

Happiness & Freedom

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Abstract

The paper draws on economics and psychology to develop a unified framework to study the role of freedom of choice and the locus of control in predicting happiness. It is argued that freedom of choice and the locus of control are intimately related and together represent a powerful instrument to study happiness. An empirical investigation that covers over 260,000 individuals from 84 countries during a period of 25 years finds evidence in support of this hypothesis. A very strong association between life-satisfaction and a variable that measures freedom of choice and the locus of control is found controlling for country and individual characteristics, personal values and social attitudes. This association survives all bivariate and multivariate tests in a cross-country and within country context and the variable selected emerges as the most likely factor to predict life satisfaction worldwide. Two tests show that this variable is not a proxy of life satisfaction and measures well both freedom of choice and the locus of control.

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1 Introduction

That people are in constant quest of happiness is not a novelty of our times. As noted repeatedly by happiness researchers, Greek and Roman philosophers since Aristotle have been concerned about the causes of happiness although progress in this field has proved hard to come. Seneca in his opening statement of the *De Vita Beata* writes to his brother: "*Brother Gallio, all want to be happy, but when it comes to see clearly what makes life happy they are shadowed by obscurity*".²

What distinguishes modern from ancient times in this respect is that we start to have some empirical evidence about what may determine happiness. Since the 18th century and the expansion of moral philosophy into the social sciences, philosophy has lost its exclusive control over the search for happiness. And the last four decades of the 20th century have provided a stream of contributions to happiness research in several disciplines such as psychology, sociology and economics that significantly changed the way we understand happiness. We are starting to lift the "shadow of obscurity" by finding elements that seem to explain well fluctuations in self-perceived happiness.

The paper follows this recent tradition and draws on economics and psychology to develop a unified framework to study the role of freedom of choice and the locus of control in predicting happiness. It is argued that freedom of choice which is central to the study of utility in economics and the locus of control which is central to the study of personality in social psychology are intimately related and together represent a powerful instrument to study happiness. An empirical investigation that covers over 260,000 individuals from 84 countries during a period of 25 years finds evidence in support of this hypothesis. A very strong association between life-satisfaction and a variable that measures freedom of choice and the locus of control is found controlling for country and individual characteristics, personal values and social attitudes. This association survives all bivariate and multivariate tests in a cross-country and within country context. The same cannot be said for other regressors that have been found in the past to explain life-satisfaction well such as income, unemployment, age, marital status and political orientation.

We start by discussing the difference between the terms utility and happiness given the existing confusion in the economics tradition (section 2). We draw on Daniel Kahneman's taxonomy of utilities to make some order in such confusion and extend this framework by adding a time sequencing to such taxonomy (section 3). Section 4 introduces Sen's theory of functionings and capabilities and the concept of freedom of choice and section 5 shows how freedom of choice and one aspect of personality (the locus of control) are closely related. The hypothesis that freedom of choice and the locus of control interact to become a powerful predictor of happiness is tested in the sections that follow. Section 6 reviews some of the main contributions to happiness research, section 7 presents data, model and variables used and section 8 outlines the results. Section 9 checks on the

²"Vivere, Gallio frater, omnes beate volunt, sed ad pervidendum quid sit quod beatam vitam efficiat caligant." Seneca (1996, p. 32)

possible drawbacks of predicting life satisfaction with an instrument such as freedom of choice and locus of control and section 10 concludes.

2 Utility and happiness

In its original conception utility was devised as an economic jargon to describe the sentiments of pleasure and happiness. Jeremy Bentham and his disciples considered the achievement of the greatest happiness a valuable social objective, a revolutionary idea that contributed to shape moral philosophy in the 19th century and modern economics in the 20th century. These ideas have also contributed to create a close relation between the words happiness and utility to an extent that the economics profession has often used the two terms interchangeably.

The difficulty with the concept of utility emerged with the search of a proper way to measure 'utils', units of pleasure or happiness which could be aggregated to obtain individual and collective utility. Consumer choice theory and the theory of revealed preferences provided a possible means to overcome this difficulty. Given a budget constraint, consumers choose the product mix that maximizes their own utility and this choice results in prices and quantities which can be measured. By focusing on individual and collective choices in the consumption sphere, consumer choice theory introduced a close association between income, consumption and utility.

It is this association that generated some confusion on the relation between utility and happiness and a stream of critiques towards utility theory. For some authors, such as Varian (1996) utility and happiness can no longer be equated: "*(...), economists have abandoned the old-fashioned view of utility as being a measure of happiness*". (p. 54). Kahneman (1997) proposed to distinguish between *experienced utility* to describe the concept of utility that Bentham had in mind and *decision utility* to describe the ordinal utility concept used in microeconomics textbooks and consumer choice theory. As noted by this author: "*With a few exceptions, experienced utility is essentially ignored in modern economic discourse*" (p. 375).

For other authors it is the excessive narrow focus of modern utility theory the real culprit. Modern theories of social justice including Runciman theory of relative deprivation (1966) and Sen's theory of capabilities (1987) have challenged the view that income and consumption choice are the best predictors of happiness. Runciman by elaborating on the idea that individual well-being depends also from the relative (income and non income) position individuals occupy in the self-selected reference group, not just absolute income and consumption. Sen by highlighting how individual well-being depends more on capabilities and opportunities than on outcomes such as income. While outlining his capabilities theory, Sen disputes the neoclassical simplification of the concept of utility. In his own words: "*To assume that the binary relation underlying choice (...) must be the person's ordering of own well-being, is an heroic simplification*" (1987, p 13).

The distinction between the classical and neoclassical interpretation of utility is rarely

made in applied works on happiness and the concepts of utility and happiness continue to be used interchangeably (see for example Easterlin, 2001³ and Alesina, Di Tella and MacCulloch, 2001⁴) adopting *de facto* a classical interpretation of the concept. Yet the tools used to describe and analyze happiness are largely derived from neoclassical utility theory reinforcing the confusion about the terms utility and happiness. One approach that helps clarifying such confusion is Kahneman's taxonomy of utilities.

3 A taxonomy of utilities

Kahneman (1997, 2000) provided a possible 'taxonomy' of utilities distinguishing between different types as follows:

- Decision utility
- Predicted utility
- Remembered utility
- Total utility

Decision utility is the concept of utility grounded in choice theory and used in neo-classical microeconomic theory. This is what is taught in microeconomics textbook and measured with expressed preferences. Predicted utility is a belief about future experienced utility. This is what people think a certain choice will lead to in terms of utility. Remembered utility is a memory based approach; it is the recollection of past utility. Total utility is a moment based approach pioneered by Kahneman himself.⁵ Utility is seen as a function of moment utility which is the pain or pleasure associated to experiences made over defined spells of time. Moment and total utility belong to the sphere of experienced utility which is clearly distinguished from remembered, predicted and decision utility.⁶ Kahneman (1997) argues that people are not generally accurate when they make value judgments about past and future utility which makes total utility a better instrument to measure utility objectively.

