditions, in explaining self-reported well-being. See also Ballas (2007) and White (2007) for recent contributions on the geography of happiness.

observations (see e.g. Anselin, 1988, Anselin and Griffith, 1988).

Spatial heterogeneity refers to systematic changes across space in relationships among variables. This phenomenon has generally been taken into account by the inclusion of location-specific dummy variables in estimated empirical specifications, such as country dummies in studies based on international data sets, or region-specific dummy variables in studies based on national data sets (e.g. Ferrer-i-Carbonell and Gowdy, 2007). However, if the relationship of interest varies across the spatial data sample, imposing common effects across different geographical units may hide information that can be particularly relevant for economic policy. Spatial dependence refers to systematic relationships between observations that are contiguous in space. Its presence violates the Gauss-Markov assumptions, making standard estimation techniques inefficient and, more importantly, standard inference procedures invalid. As a consequence, alternative modelling and estimation techniques are needed to successfully characterize spatial dependence and draw appropriate inferences.

This paper investigates the spatial distribution of the effects of economic conditions on subjective well-being throughout the world, using large samples of individuals, from the World Value Survey, for 81 countries representing about 85 per cent of the world population.[4] We start by examining how the effects of income and unemployment on subjective well-being at individual-level vary across countries. We find evidence of both spatial heterogeneity and spatial dependence across countries. Next, we investigate at country-level the relationship between macroeconomic conditions and sensitivities of subjective well-being to microeconomic conditions.

The results indicate that the sensitivities of subjective well-being to both income and unemployment at individual level are systematically related to macroeconomic conditions. The effect of income on happiness is significantly stronger in countries with lower GDP per capita. The effect of unemployment on happiness is significantly stronger in countries with higher GDP per capita and with higher unemployment rates. We also find evidence of significant spatial dependence in the cross-country distribution of the effects of being unemployed on happiness, after accounting for differences in macroeconomic and social conditions. The results are robust to a number of robustness checks, allowing for alternative indicators of subjective well-being and estimation methods to take into account the ordinal nature of the dependent

[4]In a recent review of the cross-country evidence on the determinants of well-being, Blanchflower (2008, p. 8) observes that "The structure of a happiness equation has the same general form in each industrialized country (and possibly in developing nations, though only a small amount of evidence has so far been collected)". A similar point is made by Di Tella and MacCulloch (2007, p. 9): "well being equations (where happiness and life satisfaction scores are correlated with the demographic characteristics of the respondents) are broadly similar across countries, an unlikely outcome if the data contained just noise".

variable. Overall, these findings suggest that failing to take into account the spatial dimension in the analysis of the determinants of well being can hide relevant information for economic policy.

The remainder of the paper is structured as follows. Sections 2 and 3 present the methodology and the data used for the empirical analysis, respectively. The results are presented in section 4. Section 5 concludes with a discussion of the main implications of the analysis.

2 Methodology

We follow a two-step methodology.[5] In the first step, microeconomic well-being equations are estimated at the individual level. The effect of economic conditions on subjective well-being is estimated separately for each country in the sample, controlling for socio-demographic, personality, and context-related characteristics. In the second step, we investigate across countries the relationship between macroeconomic conditions and the effect of individual economic conditions on subjective well-being. The estimated effects of income and unemployment are used as the dependent variable in cross-country regressions where macroeconomic conditions are used as the main explanatory variables and social indicators are used as control variables.

For the micro-level analysis in the first step, we assume that well-being (WB) depends on economic conditions (ECO), demographic factors ($DEMO$), social conditions (SOC), personality traits ($PERS$), and environmental characteristics (ENV):

$$WB_{ij} = \alpha + \beta_{1j} ECO_{ij} + \beta_{2j} DEMO_{ij} + \beta_{3j} SOC_{ij} + \beta_{4j} PERS_{ij} + \beta_5 ENV_j + \varepsilon_{ij} \quad (1)$$

where WB_{ij} is the well-being of individual i in country j.

Well-being is measured by either life satisfaction or happiness. We focus mainly on the results obtained for life-satisfaction, as opposed to happiness, as the two indicators are strongly correlated, while the latter is purely ordinal and displays much less variability across individuals. We also present the results obtained using happiness as a dependent variable, as a robustness check. Individual economic conditions are measured by income and unemployment status. Demographic factors include age and gender. Social indicators include education, marital status and subjective freedom. Personality traits are captured by trust. The characteristics of the external context are measured by a set of regional dummy variables for each country. The

[5] Di Tella et al. (2001) use a similar approach to estimate preferences over inflation and unemployment in 12 European countries and the United States.

set of regressors also includes time dummies to allow for heterogeneity across the four survey waves (1980-82, 1990-91, 1995-97, 1999-2001).

Alternative specifications of equation (1) are estimated at country-level by OLS. We also present the results obtained using an ordered probit estimator, to take into account the ordinal nature of the dependent variable. Test statistics are calculated using heteroskedasticity-robust standard errors.

For the macro-level analysis in the second step, we assume that the sensitivity of individual well-being to microeconomic conditions depends on the country's geographical location and country-specific characteristics (macroeconomic and social conditions). Empirically, we adopt the following general specification:

$$\begin{aligned} P &= \rho W_1 P + X\gamma + u \\ u &= \lambda W_2 u + \varepsilon \\ \varepsilon &\sim N\left(0, \sigma^2 I_n\right) \end{aligned} \tag{2}$$

where P is the vector of country-specific sensitivities of well-being to income or unemployment, ε is a country-specific error term, W_1 and W_2 are matrices of spatial weights, measuring pair-wise proximity between countries, and ρ and λ are the parameters that characterize spatial dependence in the dependent variable and the error term, respectively (see e.g. Anselin, 2001).[6]

Indicators of macroeconomic conditions in X include GDP per capita, the unemployment rate, the inflation rate, government size and trade openness. Social indicators include country size (log of population), percentage of urban population, life expectancy, and the number of TV sets per thousand people. The next section provides a detailed description of data sources and variable definitions.

In order to estimate equation (2), the sensitivities in P are proxied by the estimated $\widehat{\beta}_{1j}$ from equation (1). We consider four alternative restricted versions of equation (1), under the assumption that $W_1 = W_2$. The first model, used in order to assess the presence of spatial dependence, is a pure spatial lag model, under the assumptions $\lambda = 0$ and $\rho = 0$:

$$P = \rho W_1 P + \varepsilon, \tag{3}$$

The second specification is a spatial-lag model with country-specific characteristics, under the assumption $\lambda = 0$:

$$P = \rho W_1 P + X\gamma + \varepsilon, \tag{4}$$

[6]The distance band within which location pairs are considered neighbours is set so as to obtain at least one neighbour for each country.