Consider for example the utility derived from a pair of trousers. Decision utility is measured through revealed preferences expressed by consumers in the market place. If I pay an X amount of money for a pair of trousers this means that I value those trousers an

³"Throughout this article, I use the terms happiness, subjective well-being, satisfaction, utility, well-being, and welfare interchangeably (p. 465).

⁴"We measure "utility" in terms of survey answers about "happiness" "(pp. 3-4).

⁵The original idea is the well known hedonic machine proposed by Edgeworth (1881) but Kahneman provides theory and evidence on how this 'machine' can actually work.

⁶In psychology a distinction is made between cognitive pleasure and intensity of pleasure. Remembered utility has more to do with the cognitive aspect of the definition of subjective well-being such as the self-assessment of life satisfaction while moment utility has to do with the second aspect described as the intensity of pleasures and pains we experience in each moment of life. According to Diener *et Al.* (1997): "*Subjective Well-Being (SWB) is a field of psychology that attempts to understand people's evaluation of their lives. These evaluations may be primarily cognitive (e.g. life satisfaction or marital satisfaction) or may consist of the frequency with which people experience pleasant emotions (e.g. joy, as measured by the experience sample technique) and unpleasant emotions (e.g. depression)(...)*" (p. 2).

The distinction made by Kahneman between total and remembered utility refines the definition of Subjective Well-Being (SWB) adopted in psychology by separating the cognitive and emotional aspects.

X amount and this amount measures the utility I attribute to buying and wearing these trousers. Predicted utility is the belief I have about future experienced utility. I predict that buying a particular pair of trousers will give me an X amount of utility even if the real outcome of this choice may be different. This prediction is based on past assessments and experiences I had with trousers and other imagined or stereotyped belief I have about trousers. Remembered utility is the retrospective assessment of past pleasures and pains. In the case of trousers, it is the recollection of the pleasure and pain I had wearing trousers.

Decision, predicted and remembered utility may or may not coincide. I may remember that a certain pair of trousers gave me X (remembered) utility when in fact, just before buying them, I thought they would give me Y (predicted) utility. I then buy the trousers and pay the equivalent of Z (decision) utility. In the case of goods such as trousers it may be argued that a decision is based on the prediction and that the price I pay for the trousers reflects the predicted value. However, I may be willing to pay a Y (predicted) amount for the pair of trousers whereas I manage to pay a Z (decision) amount in the market place. This is like the distinction in public economics between willingness to pay and market price which defines the consumer surplus.⁷

We can take the Kahneman approach further and argue that a temporal and consequential relation exists between the different forms of utilities as depicted in Figure 1. The arrows in the diagram represent the functions that link the different forms of utilities. For example, the function that links moment and total utility could be the one proposed by Kahneman (1997) moment based approach already described. A function that links total utility and remembered utility would be a function that considers how memory re-laborates past experiences. A function that links remembered and predicted utility would be a forecasting function that considers how the recollection of the past affects the estimates of the future. And a function that links predicted and decision utility could be a function that considers how predictions determine choice.

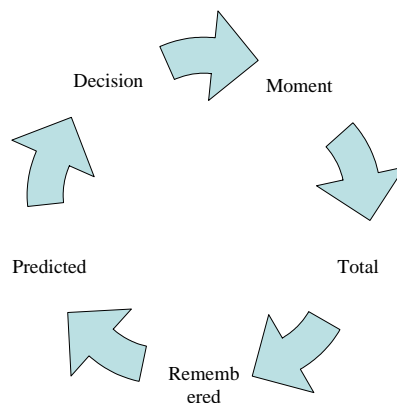


Figure 1 - The Utilities Cycle

⁷Kahneman (1997) attributes the willingness to pay to decision utility (p. 377). However, the distinction between willingness to pay and market price in economics provides a useful example to distinguish between predicted and decision utility. Decision utility is the measurement of the outcome of choice which is measured by the market price and not by the willingness to pay.

The ideal instrument to measure utility would be moment utility. If every pain and pleasure in every moment of life is recorded and then assembled in a total utility function there would be no need for remembered and predicted utility. Researchers could simply look at recorded experiences as if they were observing temperatures, weights or volumes. The problem is that measuring moment utility is costly, time consuming and impractical at present which is one of the reasons why happiness researchers rely so much on remembered utility.

However, research has shown that both remembered utility and predicted utility are bias measures of total utility. Various experiments have indicated that people's recollection of past pains and pleasures is mostly correlated with the closest events and that the duration of events has a minor role in defining remembered utility (Kahneman 1993, Redemeier and Kahneman 1996). In practice we seem to recall much better intensity of events and recent events (peak-end evaluation) rather than the duration of events (duration neglect) and this largely shapes the evaluation we provide of past experiences. Other experiments have shown instead how people's forecasting of feelings is not particularly good (Gilbert et Al. 1998, Loewenstein et Al. 1999, Kahneman and Snell 1992). Imagination mixes with wishes and memories of experienced reality when we make predictions about future feelings and usually results in poor estimates.

The bias described can also be accentuated if the decisional process is short. While the Kahneman function of total utility has a clear time dimension, remembered, predicted and decision utility can be three distinct and time consuming processes or be part of one instantaneous decisional process. Imagine entering a shop with no intention of buying anything and exiting the same shop two minutes later with a pair of shoes. It is evident that the shorter is the time allocated to choice the more time consuming activities such as reasoning leave the ground to quicker and more unpredictable factors such as perception and intuition. This is one reason why personality may play an important role in predicting happiness.

We have used Kahneman's taxonomy of utilities to distinguish among different forms of utilities and we have set up this classification in a sequential order suggesting how one form of utility can feed into the other. We have also argued that remembered and predicted utilities are bias measures of total utility and that this bias may be accentuated if the decisional time is short. In the following sections we will look at how personality may affect utility and contribute to determine the bias but before outlining the argument we look at utility from a different angle.

4 Capabilities and freedom of choice

A different approach to the study of utility is Sen's functionings and capabilities theories (Sen 1987). Sen drew on the idea that commodities have certain characteristics and that these characteristics matched with people's characteristics originate what he defines as 'functionings'. Functionings should be understood as possible 'beings' or 'statuses' such

as being well fed or in good health. Sen took these ideas further and developed his capabilities theory whereby well-being is not determined by the achieved and realized functionings but by the set of possible functionings available to an individual.⁸ According to Sen, people attribute a value not just to outcomes but also to the set of opportunities they have and it is this set of opportunities that leads to utility.



Figure 2 - Capabilities and Utility

In neoclassical economics enlarging the choice set matters for utility in that it increases the likelihood of including into the choice set a new and better alternative. With more competition prices are likely to be lower and consumers are more likely to find the product they need. However, two choice sets with a different number of alternatives containing both the maximizing alternative are equivalent in neoclassical economics. If the same market price of X is reached in an economy with three or thirty competitors this makes no difference for decision utility.