Third, we consider a spatial error model with country-specific characteristics, under the assumption $\rho = 0$:

$$\begin{aligned} P &= X\gamma + u \\ u &= \lambda W_2 u + \varepsilon \end{aligned} \tag{5}$$

Fourth, we also present results obtained estimating equation (2) by OLS, as a benchmark, under the assumptions $\rho = 0$ and $\lambda = 0$.

3 Data

The source for the micro-level data is the World Values Survey (WVS), a compilation of surveys conducted in more than 80 countries representing about 85 per cent of the world's population (see Inglehart 2000). The VWS provides information on individual beliefs about politics, the economy, religious, social and ethical topics, personal finances, familial and social relationships, happiness and life satisfaction.[7] Four WVS waves are currently available (1980-82 1990-91 1995-97 and 1999-2001), for a total of about 270,000 observations.[8]

Life satisfaction is measured on a 1-10 scale, based on the question: "All things considered, how satisfied are you with your life as a whole these days?".[9] Happiness is a four-item ordinal variable, based on the question "Taking all things together, would you say you are: very happy, quite happy, not very happy, or not at all happy?". Income is measured by self-reported deciles in the national distribution of income, so that income levels are expressed in relative terms and are comparable across countries and individuals. Unemployment is measured by a dummy variable, from a set that also includes retired, student, at home, part-time, full-time and other employment.

Educational levels are captured by dummy variables for low education (inadequately completed or completed elementary education, incomplete secondary school), medium education (complete technical/vocational secondary school, incomplete or complete university-preparatory secondary school) and high education (some university with or without degree/higher education).

[7] Within each country, samples are selected randomly "from all administrative regional units after stratification by region and degree of urbanization" (Inglehart 2000, p. 7).

[8] The first wave (1980-82) covers 23 countries (mostly OECD, about 11 per cent of the total number of observations), the second (1990-91) 43 countries (about 22 per cent), the third (1995-97) 50 countries (about 29 per cent), and the fourth wave (1999-2001) 68 countries (about 38 per cent). There are 82 different countries represented in one of the four waves.

[9] The original answers on a scale 1 (dissatisfied) to 10 (satisfied) were multiplied by 10 in order to ease interpretation of regression results. See for example Frey and Stutzer (2002a) for a discussion of the use of reported subjective well-being as an empirical approximation of individual happiness.

The trust dummy takes the value 1 for those who think that "in general people can be trusted" (0 if "you cannot be too careful when dealing with people"). Summary statistics for all the variables used in the micro-level analysis (step 1) are reported in table 1.

The data source for all the country-level data is the database World Development Indicators, (World Bank, 2005). The (log of) GDP per capita is measured at constant 2000 US dollars. The inflation rate is measured as the annual percentage change of the consumer price index. Government expenditure is general government final consumption expenditure as a percentage of GDP. Trade openness is measured as the sum of total exports and imports as a percentage of GDP. Life expectancy at birth is measured in years. Urban population is the percentage of total population living in city or town, including metropolitan areas and suburban areas. All variables are expressed as long-run averages (over the period 1960-2004). Summary statistics for all the variables used in the macro-level analysis (step 2) are reported in table 2.

4 Results

We start by presenting, in Table 3, results obtained by estimating equation (1) on the whole sample, as a benchmark. In order to check the robustness of the results, we consider four alternative specifications. Columns 1-2 and 3-4 report coefficient estimates obtained using life satisfaction and happiness, respectively. In either case we report coefficients estimated with OLS (1 and 3) or ordered probit (2 and 4), to take into account the ordinal nature of the dependent variable.

The results for the four alternative specifications are qualitatively similar for all explanatory variables, with few exceptions. Moving up by one decile in the relative income scale is associated to a strongly significant increase in well-being. Being unemployed is associated to large and significant decrease in both life satisfaction and happiness. Age is positively and significantly related to happiness, while not significantly related to life satisfaction. Subjective well-being is significantly higher for females. The freedom indicator has a large and strongly significant positive coefficient. Individual who are married report significantly higher well-being. Education has a positive effect on individuals' well being. As for personality characteristics, individuals who think that in general people can be trusted report systematically higher satisfaction levels.

4.1 Micro-level results within countries

We now consider estimation of equation (1) at individual level by country. Table 4 provides a description of the sample size for each country. We report the sample size effectively available for estimation both as an absolute number (column 3) and as a percentage of the nominal sample size (column 4). The average effective sample size is about 2,100 observations, with a range between 289 observations for the Dominican Republic and 10,874 observations for Spain. The average effective sample size as a percentage of the nominal sample size is about 67 per cent.

The results of country-specific regressions for income and unemployment are presented in tables 5 and 6, respectively. We report only the estimates obtained by OLS using life satisfaction as a dependent variable, since the cross-country pattern of coefficient estimates is virtually unchanged using the alternative specifications described above (OLS or ordered probit estimation for life satisfaction or happiness equations). The cross-country correlation between the coefficients estimated by OLS and by ordered probit is 0.97 for the life satisfaction equations and 0.96 for the happiness equations. The correlation between the coefficients estimated in the life satisfaction and happiness equations is 0.66 both for OLS and ordered probit.

Estimated coefficients for the effect of income on life satisfaction range from a minimum of -0.72 for Egypt to a maximum of 3.63 for Macedonia. Two countries display negative coefficients, although only one of these is statistically significant. Interestingly, most OECD countries are in the bottom part of the ranking. The estimates of the adverse effect of being unemployed on life satisfaction range from a minimum of +6.61 (China) to a maximum of -17.38 (Morocco). Nine countries display negative coefficients, although only three of these is statistically significant. Interestingly, most OECD countries are in the upper part of the ranking.

The figures reported in tables 5 and 6 are mapped geographically in figures 1 and 2. The map for the effect of income (figure 1) indicates a clustering of large values in Eastern Europe, Asia and Africa. Relatively low values are observed in Western Europe and Oceania. The map for the effect of being unemployed (figure 2)[10] clearly indicates a clustering of large values in Western Europe and, to a lesser extent, America. A clustering of small effects is observed instead in Asia. The nature of these spatial patterns will be explored in the next subsection.

[10]The map in figure 2 reports the *negative* of the effect of unemployment on life satisfaction, so that a figure of x indicates that, ceteris paribus, being unemployed is associated to a negative x-point differential in life satisfaction.

4.2 Macro-level results between countries

Table 7 reports regression results obtained when the country-specific sensitivities of life-satisfaction to income, estimated in step one, are regressed on indicators of macroeconomic and social conditions. We consider five alternative specifications: a purely spatial autoregressive model, a spatial lag model using only macroeconomic indicators as explanatory variables, a spatial lag model that also includes social indicators as control variables, a spatial error model for the full specification, and a linear model estimated by OLS as a benchmark (see section 2 for details).

The results for the pure spatial autoregressive model (column 1) indicate that the effect of income on well-being displays significant positive spatial dependence. However, the results in column (2) indicate that controlling for macroeconomic conditions is sufficient to remove spatial dependence. When the model includes macroeconomic conditions as explanatory variables, the coefficient for the spatial lag (ρ) is less than half its initial size, and no longer statistically significant. This suggests that the geographical pattern of the sensitivity of well-being to income is largely explained by similar aggregate economic conditions in neighboring countries.

Focusing on the results for individual explanatory variables, GDP per capita is strongly significant across all specifications: the effect of income on individual well being is smaller in richer countries. The effect of income on life satisfaction is also positively related to the unemployment rate, but this result is not robust to the inclusion of social indicators. Inflation and the size of government are not statistically significant. Interestingly, trade openness is positively related to the income-sensitivity, although the effect is only marginally significant. Although the social indicators are not statistically significant, it is interesting to observe that the effect of income on well being is lower in countries where the percentage of urban population is higher, and the number of TV sets per head is higher.[11]

Table 8 reports the results for the determinants of the sensitivity of life-satisfaction to being unemployed. It is interesting to observe that the effect of being unemployed on well-being displays significant spatial dependence even after controlling for aggregate economic and social conditions, as indicated by the results for both the spatial lag model (column 3) and the spatial error model (column 4).

Turning to individual explanatory variables, we find that both GDP per capita and the aggregate unemployment rate are strongly significantly related to the effect of being unemployed on life satisfaction across all specifications:

[11]This result is consistence with the evidence presented in Bruni and Stanca (2006), suggesting that higher TV viewing raises material aspirations and strengthens upward social comparison, thus resulting in a lower effect of income on happiness.

the adverse effect of being unemployed on individual well being is stronger in richer countries and in countries where aggregate unemployment is higher. The size and the significance of the coefficients differ across alternative specifications for GDP per capita, while they are virtually unchanged for unemployment. It is also interesting to observe that, once we account for spatial dependence, the coefficient for the size of government becomes strongly statistically significant: the negative effect of being unemployed on well being is smaller in countries where public expenditure is higher. The remaining aggregate economic and social indicators are not statistically significant.

4.3 Robustness check

Finally, we provide a check of robustness of the findings presented so far by considering the results obtained by estimating equation (1) using happiness instead of life satisfaction as the dependent variable or using an Ordered Probit estimator instead of OLS.[12] The estimated sensitivities obtained with each of the three alternative specifications of equation (1) are used to estimate in each case three alternative specifications of equation (2), using either OLS, a spatial lag model, or a spatial error model. This results in nine specifications for equation (2).

Table 9 presents the results for robustness check of the determinants of the effect of income on subjective well-being. The negative and significant effect of GDP per capita on income sensitivities is generally robust to the use of alternative specifications and spatial models. The only exception is represented by the equations where micro-level sensitivities are obtained using the four-item happiness indicator as a dependent variable and the ordered probit estimator, for which the estimated coefficient is positive and not statistically significant. It is also noteworthy that the negative effect of the number of TV sets is statistically significant in the specifications for happiness estimated by ordered probit. Table 10 presents, in a similar way, robustness checks of the determinants of the effect of unemployment on subjective well-being. The negative effects of both GDP per capita and the aggregate unemployment rate on the micro-level sensitivities to being unemployed are found to be robust to the estimation of micro-level life-satisfaction equations by ordered probit. The results are qualitatively similar using happiness to estimate micro-level sensitivities, although the estimated coefficients are no longer statistically significant.

[12] As observed by Blanchflower (2008, p. 7) "Generally, it makes little or no difference if you use an OLS or an ordered logit. The results are similar – but not identical – for happiness and life satisfaction".

5 Concluding remarks

The economic literature has investigated the relationship between economic conditions and happiness in three main ways: across individuals at a given point in time; across countries at a given point in time; over time for individuals or countries.[13] This paper proposed a new approach, investigating how the effects of microeconomic conditions on subjective well-being at individual level vary across countries throughout the world. We found evidence of substantial cross-country spatial heterogeneity in the effects of both income and unemployment on life satisfaction and happiness. We then examined the determinants of the spatial distribution of country-level sensitivities of subjective well-being to microeconomic conditions.

The results indicate that, ceteris paribus, the sensitivities of subjective well-being to income and unemployment display spatial dependence across countries and are systematically related to macroeconomic conditions. In particular, the positive effect of income on happiness is significantly stronger in countries with lower GDP per capita, whereas the negative effect of unemployment on happiness is significantly stronger in countries with higher GDP per capita and with higher unemployment rates. We also find evidence of significant spatial dependence in the cross-country distribution of the effects of being unemployed on happiness, after controlling for macroeconomic and socio-demographic conditions. The results are robust to a number of robustness checks, allowing for different indicators of subjective well-being and alternative estimation methods to take into account the ordinal nature of the dependent variable.

These findings indicate that, throughout the world, money does matter for individual well-being. However, having a higher income matters less in richer countries. This result can be interpreted as providing a microeconomic interpretation of the established finding of decreasing returns to income in the cross-country income-happiness relationship. On the other hand, the well-being costs of being unemployed are larger in countries where unemployment is high and income is high. This result emphasizes the relevance of the psychological and social implications of unemployment. Overall, these findings suggest that taking explicitly into account the spatial dimension in the analysis of the determinants of well-being can provide relevant information for economic policy.

[13] Relatively less evidence is available in the economic literature about the effect of changes in economic conditions over time at individual level (Blanchflower, 2008, Clark et al., 2008).

6 References

Anselin, L. (1988). Spatial Econometrics: Methods and Models, Dorddrecht: Kluwer Academic Publishers.

Anselin, L. (1991). Spatial Econometrics. In Baltagi BH (Ed.). A companion to Theoretial Econometrics, Blackwell, Oxford.

Anselin, L., Griffith, D.A. (1988). Do spatial effects really matter in regression analysis?Papers of the Regional Science Association,V ol. 65, pp. 11-34.

Aslam, A., Corrado, L. (2007). No Man is an Island: the Inter-personal Determinants of Regional Well-Being in Europe, Cambridge Working Papers in Economics with n. 717.

Ballas, D. (2007). Exploring geographies of happiness in Britain and the implications for public policy, Department of Geography, University of Sheffield, http://www.uptap.net/wordpress/

Blanchflower, D. (2008). International Evidence on Well-being, IZA Discussion Paper 3354, Institute for the Study of Labor (IZA).

Brereton, F., Clinch, J., Ferreira, S. (2008). Happiness, geography and the environment, Ecological Economics, 65(2), 386-396.

Bruni, L., Stanca, L. (2007). Watching alone: Relational Goods, Television and Happiness, Journal of Economic Behavior and Organization, 65(3), 506-528.