Sen (1985, 1990) and others have challenged this view and argued that the size of the choice set or the degree of freedom of choice has an *intrinsic value* for individuals.⁹ Two choice sets that contain the same best option x can be ranked according to the number of options they offer; the larger the number of options the better the rank. In this sense, expanding the range of possible freedoms such political and economic freedoms should be valuable to individuals even if people do not vote or do not profit from the economic possibilities offered.

If we try to place Sen's capabilities approach into Kahneman's utilities framework this will have to be somewhere in between remembered and decision utility where the process of choice takes place. Sen built his capabilities theory as a critique to decision utility and his theory is not really concerned with momentary pleasures or pains. He is also little concerned about the outcome of choice and he focuses instead on freedom of choice arguing that this freedom has an intrinsic value for people.

Interestingly, while Sen's theories amounted to a revolution in economics, in psychology it has been known for long that people associate freedom of choice to leisure: "*Freedom of choice in the activity being undertaken has been regarded as a critical regulator of what becomes leisure in people's minds. (...) Obtaining intrinsic rewards from engaging in freely chosen activities has been almost unquestionably accepted by researchers (...)*" (Haworth et Al. 1997, p. 347-348).

Yet, we can well imagine some type of individuals who might prefer a reduced choice set to an expanded one. One example may be a person who is adverse to decision making and finds choosing between different options a pain rather than a pleasure. A second case may be that of a person who believes that destiny and not choice determines the

⁸This interpretation of Sen's capabilities theory is sometimes referred to as the 'options application' as opposed to the 'choice application' which focuses on realized functionings (Sen 1997).

⁹See Gravel (1994) and Bavetta (2004) for critical reviews of this literature.

future. Both cases are cases of personalities who may attribute a low score to freedom of choice. This is a second reason to look at personality with interest when trying to predict happiness.

5 Happiness with personality

The question of personality is generally ignored in the economic discourse. In the neoclassical decision utility framework, all individuals are considered equal in terms of personal characteristics. In Sen's capabilities theory individual characteristics are seen as visible characteristics such as age and education but not as personality. Even in Kahneman's moment based framework, personality is not explicitly treated. This is in contrast with the psychological tradition which attributes an important role to personality in determining happiness. For example, it has been shown that pleasant and unpleasant affects have a strong genetic basis (Lykken & Tellegen, 1996) and that optimism, self-esteem, extraversion and neuroticism are all aspects of personality correlated with happiness (Diener et Al. 1997).

One particularly important aspect of personality is what psychologists call the locus of control. Rotter (1966, 1990) has distinguished between people who attribute the outcomes of their actions to internal factors such as choices made and own capacities (the 'internals') and people who tend to attribute the outcome of their actions to external factors such as fate or destiny (the 'externals'). Experiments on university students have shown for example how individuals can be clearly separated into these two groups and Rotter has devised a scale (known as the Rotter scale) to rank individuals according to the locus of control, the degree of control that people think to have on their life. One example of a ten steps Rotter scale is provided below. People may be asked on a scale from one to ten how much control they feel they have on their life and answers to such question may be used to rank individuals according to the locus of control.

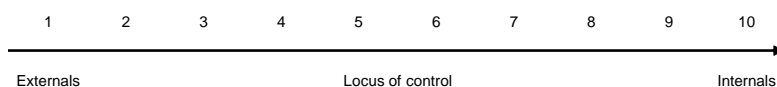


Figure 3 - The Rotter's Scale

If happiness is measured with questions on life satisfaction then we are in the sphere of remembered and perhaps predicted utility. Supposedly, people assess past achievements and failures and value future prospects and opportunities when answering a question on life satisfaction. Therefore, if the locus of control has a role in determining remembered and predicted utility, then personality has a role in determining happiness. There is some evidence on these associations. For example, Landau et Al.,(1993) have shown how the locus of control is related to memory and Langer (1983) and Strickland (1989) have found internals to be consistently happier than externals.

We should also expect the locus of control to be a regulator of the intrinsic value that people attribute to freedom of choice. The 'externals' should attribute more importance

to freedom of choice than the 'internals'. If I believe that fate alone is managing my life I will not consider having an opportunity to choose among alternatives as an asset that could improve my life. Vice-versa if I feel in control of my life and trust that my own choices will have an impact on my future life I will give a greater value to freedom of choice. The locus of control is therefore expected to affect both happiness and freedom of choice as illustrated in Figure 4 becoming a good candidate to predict happiness.

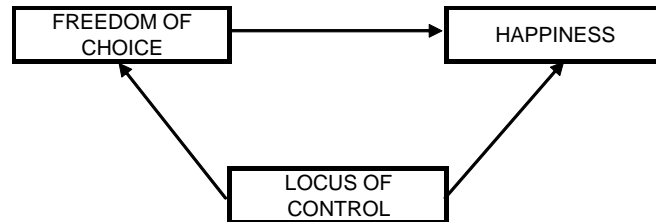


Figure 4 - Locus of Control and Happiness

Happiness researchers have noted before that inherited features such as temperament and personality are very relevant for happiness (Mayers and Diener 1995) but pinpointing what aspect of personality is more relevant for happiness has been harder. Our framework suggests that the locus of control is a good place to start from. In particular, a variable that measures both freedom of choice and the locus of control should be expected to be a very good predictor of happiness. This is the test we intend to carry out in the sections that follow after a brief discussion on the known predictors of happiness.

6 Predicting happiness

Surveys on happiness research have indicated a number of correlates of happiness such as health, education, age, income, employment status, marital status, religion or political orientation. The World Database of Happiness ¹⁰ lists hundreds of correlates of happiness found by happiness researchers in the past. Many of the findings are controversial but for some predictors there is unanimous recognition of their importance. For example, there is a wealth of evidence and little disagreement about the fact that unemployment and poor health tend to reduce happiness while marriage increases it (Wilson, 1967, Veenhoven 1996, Diener et Al. 1997, Clark and Oswald 1994, Blanchflower and Oswald 1997, Winkelmann and Winkelmann 1998).

Central to the study of happiness and utility is the role of income. If income explained happiness invariably there would be little disagreement about the use of decision utility and little difference between the classical and neoclassical interpretations of utility. However, the evidence is mixed and varies according to whether we consider covariances across people and countries or covariances across the life-cycle and time.

Evidence on the relation between happiness and income across people and countries seem to concord that the two variables are positively correlated. Individuals or countries

¹⁰R. Veenhoven, World Database of Happiness, Correlational Findings: <http://worlddatabaseofhappiness.eur.nl> (2007)

with a higher income tend to be happier (Blanchflower and Oswald 2000, Di Tella, MacCulloch and Oswald 2001, Inglehart 1990, Diener et Al. 1995). On the contrary, longitudinal studies do not find a strong positive association between happiness and income. Easterlin (1974) was one of the first to find that the increase in GDP per capita in the United States since the 1950s had not been accompanied by an increase in self-perceived happiness. This finding was confirmed by later studies on the part of the same author (1995, 2001) and by other authors for the USA (Diener et Al. 1999) and for other countries as diverse as Japan (Veenhoven, 1993), the Philippines (Mangahas 1995), Russia (Ravallion and Lokshin 2000) and the UK (Clark and Oswald 1994).