Bruni, L., Stanca, L. (2006). Income Aspirations, Television and Happiness: Evidence from the World Values Survey, Kyklos, 59(2), 209-225.

Clark, A., Oswald, A. (1994). Unhappiness and Unemployment. The Economic Journal, 104(424), 648-659.

Clark, A., Frijters, P., Shields, M.A. (2008). A survey of the income happiness gradient, Journal of Economic Literature, 46(1), 95-144.

Di Tella, R., MacCulloch, R. (2006). Some Uses of Happiness Data in Economics, Journal of Economic Perspectives 20(1), 25-46.

Di Tella, R., MacCulloch, R.J., Oswald, A.J. (2001). Preferences over inflation and unemployment: evidence from surveys of happiness, American Economic Review, 91, 335-341.

Di Tella, R., MacCulloch, R., Oswald, A. (2003). The macroeconomics of happiness. The Review of Economics and Statistics, 85(4), 809-827.

Diener, E., Suh, E.M., Lucas, R.E., Smith H.L. (1999). Subjective well-being: three decades of progress, Psychological Bulletin, 125(2), 276-302.

Easterlin, R. (1974). Does economic growth improve the human lot? Some empirical evidence. In: Davis P.A., Reder, M.W. (Eds.). Nation and Households in Economic Growth: Essays in Honor of Moses Abromowitz. New York: Academic Press, 89-125.

Ferrer-i-Carbonell, A., Gowdy, J. M. (2007). Environmental degradation and happinessEcological Economics, 60(3), 509-516.

Frey, B.S. (2008). Happiness: A Revolution in Economics, MIT Press (MA).

Frey, B.S., Stutzer, A. (2002a). What Can Economists Learn from Happiness Research?Journal of Economic Literature, 40, 402-435.

Frey, B.S., Stutzer A. (2002b). Happiness and Economics: How the Economy and Institutions Affect Human Well-Being, Princeton University Press, Princeton.

Helliwell, J.F. (2002). How's life? Combining Individual and National Variables to Explain Subjective Well-Being, Economic Modelling, 20, 331-360.

Inglehart, R. (2000). World Values Surveys and European Values Surveys, 1981-1984, 1990-1993, and 1995-1997; Ann Arbor, MI: Interuniversity Consortium for Political and Social Research.

Lane, R. (2000). The Loss of Happiness in Market Economies, Yale University Press.

Layard, R. (2005). Happiness: Lessons from a New Science, New York, NY, Penguin.

Oswald, A.J. (1997). Happiness and Economic Performance, The Economic Journal, CVII, November, pp. 1815-31.

Stutzer, A., (2004). The Role of Income Aspirations in Individual Happiness, Journal of Economic Behavior and Organization, 54(1), 89-109.

Veenhoven, R. (1993). Happiness in nations: Subjective Appreciation of Life in 56 Nations 1946-1992. Erasmus University Press.

White, A. (2007). A Global Projection of Subjective Well-being: A Challenge To Positive Psychology? Psychtalk, 56, 17-20.

World Bank, World Development Indicators 2006, ISBN: 0-8213-7386-2

Table 1: Descriptive statistics, individual-level

Variable	Mean	Std. Dev.	Min.	Max.	N
Life satisfaction	66.33	24.9	10	100	265123
Happiness	30.2	7.38	10	40	260003
Income	4.72	2.53	1	10	225964
Unemployed (dummy)	0.1	0.3	0	1	257393
Empl. Full time (dummy)	0.39	0.49	0	1	257393
Empl. Part time (dummy)	0.09	0.29	0	1	257393
Empl. Self (dummy)	0.1	0.3	0	1	257393
Empl. other (dummy)	0.03	0.18	0	1	257393
Retired (dummy)	0.15	0.36	0	1	257393
At home (dummy)	0.16	0.36	0	1	257393
Student (dummy)	0.09	0.29	0	1	257393
Education, lower (dummy)	0.26	0.44	0	1	268799
Education, middle (dummy)	0.49	0.5	0	1	268799
Education, upper (dummy)	0.26	0.44	0	1	268799
Married (dummy)	0.61	0.49	0	1	265180
As married (dummy)	0.06	0.24	0	1	265180
Divorced (dummy)	0.06	0.23	0	1	265180
Separated (dummy)	0.04	0.19	0	1	265180
Widowed (dummy)	0.09	0.29	0	1	265180
Single (dummy)	0.24	0.43	0	1	265180
Freedom	6.35	2.7	1	10	250912
Trust in others (dummy)	0.3	0.46	0	1	257204
Age	40.04	17.16	15	98	261612
Male (dummy)	0.48	0.5	0	1	265364
Survey wave 1	0.11	0.32	0	1	270021
Survey wave 2	0.22	0.41	0	1	270021
Survey wave 3	0.31	0.46	0	1	270021
Survey wave 4	0.36	0.48	0	1	270021

Table 2: Descriptive statistics, country-level

Variable	Mean	Std. Dev.	Min.	Max.	N
Log GDP per capita	8.04	1.41	5.32	10.25	81
Unemployment rate	9.42	6.35	0.85	33	81
Inflation rate	55.02	119.38	2.06	561.68	81
Government size	15.71	5.13	5.91	30.28	81
Trade Openness	70.79	42.15	15.56	209.84	81
Log Population	16.39	1.57	12.36	20.72	81
Urban population (per cent)	58.33	20.71	9.74	100	81
Life expectancy	68.31	7.60	45.99	77.45	81
TV set per 1000	0.28	0.17	0.01	0.70	81

Table 3: Determinants of subjective well-being, overall

	LS (OLS)	LS (OP)	HAP (OLS)	HAP (OP)
Regressors				
Income	1.08**	0.05**	0.25**	0.04**
	(48.94)	(44.66)	(34.90)	(34.46)
Unemployed (dummy)	-4.59**	-0.20**	-1.09**	-0.17**
	(-22.46)	(-20.88)	(-16.85)	(-16.31)
Empl. Part time (dummy)	0.04	0.00	-0.13*	-0.02*
	(0.25)	(0.49)	(-2.23)	(-2.11)
Empl. Self (dummy)	-0.34	-0.01	-0.03	-0.00
	(-1.83)	(-1.32)	(-0.55)	(-0.35)
Empl. other (dummy)	-0.11	-0.00	0.34**	0.06**
	(-0.29)	(-0.04)	(2.88)	(2.83)
Retired (dummy)	1.46**	0.08**	0.30**	0.06**
	(7.76)	(9.06)	(5.11)	(6.18)
At home (dummy)	1.59**	0.08**	0.44**	0.08**
	(9.27)	(9.78)	(8.14)	(8.12)
Student (dummy)	2.49**	0.11**	0.73**	0.12**
	(11.87)	(10.96)	(10.89)	(10.51)
Education, middle (dummy)	0.68**	0.02**	0.46**	0.07**
	(4.86)	(3.47)	(10.17)	(9.79)
Education, upper (dummy)	0.70**	0.01	0.51**	0.08**
	(4.36)	(1.27)	(9.94)	(9.36)
Married (dummy)	2.30**	0.12**	1.50**	0.26**
	(15.84)	(16.52)	(31.97)	(32.38)
As married (dummy)	-0.14	-0.00	0.65**	0.11**
	(-0.51)	(-0.09)	(7.55)	(7.56)
Divorced (dummy)	-3.02**	-0.14**	-1.15**	-0.18**
	(-10.68)	(-10.52)	(-12.45)	(-11.81)
Separated (dummy)	-5.43**	-0.26**	-1.81**	-0.29**
	(-12.44)	(-12.19)	(-12.61)	(-12.50)
Widowed (dummy)	-1.27**	-0.06**	-0.80**	-0.11**
	(-4.67)	(-4.37)	(-9.06)	(-7.83)
Trust in others (dummy)	2.38**	0.11**	0.76**	0.13**
	(22.70)	(21.07)	(22.46)	(22.14)
Freedom	3.09**	0.15**	0.49**	0.08**
	(119.10)	(111.69)	(64.77)	(64.07)
Age	-0.01	0.00	-0.03**	-0.00**
	(-1.56)	(0.46)	(-19.60)	(-19.72)
Male (dummy)	-0.87**	-0.05**	-0.34**	-0.06**
	(-8.24)	(-8.93)	(-10.13)	(-10.67)
R2	0.30		0.20	
Number of obs.	193863	193863	188477	188477

Note: Dependent variable: Life satisfaction (columns 1-2) or happiness (columns 3-4). Estimator: OLS (columns 1 and 3) or Ordered Probit (columns 2 and 4). t-statistics reported in brackets (heteroskedasticity-robust standard errors). * indicates $p<0.05$, ** indicates $p<0.01$.

Table 4: Sample size, by country

Code	Country	N.Obs.	Perc.	Code	Country	N.Obs.	Perc.
1	Albania	909	90.90	42	Latvia	2685	86.17
2	Algeria	927	72.31	43	Lithuania	2563	84.67
3	Argentina	2620	60.01	44	Luxembourg	569	46.99
4	Armenia	1718	85.90	45	Macedonia	968	47.22
5	Australia	2568	78.39	46	Malta	703	70.16
6	Austria	2384	79.95	47	Mexico	3522	77.34
7	Azerbaijan	1546	77.22	48	Moldova	1742	87.45
8	Bangladesh	2120	70.11	49	Montenegro	932	71.97
9	Belarus	3527	85.88	50	Morocco	1321	58.37
10	Belgium	3564	60.96	51	Netherlands	2193	67.71
11	Bosnia-Her.	2172	90.50	52	New Zealand	960	80.54
12	Brazil	2704	92.26	53	Nigeria	4658	80.44
13	Bulgaria	1756	56.63	54	Norway	2992	82.83
14	Canada	4056	82.57	55	Pakistan	1206	44.13
15	Chile	3428	92.65	56	Peru	2354	86.80
16	China	3187	91.11	57	Philippines	1170	48.75
17	Colombia	5832	96.80	58	Poland	2307	72.46
18	Croatia	1893	86.32	59	Portugal	1075	49.20
19	Czech Republic	2589	91.23	60	Puerto Rico	1695	90.69
20	Denmark	2598	80.31	61	Romania	1981	88.08
21	Dominican Rep.	289	69.64	62	Russian Fed.	6714	72.69
22	Egypt	2646	88.20	63	Serbia	2030	82.09
23	El Salvador	973	77.59	64	Singapore	1412	93.39
24	Estonia	2728	89.91	65	Slovakia	1630	90.76
25	Finland	2254	86.33	66	Slovenia	1507	49.47
26	France	2766	72.47	67	South Africa	4759	54.88
27	Georgia	389	8.46	68	Spain	10874	68.91
28	Germany	6667	75.73	69	Sweden	3298	82.31
29	Greece	800	70.24	70	Switzerland	1544	59.11
30	Hungary	1830	52.94	71	Taiwan	1933	86.60
31	Iceland	1623	62.50	72	Tanzania	942	81.42
32	India	5126	78.36	73	Turkey	6739	89.33
33	Indonesia	773	77.30	74	Uganda	515	51.40
34	Iran	1392	54.98	75	Ukraine	2911	72.67
35	Ireland	2174	67.43	76	United Kingdom	3275	50.99
36	Israel	909	75.81	77	United States	5757	83.85
37	Italy	3675	68.49	78	Uruguay	894	89.40
38	Japan	3248	70.14	79	Venezuela	2069	86.21
39	Jordan	1094	89.45	80	Viet Nam	894	89.85
40	Korea-North	1116	93.00	81	Zimbabwe	807	80.54
41	Korea-South	1155	33.29				

Note: Source: World Values Survey (ICPSR).

Table 5: Effect of Income on Life Satisfaction, by country

Rank	Country	Coeff.	t-stat	Rank	Country	Coeff.	t-stat
1	Macedonia	3.63	7.24	42	Singapore	1.16	5.62
2	Viet Nam	3.55	6.52	43	Serbia	1.15	5.74
3	Poland	3.21	10.53	44	Venezuela	1.14	4.37
4	Philippines	3.03	7.79	45	Uruguay	1.08	3.45
5	Korea-North	2.94	6.83	46	Dominican Rep.	1.03	2.07
6	Azerbaijan	2.90	7.20	47	Spain	1.01	9.93
7	China	2.90	11.95	48	France	0.97	6.35
8	Hungary	2.77	8.19	49	Japan	0.97	8.39
9	Albania	2.73	7.45	50	Taiwan	0.93	6.19
10	El Salvador	2.66	4.18	51	Mexico	0.84	5.21
11	Turkey	2.66	13.67	52	Colombia	0.74	4.36
12	Bangladesh	2.56	7.83	53	Czech Republic	0.71	4.01
13	Iran	2.52	6.51	54	Slovakia	0.71	3.18
14	Indonesia	2.46	6.05	55	Chile	0.69	4.85
15	Bosnia-Her.	2.36	9.89	56	Iceland	0.66	3.56
16	South Africa	2.32	12.38	57	Puerto Rico	0.66	2.64
17	Bulgaria	2.31	8.24	58	United States	0.65	5.53
18	Georgia	2.24	4.44	59	Argentina	0.64	3.45
19	Israel	2.13	5.68	60	Greece	0.64	1.90
20	Romania	2.09	7.77	61	Ireland	0.61	3.06
21	Ukraine	2.06	9.85	62	Luxembourg	0.59	2.16
22	Armenia	1.96	6.49	63	Germany	0.55	5.42
23	Tanzania	1.96	3.05	64	Netherlands	0.55	3.68
24	Jordan	1.94	5.18	65	Switzerland	0.50	2.79
25	Moldova	1.88	6.76	66	Canada	0.42	3.36
26	Lithuania	1.85	6.75	67	New Zealand	0.41	1.66
27	Nigeria	1.82	10.47	68	Finland	0.39	2.32
28	Pakistan	1.70	6.03	69	Belgium	0.37	2.59
29	Algeria	1.66	3.20	70	Austria	0.34	1.45
30	Latvia	1.60	7.37	71	Sweden	0.34	2.83
31	Estonia	1.58	7.69	72	Denmark	0.32	1.91
32	Zimbabwe	1.57	2.91	73	United Kingdom	0.31	1.98
33	India	1.55	8.25	74	Australia	0.30	1.94
34	Uganda	1.53	2.24	75	Portugal	0.29	0.97
35	Peru	1.53	5.17	76	Malta	0.25	0.91
36	Belarus	1.50	8.13	77	Morocco	0.22	0.59
37	Montenegro	1.33	5.24	78	Norway	0.13	0.92
38	Korea-South	1.29	4.53	79	Italy	0.13	0.72
39	Croatia	1.24	5.65	80	Brazil	-0.19	-0.82
40	Russian Fed.	1.22	9.40	81	Egypt	-0.72	-2.40
41	Slovenia	1.18	4.92				