The inconsistent relation between happiness and income in longitudinal studies is generally explained with theories of relative deprivation or rising expectations. Similar theories have been elaborated in the past by psychologists, sociologists and economists alike and seem to explain well why happiness does not increase consistently with income over time. In substance, people make judgments on the relative position they occupy within a reference group in a particular point in time (Runciman 1966) or adjust quickly to changed circumstances. For example, individuals with disabilities or lottery winners are not found to be significantly different from other people in terms of happiness after a period of habituation to the new condition (Diener et Al. 1997, Brickman et Al. 1978, Brickman and Campbell 1971).

Easterlin (2001) also noticed that income and happiness do not move together over the life-cycle. People tend to recall that they were worse off in the past and generally forecast that they will be better off in the future while in fact they report the same level of happiness at different times during their life-time. To put it bluntly, people are optimist about the future and pessimist about the past. This finding applied to all age cohorts and Easterlin provides an explanation based on raising aspirations arguing that aspirations move upwards together with income during the life-cycle. Interestingly, this finding not only reinforces what the literature on longitudinal studies finds about income and happiness but is also consistent with the finding in psychological research that people are not generally good in either remembering or forecasting feelings and that they tend to undervalue the past and overvalue the future (Gilbert et Al. 1998, Loewenstein et Al. 1999).

A model of utility which includes the locus of control could also help to explain the lack of covariance between income and happiness over time and this could occur through two mechanisms. The first is via the valuing function of past and future experiences. We showed how the locus of control may affect remembered and predicted utility. If it is the locus of control that dominates these judgments relatively to experienced utility it is natural to expect that the valuing of the past and of the future will remain rather constant over the life-cycle provided that personality remains stable. The second mechanism is via income and freedom of choice. Income expands freedom of choice by definition and we showed how the valuing of freedom of choice (the intrinsic value of freedom of choice) is partly affected by the locus of control. If it is the locus of control that dominates

the determination of the intrinsic value of freedom then expanding income will not alter greatly the happiness derived by such income.

One study that made a first effort to look at the locus of control is Veenhoven (2000). In this study the author focused on the relation between freedom and happiness and devised two measures of freedom, one based on the opportunity to choose and the second based on the capability to choose. In particular, capability to choose is measured with two variables, one measuring individualistic work values and the other measuring what the author defines as 'perceived fate-control'. The author finds a positive and significant correlation between happiness and each of the components of freedom described including perceived fate-control. The relation seems to be linear and richer nations are shown to be happier and freer as compared to poorer nations.

The 'perceived fate-control' variable used by Veenhoven has been constructed from a question present in the World Values Survey¹¹ that asked respondents about their perceived freedom of choice and control over their own life. This seemed the ideal variable to test our hypothesis about freedom of choice and locus of control. The next section will illustrate more in detail this variable and the other variables used as well as the data and the empirical specification of the model.

7 Data, model and variables

We use a large data set compiled from the European and the World values surveys.¹² These surveys have been carried out since the early 1980s and question individuals worldwide on happiness, personal values, social attitudes and individual attributes. The version of the data set we use contains 267,870 observations on individuals from 84 countries surveyed between 1981 and 2004 where each country has been surveyed from a minimum of one to a maximum of four times.

The econometric specification of the happiness equation is as follows:

$$H_i = \alpha + \nu F_i + \rho C_c + \beta E_i + \gamma P_i + \delta V_i + \tau S + \epsilon_i$$

where H is subjective happiness; F is a variable that measures freedom of choice and control over one own life; C is a vector of macroeconomic country variables; E is a vector of individual entitlements such as income and work; P is a vector of personal and family

¹¹Wired at <http://www.worldvaluessurvey.org/>. Veenhoven refers to the World Values Survey 2, item 95 but this same question has been asked in all rounds of the World and European Values Surveys.

¹²Values surveys 1981-2004, integrated questionnaire version 20060423. Data can be freely downloaded from: <http://www.jdsurvey.net>. We are grateful to the Values Study Group and World Values Survey Association for creating and making accessible the EUROPEAN AND WORLD VALUES SURVEYS FOUR-WAVE INTEGRATED DATA FILE, 1981-2004, (v.20060423, 2006). Aggregate File Producers: Análisis Sociológicos Económicos y Políticos (ASEP) and JD Systems (JDS), Madrid, Spain/Tilburg University, Tilburg, The Netherlands. Data Files Suppliers: Analisis Sociologicos Economicos y Politicos (ASEP) and JD Systems (JDS), Madrid, Spain/Tillburg University, Tillburg, The Netherlands/ Zentralarchiv fur Empirische Sozialforschung (ZA), Cologne, Germany:) Aggregate File Distributors: Análisis Sociológicos Económicos y Políticos (ASEP) and JD Systems (JDS), Madrid, Spain/Tillburg University, Tilburg, The Netherlands/Zentralarchiv fur Empirische Sozialforschung (ZA) Cologne, Germany.

characteristics, V is a vector of variables standing for values; S is a vector of variables standing for social attitudes; $\alpha, \nu, \rho, \beta, \gamma, \delta$ and τ are the parameters to be estimated and ε is the error term normally distributed with zero mean. The subscript i stands for individuals and the subscript c stands for countries. The regression is estimated first on the pooled world sample and in a second stage on ten selected countries omitting the country variables. Both ordered logit and OLS models are used for the estimations. For all estimations we use the robust Huber-White sandwich estimator.

Life satisfaction is the key variable that we try to explain. The question asked is: "*All things considered, how satisfied are you with your life as a whole these days?*" Answers include a ten steps ladder where "1" is equal to 'Dissatisfied' and "10" is equal to 'Satisfied'.

The full dataset we use contains 913 variables most of which can be used as predictors of life satisfaction. In an effort to learn from the data as much as possible we first run OLS bivariate regressions between life satisfaction and all the possible regressors of life satisfaction present in the database. We then ranked variables on the basis of the R squared values. As expected, the variables with the highest R squared were proxies of life satisfaction such as happiness or satisfaction with income, family or job. This type of variables occupied the top ten positions in terms of R squared in a list of over 800 variables with one exception, freedom of choice and control over one own life which ranked in 7th place. Subjective health and income were also very relevant in this classification with the first variable in 15th place and the second variable in 25th place.

Many variables in the database are only present for some years or for some country and the number of observations available varies significantly across variables. This makes the R squared comparison across variables difficult as we compare different sets of observations. Restricting the possible predictors of life satisfaction to only those variables with at least 100,000 observations reduced the database to about a fourth of the original number of variables. Among these variables, subjective freedom ranked 3rd in terms of R squared after two proxies of life satisfaction (happiness and satisfaction with the financial situation of the household). Subjective health followed in 4th place and relative income in 8th place. Restricting further the database to variables with at least 200,000 observations reduced the data set to a further half of the variables leaving approximately 100 variables. If we exclude the proxies of life satisfaction which occupied the top two positions, the top three variables in order of importance were freedom of choice, health and income in this order.