Note: Source: World Values Survey (ICPSR).

Table 6: Effect of being Unemployed on Life Satisfaction, by country

Rank	Country	Coeff.	t-stat	Rank	Country	Coeff.	t-stat
1	Morocco	-17.38	-7.29	41	Jordan	-4.05	-1.69
2	Switzerland	-14.97	-2.94	42	Moldova	-3.87	-2.32
3	Norway	-12.82	-5.11	43	Australia	-3.75	-1.49
4	Austria	-12.60	-3.26	44	Slovenia	-3.68	-1.72
5	Germany	-12.46	-11.22	45	Colombia	-3.56	-3.47
6	Iceland	-11.65	-1.96	46	Latvia	-3.49	-2.22
7	Italy	-10.62	-5.18	47	Albania	-3.38	-1.44
8	France	-10.53	-5.72	48	Romania	-3.29	-1.48
9	Taiwan	-9.78	-2.68	49	Puerto Rico	-3.24	-1.28
10	Korea-North	-8.86	-2.60	50	United States	-3.18	-2.85
11	Hungary	-8.69	-3.89	51	Russian Fed.	-2.87	-2.13
12	Poland	-8.60	-3.03	52	Israel	-2.86	-0.99
13	Greece	-8.52	-2.32	53	Finland	-2.75	-2.23
14	Denmark	-8.35	-4.71	54	Bangladesh	-2.73	-1.23
15	Czech Republic	-8.08	-3.23	55	Ukraine	-2.67	-1.68
16	Dominican Rep.	-7.77	-0.98	56	Bosnia-Her.	-2.56	-2.09
17	Chile	-7.62	-4.46	57	Portugal	-2.47	-0.57
18	Malta	-7.53	-1.52	58	India	-2.46	-1.99
19	Turkey	-7.28	-5.35	59	Croatia	-2.38	-1.43
20	Belgium	-7.06	-5.21	60	Singapore	-2.38	-1.12
21	Netherlands	-7.01	-2.64	61	Peru	-2.33	-1.18
22	United Kingdom	-7.01	-4.43	62	Armenia	-1.52	-0.93
23	Canada	-6.99	-5.36	63	Zimbabwe	-1.51	-0.62
24	Ireland	-6.59	-3.32	64	Georgia	-1.34	-0.33
25	South Africa	-6.55	-5.74	65	El Salvador	-0.90	-0.27
26	Uganda	-6.53	-1.53	66	Tanzania	-0.78	-0.21
27	Slovakia	-6.29	-2.98	67	Macedonia	-0.72	-0.33
28	Spain	-5.87	-8.48	68	Luxembourg	-0.66	-0.08
29	Algeria	-5.75	-1.80	69	Nigeria	-0.45	-0.32
30	Venezuela	-5.64	-2.97	70	Mexico	-0.24	-0.14
31	Lithuania	-5.53	-2.95	71	Philippines	0.21	0.09
32	Brazil	-5.49	-2.98	72	Montenegro	0.65	0.37
33	Uruguay	-5.45	-1.83	73	Belarus	0.73	0.43
34	Bulgaria	-5.33	-2.09	74	Iran	1.58	0.64
35	Argentina	-5.31	-2.84	75	Pakistan	1.62	0.63
36	Japan	-5.17	-1.80	76	Serbia	4.17	2.40
37	Egypt	-5.07	-1.92	77	Azerbaijan	4.76	2.69
38	Sweden	-4.95	-3.28	78	Indonesia	6.31	1.41
39	Viet Nam	-4.27	-1.15	79	China	6.61	2.71
40	Estonia	-4.25	-2.58				

Note: Source: World Values Survey (ICPSR).

Table 7: Determinants of the effect of Income on Life Satisfaction

	(1)	(2)	(3)	(4)	(5)
Regressors					
Log GDP per capita		-0.38**	-0.40**	-0.43*	-0.42**
		(-6.17)	(-2.81)	(-2.21)	(-2.78)
Unemployment rate		0.03*	0.02	0.02	0.02
		(2.29)	(1.58)	(1.46)	(1.49)
Inflation rate		-0.00	-0.00	-0.00	-0.00
		(-0.15)	(-0.34)	(-0.35)	(-0.34)
Government size		-0.01	-0.01	-0.01	-0.01
		(-0.61)	(-0.53)	(-0.62)	(-0.74)
Trade Openness		0.00	0.00	0.00	0.00
		(1.85)	(1.87)	(1.74)	(0.99)
Log Population			0.03	0.03	0.03
			(0.48)	(0.54)	(0.38)
Urban population (per cent)			-0.01	-0.01	-0.01
			(-1.20)	(-1.08)	(-0.83)
Life expectancy			0.04	0.04	0.04
			(1.74)	(1.50)	(1.74)
TV set per 1000			-0.74	-0.75	-0.78
			(-0.83)	(-0.73)	(-0.79)
Constant	0.61	3.81**	1.62	1.79	1.83
	(1.67)	(4.61)	(0.94)	(1.08)	(0.84)
rho					
	0.53*	0.20	0.14		
	(2.18)	(0.79)	(0.50)		
sigma					
	0.92**	0.71**	0.69**	0.69**	
	(14.13)	(9.76)	(9.89)	(10.02)	
lambda					
				-0.06	
				(-0.08)	
R2	0.08	0.45	0.47	0.47	0.47
Number of observations	81	81	81	81	81

Note: Dependent variable: sensitivity of Life Satisfaction to Income. (1)-(3): spatial lag model; (4): spatial error model;(5): OLS. t-statistics reported in brackets (heteroskedasticity-robust standard errors). * and ** indicate test-statistic significant at 5 and 1 per cent level, respectively.

Table 8: Determinants of the effect of Unemployment on Life Satisfaction

	(1)	(2)	(3)	(4)	(5)
Regressors					
Log GDP per capita		-1.82**	-1.97**	-1.57*	-2.31**
		(-4.80)	(-2.84)	(-2.36)	(-3.01)
Unemployment rate		-0.16*	-0.19**	-0.17**	-0.19*
		(-2.08)	(-2.62)	(-2.71)	(-2.47)
Inflation rate		0.00	0.00	0.00	-0.00
		(0.58)	(0.11)	(0.97)	(-0.01)
Government size		0.18*	0.19*	0.32**	0.12
		(2.10)	(2.14)	(3.12)	(1.23)
Trade Openness		0.01	0.01	0.01	0.01
		(0.51)	(1.07)	(0.94)	(0.96)
Log Population			0.55	0.22	0.60
			(1.55)	(0.60)	(1.51)
Urban population (per cent)			-0.03	-0.07*	-0.01
			(-0.99)	(-2.02)	(-0.33)
Life expectancy			0.19	0.16	0.21
			(1.85)	(1.44)	(1.72)
TV set per 1000			-2.35	-0.05	-3.23
			(-0.61)	(-0.01)	(-0.65)
Constant	-1.95	10.46**	-7.94	-6.27	-9.67
	(-1.89)	(3.13)	(-0.81)	(-0.60)	(-0.86)
rho					
	0.58**	0.52*	0.52*		
	(2.76)	(2.11)	(2.03)		
sigma					
	4.22**	3.52**	3.42**	3.32**	
	(11.22)	(9.68)	(10.04)	(10.17)	
lambda					
				0.77**	
				(4.38)	
R2	0.10	0.36	0.40	0.25	0.36
Number of observations	79	79	79	79	79

Note: Dependent variable: sensitivity of Life Satisfaction to Unemployment. (1)-(3): spatial lag model; (4): spatial error model;(5): OLS. t-statistics reported in brackets (heteroskedasticity-robust standard errors). * and ** indicate test-statistic significant at 5 and 1 per cent level, respectively.

Table 9: Robustness check: determinants of effect of Income

	LS-OP	H-OLS	H-OP	LS-OP	H-OLS	H-OP	LS-OP	H-OLS	H-OP
Regressors									
Log GDP per capita	-0.02**	-0.09*	0.12	-0.02**	-0.09**	0.12	-0.02**	-0.11**	0.12
	(-3.35)	(-2.44)	(1.53)	(-3.26)	(-3.07)	(1.40)	(-2.68)	(-2.92)	(1.37)
Unemployment rate	0.00	-0.00	-0.01	0.00	-0.00	-0.01	0.00	-0.00	-0.01
	(0.96)	(-0.47)	(-0.97)	(0.96)	(-0.44)	(-0.80)	(0.85)	(-0.47)	(-0.79)
Inflation rate	-0.00	-0.00	0.00	-0.00	-0.00	0.00	-0.00	-0.00	0.00
	(-0.63)	(-0.64)	(0.64)	(-0.61)	(-0.97)	(0.71)	(-0.58)	(-0.94)	(0.67)
Government size	-0.00	0.00	0.01	-0.00	0.00	0.01	-0.00	0.00	0.01
	(-0.95)	(0.60)	(0.94)	(-0.66)	(0.54)	(0.93)	(-0.72)	(0.77)	(0.82)
Trade Openness	0.00	-0.00	0.00	0.00*	-0.00*	0.00	0.00	-0.00*	0.00
	(1.28)	(-1.55)	(0.18)	(2.01)	(-2.25)	(0.19)	(1.87)	(-2.38)	(0.19)
Log Population	0.00	-0.01	0.04	0.00	-0.01	0.04	0.00	-0.01	0.04
	(0.65)	(-0.47)	(0.88)	(0.75)	(-0.58)	(0.80)	(0.76)	(-0.91)	(0.89)
Urban population (per cent)	-0.00	0.00	-0.00	-0.00	0.00	-0.00	-0.00	0.00	-0.00
	(-1.14)	(0.32)	(-0.75)	(-1.51)	(0.45)	(-0.62)	(-1.35)	(0.38)	(-0.47)
Life expectancy	0.00*	0.01	0.01	0.00*	0.01	0.01	0.00*	0.01	0.01
	(2.44)	(1.59)	(0.77)	(2.45)	(1.56)	(0.71)	(2.02)	(1.74)	(0.72)
TV set per 1000	-0.02	-0.35	-0.90	-0.02	-0.36	-0.88*	-0.02	-0.33	-0.87*
	(-0.51)	(-1.44)	(-1.75)	(-0.49)	(-1.57)	(-2.00)	(-0.52)	(-1.61)	(-2.02)
Constant	0.06	0.65	-1.92	0.05	0.67	-1.89	0.06	0.72	-1.89
	(0.55)	(1.19)	(-1.68)	(0.55)	(1.43)	(-1.58)	(0.68)	(1.76)	(-1.65)
rho									
				0.18	-0.03	-0.38			
				(0.69)	(-0.10)	(-0.88)			
lambda									
							0.03	-0.56	-0.36
							(0.05)	(-0.93)	(-0.68)
R2				0.49	0.30	0.11	0.49	0.29	0.10
Number of observations	81	81	81	81	81	81	81	81	81

Note: Dependent variable: country-specific sensitivities of subjective well-being to income, estimated with alternative specifications as detailed in section 3.3. Estimates are obtained by OLS in columns 1-3, a spatial lag model in columns 4-6, and a spatial error model in columns 7-9. t-statistics reported in brackets (heteroskedasticity-robust standard errors). * and ** indicate test-statistic significant at 5 and 1 per cent level, respectively.