The R-squared bivariate procedure contributed to select the most relevant variables for the specified model. The selection criteria of the final set of variables was a combination of the R squared ranking, the variables that were known in the literature to be relevant for life satisfaction, the number of observations available for each variable and the meaning that we attributed to selected variables. Below we describe the set of variables used for the estimations.

The variable freedom of choice and control over one own life (freedom for short - F) is the variable that topped the R squared ranking described above and the one used in Veenhoven (2000). The question asked is: "*Please use this scale where 1 means 'none*

at all" and 10 means "a great deal" to indicate how much freedom of choice and control you feel you have over the way your life turns out." This variable can be used as a sort of Rotter's scale but we argue that is also an indirect measure of experienced freedom of choice. Personality being equal, two persons who enjoy a different degree of individual freedom should provide different scores to this question. This hypothesis will be tested further in the paper.

We use four *macroeconomic variables* (C) to account for country economic heterogeneity. The first variable is GDP per capita estimated at Purchasing Power Parity (2000 prices). This variable is extracted from the World Bank Indicators database available on line¹³ and is the only variable which is exogenous to the database used. The second variable is the gini coefficient estimated by country using the income variable described below. The third variable is the country employment rate calculated as the number of employed people divided by the working age population. And the last variable is the country average trust in institutions. This is expected to measure the quality of the country institutions as judged by the country citizens. Using these four variables we are able to capture national wealth, the distribution of incomes, the labor market situation and the state of local institutions.

Two variables were selected to capture *individual economic status* (E). These are income and unemployment. Income is measured as self-positioning in a ten-steps income scale where the income brackets have been measured in local currency in each country. This is not self-perceived income but the positioning of individuals into income brackets. In some sense, this is a more accurate indicator than self-reported income which is known to be underreported in household surveys worldwide. That is because people are not asked to tell how much they earn but simply to say to which income brackets they belong. A categorical variable constrains the variance of the income variable as compared to a continuous variable but this is not a great shortcoming considering that the dependent variable is categorical (also based on a ten-steps ladder) and that coefficients are also estimated with an ordered logit model. We call this variable relative income because it measures the relative position in income of individuals within countries. The unemployment status is the self-reported unemployment status captured with a binary variable.

A set of variables measures *individual attributes* (P). These are sex (1=female and 0=males), age (continuous with the addition of age squared), a dummy for tertiary education, marriage status (dummy where '1' includes: 'married' and 'living together as married') and subjective health (measured on a ten steps scale).

Personal values (V) are taken into account with four variables. These include the importance attributed by individuals to family, the importance attributed to work relatively to leisure (importance of work/importance of leisure), the importance of politics and the importance of religion. All these variables are measured on a scale from one to four. The original variables assigned to one the value "very important" and to four the value "Not important at all". We reversed this order to make the variables increasing in

¹³Wired at www.worldbank.org.

life satisfaction.

Values matter for at least two reasons. One is that they contribute to define individual personalities as they are partly an expression of personality. And the second is that they contribute to determine how much importance people give to the different attributes they have. For example, being married or being unemployed have an impact on life-satisfaction but we should expect these variables to have a different impact depending on the importance that people give to family or to work.

Another set of variables captures what we call *social attitudes* (S). One variable measures on a scale from one to ten how people think is justifiable to cheat on taxes where one corresponds to 'never' and ten to 'always'. Another variable measures the political orientation of people on a scale from one to ten where one corresponds to 'left' and ten corresponds to 'right'. A third variable measures the degree of desired income inequality on a scale from one ('Income should be made more equal') to ten ('We need larger income differences as incentives'). We called this variable 'Pro inequality' because increasing values indicate an increased appreciation of inequality. A last variable measures whether people generally trust other people or not. This is the variable 'trust in people' and is measured with a dummy variable where one is 'Most people can be trusted' and zero is 'Can't be too careful'.

Social attitudes are also expected to be important for economic policies. For example, the impact of income inequality on life-satisfaction in society is likely to be affected by opinions on inequality. If I desire a society with low inequality but I live in a society with high inequality I will be less happy than a person who desires higher inequality. Trust in people may improve freedom of action and provide a sense of security which is essential to transform income into a functionality. Imagine a person with a high income but who has no trust in people. Income improves freedom of choice and opportunities but a lack of trust constraints this same freedom. Also, the variable trust in people account for the mutual trust present in society and can be considered as a measure of social capital as in Helliwell (2003).

8 The predictors of life satisfaction across world citizens

In table 1 we report the results for the multivariate and bivariate estimates made on on the variables described. In column 1 we report results for the multivariate equation estimated with an ordered logit model. In column 2 we repeat the same exercise with an OLS estimator. In column 3 we report the results of the bivariate estimates taking each regressor one at the time and using the same sample used in columns 1 and 2. This is the largest possible sample that can be used in the multivariate context and with the variables selected. In column 4 we repeat the exercise of column 3 but using the full samples available for the bivariate estimates. Comparing columns 1 and 2 allows to test the robustness of the findings using different estimators. Comparing columns 2 and 3 allows to test the robustness of the findings between multivariate and bivariate estimates.

Comparing columns 3 and 4 allows to compare bivariate estimates between the reduced and the full sample.¹⁴

Freedom shows a positive and significant sign in all four models with a rather consistent coefficient estimated around 0.4. A one step change in the ten steps freedom scale induces a 0.4 step change in the ten steps life satisfaction scale. The bivariate estimates show higher coefficients than the multivariate estimates but the impact of the variable freedom is positive, significant, strong and consistent.

GDP per capita has a positive and significant sign in all equations. The coefficient varies between 0.039 and 0.077. An increase in 1,000 USD per capita at PPP values increases life satisfaction by less than one tenth of a step. People living in richer countries are happier on average but it takes very significant changes in GDP per capita to observe significant changes in average life satisfaction. The employment rate has also a positive and significant sign in all equations as expected. A one percentage change in the employment rate changes life satisfaction by less than 2% of a step.

The gini coefficient is significant and with a positive sign using the reduced sample in the multivariate and bivariate estimates (columns 1-3) but changes sign and is significant using the full sample (column 4). The same effect is visible with the trust in institutions variable which is negative with the reduced sample and positive with the full sample. Overall, the gini coefficient has a positive impact on life satisfaction and trust in institutions has a negative impact but these results are sensitive to the size of the sample used and they are also counterintuitive. The literature on the impact of inequality on happiness is very controversial (see for example Alesina et Al., 2001) while we are not aware of studies that looked into the variable trust in institutions to compare our results with.

Income is positive and significant in all models. A change of one step in the ten steps income scale determines a change of about 20% of a step in the life satisfaction scale. Income squared is negative and significant in three of the four models which indicates a non linear relation with life satisfaction although this result is not entirely consistent. These findings are expected and consistent with other studies. People with higher incomes tend to be happier on average but the higher the income the smaller is the effect. The result for unemployment is also expected and consistent across the four models and with previous studies. Being unemployed reduces on average life satisfaction by half of a step in the multivariate context and by one step in the bivariate context.