Table 10: Robustness check: determinants of effect of Unemployment

	LS-OP	H-OLS	H-OP	LS-OP	H-OLS	H-OP	LS-OP	H-OLS	H-OP
Regressors									
Log GDP per capita	-0.11**	-0.44	-0.03	-0.09*	-0.35	-0.03	-0.07*	-0.26	-0.04
	(-2.69)	(-1.92)	(-0.34)	(-2.50)	(-1.64)	(-0.38)	(-1.99)	(-1.29)	(-0.56)
Unemployment rate	-0.01*	-0.01	-0.01	-0.01*	-0.01	-0.01	-0.01*	-0.01	-0.01
	(-2.12)	(-0.55)	(-1.30)	(-2.19)	(-0.69)	(-1.24)	(-2.24)	(-0.67)	(-1.17)
Inflation rate	0.00	-0.00	-0.00	0.00	0.00	-0.00	0.00	0.00	-0.00
	(0.14)	(-0.10)	(-1.00)	(0.33)	(0.04)	(-1.02)	(1.03)	(0.51)	(-1.04)
Government size	0.01	-0.01	0.02	0.01	0.01	0.02	0.01*	0.04	0.02
	(1.01)	(-0.37)	(1.60)	(1.79)	(0.52)	(1.52)	(2.55)	(1.43)	(1.70)
Trade Openness	0.00	0.00	0.00*	0.00	0.00	0.00*	0.00	0.00	0.00*
	(0.99)	(0.05)	(2.05)	(0.95)	(0.30)	(2.27)	(0.87)	(0.68)	(2.46)
Log Population	0.03	0.09	0.09*	0.03	0.07	0.11*	0.02	0.05	0.11*
	(1.56)	(0.76)	(2.28)	(1.49)	(0.85)	(2.05)	(0.75)	(0.50)	(2.57)
Urban population (per cent)	-0.00	-0.01	-0.00	-0.00	-0.01	-0.00	-0.00	-0.02	-0.00
	(-0.46)	(-0.57)	(-0.69)	(-1.12)	(-1.10)	(-0.60)	(-1.89)	(-1.93)	(-0.11)
Life expectancy	0.01	0.01	0.02	0.01	0.01	0.02	0.01	0.01	0.02
	(1.48)	(0.22)	(1.50)	(1.59)	(0.22)	(1.76)	(1.23)	(0.26)	(1.92)
TV set per 1000	-0.19	1.21	-0.59	-0.13	1.43	-0.60	-0.00	1.91	-0.73
	(-0.74)	(0.81)	(-1.12)	(-0.66)	(1.15)	(-1.41)	(-0.02)	(1.39)	(-1.79)
Constant	-0.48	0.80	-2.66*	-0.41	0.92	-2.86*	-0.36	-0.02	-2.95*
	(-0.83)	(0.24)	(-2.27)	(-0.78)	(0.35)	(-2.21)	(-0.64)	(-0.01)	(-2.57)
rho									
				0.50	0.52*	-0.76			
				(1.89)	(2.21)	(-1.52)			
lambda									
							0.75**	0.74**	-0.99
							(3.52)	(3.76)	(-1.75)
R2				0.39	0.29	0.19	0.26	0.13	0.12
Number of observations	79	79	79	79	79	79	79	79	79

Note: Dependent variable: country-specific sensitivities of subjective well-being to income, estimated with alternative specifications as detailed in section 3.3. Estimates are obtained by OLS in columns 1-3, a spatial lag model in columns 4-6, and a spatial error model in columns 7-9. t-statistics reported in brackets (heteroskedasticity-robust standard errors). * and ** indicate test-statistic significant at 5 and 1 per cent level, respectively.

Figure 1: Effect of Income on Life satisfaction

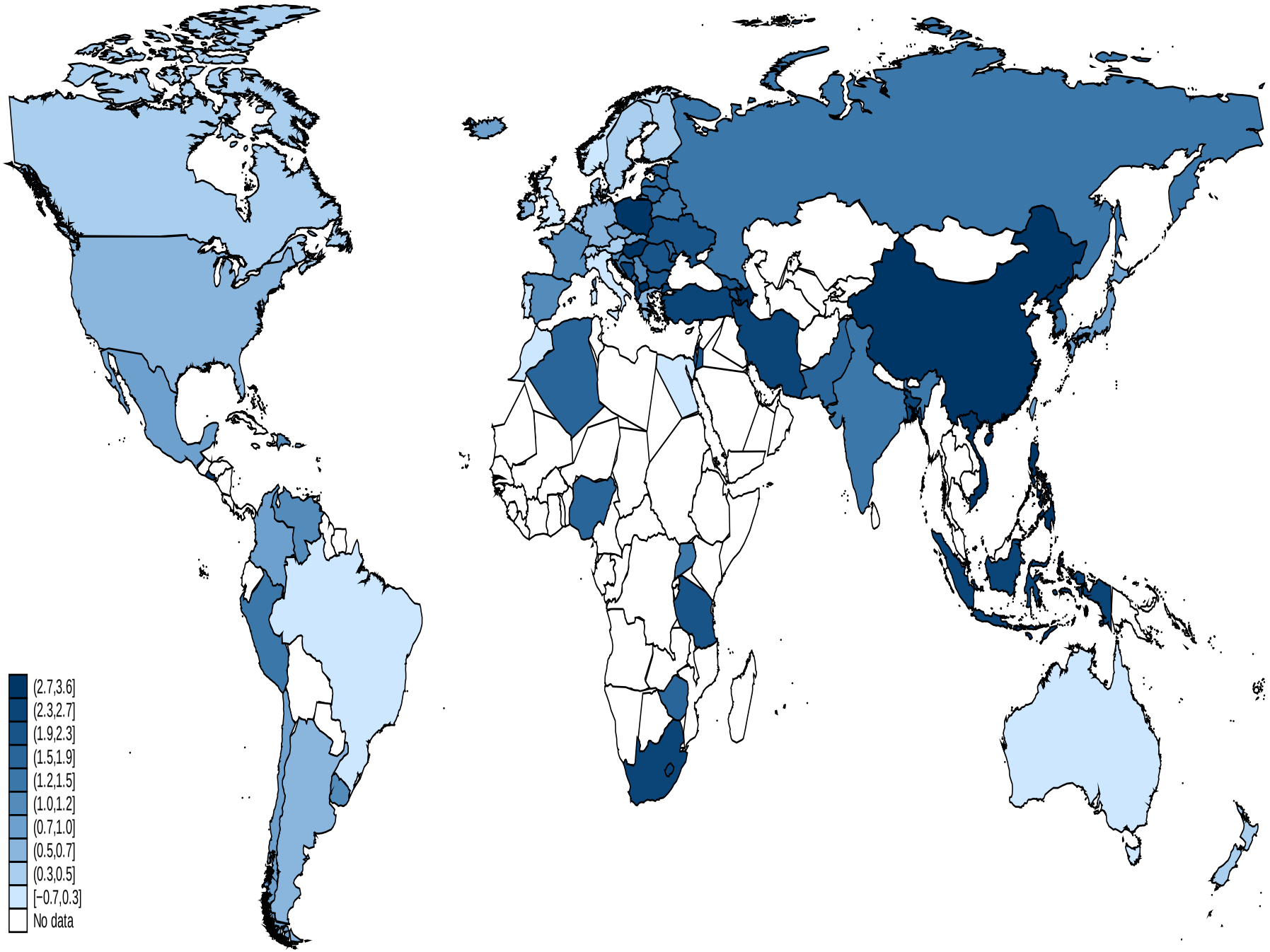

Figure 2: Effect of being Unemployed on Life satisfaction