Females are happier on average although the impact is rather small (less than 10% of a step). Also, this result is no longer significant if the full sample is considered. Age instead has a negative and consistent impact on life satisfaction with a non linear relation with life satisfaction. Being married is always positive and significant. It increases life satisfaction by about a fourth of a step. Being in poor health has a significant, consistent and negative effect on life satisfaction with an impact on life satisfaction estimated in between 0.4 and

¹⁴The difference between the full and reduced samples is explained partly by the fact that some variables are present in only some of the rounds of the surveys and partly by missing observations. Tables A1 and A2 in annex show the summary statistics including means and standard deviations for the full and reduced samples.

0.8 of a step. Again, these results are fully in line with previous studies. Tertiary education is instead a variable which is very unstable changing sign in two equations and being non significant in another equation. We cannot derive any firm conclusion on this variable.

Individual values show to be relevant factors for life satisfaction. People who give a lot of importance to family and religion tend to be happier on average. Instead people who attribute a lot of importance to work relatively to leisure are less happy. The signs of these three variables are consistent in the four models. The coefficients change significantly between the multivariate and bivariate models which confirms our hypothesis that these variables interact with other regressors. The variable which measures the importance given to politics is always significant but negative in the multivariate models and positive in the bivariate models.

Social attitudes are also correlated with life satisfaction. People who place themselves on the right-hand side of the political spectrum tend to be happier and so are the people who tend to trust other people more. Those instead that tend to consider tax cheating as tolerable tend to be less happy. The results for these three variables are consistent in the four models and, as it was the case for the values variables, they change size of coefficient significantly passing from the multivariate to the bivariate model suggesting a certain amount of interaction with other regressors. The result on political orientation is also consistent with Alesina et Al. (2001) and the results on trust and tax cheating are consistent with Helliwell (2003). The pro-inequality measure is significant in only the bivariate models and for this reason not a very robust predictor of life satisfaction.

[Table 1]

What we learn from table 1 is that the most relevant factors for life satisfaction are freedom, health, income, being unemployed, being married and age in this order. GDP per capita and the employment rate are also good predictors of life satisfaction and these findings are in line with previous studies on happiness. What is relatively new is the remarkable relevance of the freedom variable which appears to be much more relevant than variables such as income, unemployment or being married. Also relatively new is the fact that values and social attitudes contribute significantly to predicting life satisfaction and in affecting the impact of more traditional predictors vis-à-vis life satisfaction. In substance, freedom of choice, the locus of control and personality broadly defined have a very relevant role in predicting life satisfaction.

The pooled sample we used in table 1 took into account some aspects of the economic country situation captured by the four country variables described but could not take into account the full country heterogeneity. The asymptotic properties of the estimators also make estimations on large samples more likely to find significant covariances among variables. For this reason we tested the same model on ten selected countries. The purpose of this exercise is to check the consistency of the different regressors across countries which are perceived as being different in terms of economic development, culture, values and social norms. The selection of these countries was made on the basis of these criteria

as well as on the basis of the number of observations available, the size of the countries in terms of population and the geographical location. The final choice included Canada, the USA, Germany, Spain, Mexico, Russia, Nigeria, South-Africa, China and India. In terms of the number of observations, the ten countries selected represent 15.6% of the total sample and in terms of population they represent over half of the world population.

Table 2 reports the results of the ordered logit estimates made on these countries. As before we use a robust estimator and we also introduced dummies for years. That is because each country has been surveyed a different number of times and in different years. The set of regressors is the same as the one used for the pooled sample in table 1 with the exception of the country variables and of the political orientation variable. This last variable had to be omitted because was not present for countries such as China. Table 2 also includes a column which reports the number of countries where the variables are significant and one last column which reports whether the variable is significant and changes of sign across the ten countries.

There are only two variables which are consistently significant and with a rather stable coefficient across the ten countries selected. These are freedom and health. The coefficient for freedom is around 0.5 in rich nations and around 0.3 in poor nations with a positive sign in all equations. The coefficient for health varies around 0.5 but does not seem to show a pattern between rich and poor nations. Other variables which are significant in more than half of the countries considered are age, being married and the importance of religion which are all significant in nine of the countries and with consistent signs. The rest of the variables are significant in half or less than half of the countries and some of these variables (tertiary education, the importance of work relatively to leisure, the importance of politics and trust in people) change of sign cross-country when significant. Income and unemployment which are almost universally accepted as good predictors of life satisfaction are significant in only three and four countries respectively.

If we have to bet on what variables best predict life satisfaction anywhere in the world our money would probably go on freedom and health. All other variables would seem to be a less than optimal choice including many variables which previous studies have found to be consistently good predictors of life satisfaction.

[Table 2]

9 Life satisfaction & freedom

We have established with a certain degree of confidence that freedom of choice and control over one own life is the best predictor of life satisfaction worldwide. In this last section we want to address two questions which beg an answer when considering freedom as a regressor in a life satisfaction equation. The first question is whether the two variables are, in fact, proxies (we call this the 'proxies' hypothesis). The questions asked are different and relate to different objects but it could be that people perceive the two questions as

the same. We have already shown that psychologists found freedom of choice and leisure to be closely related in people's mind (Haworth et Al. 1997) and it could be that people consciously or unconsciously reply to the two questions as if they were answering the same question.

The second issue is whether freedom is a variable that relates only to freedom of choice or only to the locus of control or to both (we call this the 'double role' hypothesis). The formulation of the question would suggest that people considers both components when answering the freedom question. Also, as already discussed, research in psychology has shown how close freedom of choice and the locus of control are (Langer 1983, Strickland 1989). It is difficult to separate freedom of choice from the locus of control but we can check if the variable freedom accounts for both sentiments or for just one of the two.

We address these two themes with the estimations proposed in table 4. This time we regressed the same set of variables on life satisfaction and on freedom separately including freedom in the life satisfaction equation and life satisfaction in the freedom equation. We included ten other regressors. Two regressors (being married and importance of religion) were selected because they are expected to have opposite effects on life satisfaction and on freedom. They should show a positive sign against life satisfaction and a negative sign against freedom. The hypothesis is that marriage and religion restricts freedom of choice even if they make people feel happier. Two other regressors (the importance of child obedience and the importance of child independence) were selected because they were expected to capture the locus of control well. The importance of child obedience is expected to be a feature of 'externals' and to be negatively related to the locus of control component of the freedom variable. Vice-versa, the importance of child independence is expected to be a feature liked by 'internals' and be positively related to the locus of control component of the freedom variable. Six other variables depict individual attributes (income, unemployed, female, age, tertiary education and health) and are used mainly as controls. Comparing significance, signs and coefficients between the life satisfaction and freedom equations will test for the 'proxies' hypothesis. Checking the signs and significance of the variables in the freedom equation will test the 'double role' hypothesis.

Results in table 3 show that the variables life satisfaction and freedom cannot really be considered as proxies. Five of the eight variables which are significant in both equations have opposite signs (married, importance of religion, child obedience, child independence and female). In two other cases the variable is significant in one equation but not in the other (unemployment and tertiary education). And for the remaining three regressors (income, age and health) which are significant and with the same sign in both equations the coefficients and the z-statistics are significantly different.

The variable freedom clearly captures aspects of freedom of choice. All signs in the freedom equation are as expected. Being married which was one of the most consistent and positive predictor of life satisfaction shows a negative sign against freedom. People who are married are more likely to be happy but less likely to feel free. The same can be said for the importance of religion. This variable was positive and significant against

life satisfaction but is negative and significant against freedom. People who attach a lot of importance to religion feel happier but less free. Other three variables which may be related to freedom are also consistent with these findings. Being unemployed which is a strong predictor of life satisfaction is non significant in the freedom equation. Unemployed people are less happy but not necessarily less free. Being female which has a positive sign in the life satisfaction equation has a negative sign in the freedom equation. Women seem to be happier on average but feel less free as compared to men. Also tertiary education which we found being a very weak predictor of life satisfaction is instead a good predictor of freedom of choice. This is expected given that more education should provide more work opportunities and more freedom of choice. Two variables which instead concord in sign in both the life satisfaction and freedom equations (income and health) have the expected sign and indeed higher income and better health should be expected to improve happiness but also freedom of choice.

Finally, freedom is also a good proxy of the locus of control. In the freedom equation, the importance of child independence has a positive and significant sign while the importance of child obedience has a negative and significant sign. This is what we expected. Internals are more likely to appreciate independence as a child quality as opposed to externals who are more likely to appreciate obedience.

[Table 3]

10 Conclusion

The paper has introduced the notion of freedom of choice and locus of control among the possible predictors of life satisfaction and found a variable that captures both aspects to be the most relevant predictor of life satisfaction worldwide. This variable predicts life satisfaction better than all other predictors found in the past to be important such as income, unemployment, health or age. It is also found that other aspects that may contribute to define personality such as values and social attitudes are relevant to predict life satisfaction and to influence the role of other predictors.

Utility theories including classical and neoclassical theories and more recent contributions on the part of Amartya Sen and Daniel Kahneman do not explicitly consider the role of personality in shaping choice. This paper provides empirical evidence that a strong relation between personality and happiness exists.

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Table 1 - Life Satisfaction Equations - Pooled World Sample

Group	Var.	1 Ologit Multiv.	2 OLS Multiv.	3 OLS Bivar.	4 OLS Bivar.
Freedom	freedom	0.355 (97.68)**	0.351 (99.30)**	0.437 (123.10)**	0.412 (186.56)**
	gdp (000)	0.039 (49.57)**	0.049 (54.69)**	0.07 (91.25)**	0.077 (151.04)**
Country Economic Status	gini	0.691 (6.16)**	0.59 (4.48)**	0.382 (2.62)**	-0.986 (11.13)**
	emprate (%)	0.004 (7.77)**	0.005 (6.94)**	0.027 (45.61)**	0.02 (53.21)**
	trust institutions	-0.239 (8.53)**	-0.234 (7.04)**	-0.094 (2.58)**	0.233 (10.10)**
Individual Economic Status	income	0.141 (13.85)**	0.198 (16.72)**	0.221 (16.88)**	0.284 (32.51)**
	income2	-0.006 (6.89)**	-0.009 (9.10)**	-0.002 -1.7	-0.008 (9.79)**
	unemployed	-0.423 (17.80)**	-0.539 (19.22)**	-0.985 (31.48)**	-1.007 (50.67)**
Individual Attributes	female	0.073 (6.44)**	0.069 (5.21)**	0.044 (2.80)**	0.015 -1.51
	age	-0.05 (22.24)**	-0.057 (22.37)**	-0.031 (11.73)**	-0.032 (19.76)**
	age2	0.001 (23.53)**	0.001 (23.23)**	0 (11.76)**	0 (18.08)**
	edutert	-0.029 (2.03)*	-0.005 -0.32	0.299 (15.76)**	0.25 (19.10)**
	health	-0.44 (58.64)**	-0.493 (57.54)**	-0.776 (88.80)**	-0.794 (135.67)**
	married	0.271 (19.69)**	0.308 (19.01)**	0.224 (13.62)**	0.223 (22.09)**
Individual Values	family imp.	0.075 (5.10)**	0.083 (4.63)**	0.341 (16.79)**	0.401 (30.35)**
	work imp.	-0.069 (6.08)**	-0.091 (6.80)**	-0.394 (26.38)**	-0.41 (43.07)**
	politics imp.	-0.055 (8.69)**	-0.064 (8.64)**	0.046 (5.42)**	0.083 (14.49)**
	religion imp.	0.175 (30.08)**	0.189 (27.80)**	0.084 (11.57)**	0.015 (3.17)**
Individual Social Attitudes	taxcheat	-0.022 (8.67)**	-0.025 (8.27)**	-0.047 (13.65)**	-0.052 (23.15)**
	rightwing	0.066 (22.20)**	0.071 (21.12)**	0.108 (29.08)**	0.108 (40.18)**
	pro inequality	0.001 -0.44	0.002 -0.81	0.039 (13.48)**	0.045 (23.33)**
	trust people	0.066 (5.46)**	0.103 (7.21)**	0.516 (31.49)**	0.561 (54.57)**
	observations	96909	96909	96909	191,000<>264,000

Robust z statistics in parentheses. * significant at 5%; ** significant at 1%. Constants coefficients omitted

Table 2 - Life Satisfaction Equations (Ordered Logit-Selected Countries)

	Canada	USA	Germany	Spain	Mexico	Russia	Nigeria	South-Africa	China	India	Signif. (#)	Change sign if signif.?
freedom	0.512 (20.04)**	0.478 (21.07)**	0.475 (25.78)**	0.497 (25.11)**	0.398 (20.82)**	0.243 (13.79)**	0.234 (15.56)**	0.368 (27.24)**	0.324 (16.41)**	0.232 (16.15)**	10	no
income	-0.028 -0.48	-0.08 -1.4	0.038 -0.81	0.126 (2.26)*	0.084 -1.74	0.119 -1.68	-0.103 -1.82	0.376 (9.84)**	0.205 (2.62)**	-0.103 -1.78	3	no
income2	0.004 -0.75	0.012 (2.45)*	-0.001 -0.33	-0.007 -1.31	-0.005 -1.19	-0.002 -0.27	0.024 (4.57)**	-0.023 (6.69)**	-0.005 -0.72	0.023 (3.88)**	4	yes
unemployed	-0.493 (3.17)**	-0.19 -1.33	-1.155 (8.62)**	-0.644 (6.01)**	0.208 -1.51	-0.326 -1.51	0.066 -0.64	-0.52 (7.82)**	0.223 -1	-0.126 -1.37	4	no
female	0.028 -0.41	-0.017 -0.3	0.101 -1.81	-0.037 -0.7	0.158 (2.82)**	0.158 (2.18)*	0.123 (2.19)*	0.049 -1.14	0.267 (3.99)**	0.137 (2.54)*	5	no
age	-0.042 (3.32)**	-0.026 (2.56)*	-0.046 (4.21)**	-0.049 (4.64)**	-0.056 (4.17)**	-0.078 (5.45)**	-0.055 (3.84)**	-0.053 (5.97)**	-0.036 (2.09)*	0.001 -0.08	9	no
age2	0.001 (4.57)**	0 (4.09)**	0.001 (5.15)**	0 (4.30)**	0.001 (4.24)**	0.001 (5.72)**	0.001 (3.44)**	0.001 (6.31)**	0.001 (2.72)**	0 -0.35	9	no
edutert	-0.122 -1.25	-0.027 -0.34	0.394 (3.88)**	0.315 (2.64)**	-0.112 -1.43	0.208 -1.94	0.212 (3.42)**	-0.226 (4.03)**	0.04 -0.31	0.079 -1.32	4	yes
health	-0.45 (9.71)**	-0.466 (11.11)**	-0.641 (16.58)**	-0.426 (11.35)**	-0.284 (8.04)**	-0.417 (8.25)**	-0.471 (12.25)**	-0.413 (14.96)**	-0.342 (8.87)**	-0.502 (14.14)**	10	no
married	0.658 (7.99)**	0.565 (8.45)**	0.547 (7.64)**	0.577 (8.76)**	0.348 (5.37)**	0.361 (4.45)**	0.195 (2.64)**	0.259 (4.96)**	0.387 (3.42)**	0.117 -1.6	9	no
family imp.	0.325 (2.84)**	0.191 (2.04)*	0.172 (3.12)**	0.103 -1.52	0.025 -0.41	0.116 -1.74	0.24 -1.61	0.054 -0.8	0.118 -1.89	0.083 -1.25	3	no
work imp.	-0.184 (1.97)*	-0.213 (2.60)**	0.039 -0.55	0.043 -0.62	-0.102 -1.58	0.032 -0.52	-0.026 -0.45	-0.14 (3.71)**	0.064 -1.14	0.104 (3.24)**	4	yes
politics imp.	-0.046 -1.13	0.025 -0.7	-0.005 -0.14	-0.092 (2.99)**	-0.101 (3.21)**	-0.064 -1.61	0.034 -1.35	-0.083 (3.74)**	0.108 (2.70)**	0.027 -1	3	yes
religion imp.	0.15 (4.31)**	0.168 (5.03)**	0.149 (4.98)**	0.085 (3.00)**	0.127 (3.74)**	0.089 (2.35)*	0.342 (5.47)**	0.203 (7.45)**	-0.017 -0.32	0.129 (4.39)**	9	no
taxcheat	-0.011 -0.72	-0.045 (2.61)**	-0.028 (2.26)*	-0.019 -1.55	-0.045 (4.35)**	-0.011 -0.83	0.015 -1	-0.016 -1.52	-0.075 (2.80)**	-0.021 -1.5	4	no
pro inequality	-0.02 -1.59	0.02 -1.71	0.004 -0.35	-0.005 -0.5	0.033 (3.37)**	0.053 (3.75)**	0.026 (2.65)**	0.022 (2.93)**	0.016 -1.25	0.038 (4.75)**	5	no
trust people	0.017 -0.26	0.095 -1.63	0.354 (6.06)**	0.081 -1.48	-0.133 (2.17)*	0.13 -1.73	-0.024 -0.37	0.196 (3.66)**	0.264 (3.98)**	0.058 -1.11	4	yes
Observations	3078	3983	4430	4594	4204	2823	4263	6755	2923	4738		

Robust z statistics in parentheses. * significant at 5%; ** significant at 1%. Coefficients of years dummies omitted

Table 3 - Life Satisfaction Vs. Freedom

	lifesat	freedom
married	0.186 (18.65)**	-0.117 (11.74)**
religion imp.	0.137 (26.36)**	-0.028 (5.37)**
child obedience imp.	0.094 (9.22)**	-0.027 (2.71)**
child independence imp.	-0.066 (6.79)**	0.086 (8.89)**
scale of incomes	0.082 (38.83)**	0.023 (11.05)**
unemployed	-0.343 (18.04)**	0.002 -0.08
female	0.134 (15.00)**	-0.139 (15.63)**
age	0.005 (16.41)**	0.001 (2.71)**
edutert	0.023 -1.81	0.087 (6.90)**
health	-0.45 (73.25)**	-0.113 (18.68)**
life satisfaction	n.a.	0.324 (106.59)**
freedom	0.293 (105.49)**	n.a.
Observations	152609	152609

Robust z statistics in parentheses. * significant at 5%; ** significant at 1%
Coefficients for years and country dummies omitted

Table A1 - Descriptive Statistics (Full Sample)

Variable	Obs	Mean	Std. Dev.	Min	Max
lifesat	263097	6.62	2.49	1	10
freedom	248224	6.64	2.44	1	10
health	215997	2.25	0.93	1	5
gdp (000)	253718	12.63	9.05	0.5	66.7
gini	269495	0.27	0.06	0.0	0.4
emprate (%)	265436	58.77	13.31	0.0	92.9
trust institutions	262666	2.45	0.22	1.9	3.3
relinc	228938	4.68	2.48	1	11
unemployed	269495	0.08	0.27	0	1
female	269495	0.52	0.50	0	1
age	264839	41.24	16.33	15	101
edutert	269495	0.15	0.35	0	1
married	269495	0.63	0.48	0	1
imp_family	238246	3.86	0.41	1	4
imp_work	233484	1.28	0.61	0.3	4
imp_politics	234025	2.27	0.96	1	4
imp_religion	234563	2.90	1.08	1	4
taxcheat	246723	2.40	2.34	1	10
rightwing	193531	5.56	2.27	1	10
proinequality	217943	5.94	3.02	1	10
trust people	269495	0.28	0.45	0	1

Table A2 - Descriptive Statistics (Reduced Sample Table1)

Variable	Obs	Mean	Std. Dev.	Min	Max
lifesat	96909	6.69	2.42	1	10
freedom	96909	6.84	2.35	1	10
health	96909	2.18	0.90	1	5
gdp (000)	96909	11.71	9.08	0.54	33.45
gini	96909	0.28	0.05	0.14	0.43
emprate (%)	96909	58.68	12.51	0	92.89
trust institutions	96909	2.45	0.22	1.90	3.27
relinc	96909	4.75	2.47	1	10
unemployed	96909	0.08	0.27	0	1
female	96909	0.48	0.50	0	1
Robust z statistics in t	96909	40.44	15.58	15	99
edutert	96909	0.19	0.39	0	1
married	96909	0.65	0.48	0	1
imp_family	96909	3.87	0.39	1	4
imp_work	96909	1.27	0.58	0.25	4
imp_politics	96909	2.36	0.96	1	4
imp_religion	96909	2.94	1.06	1	4
taxcheat	96909	2.45	2.35	1	10
rightwing	96909	5.61	2.32	1	10
proinequality	96909	6.04	2.93	1	10
trust people	96909	0.28	0.45	0	1