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Determinants of Subjective Wellbeing: Comparison of Developed and Developing Countries

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Abstract

Recent studies concerning subjective wellbeing have not taken different conditions in developed and developing countries into consideration. Also, different types of factors affecting subjective wellbeing have rarely been researched together. This bachelor thesis seeks to fill the gap. Its main aim is to compare individual, economic, political and institutional determinants of life satisfaction within groups of states divided according to their level of economic development. Data from last three waves of World Values Survey are used here. I analyse dependence of life satisfaction on various determinants by ordered probit model. Results show substantial differences between the groups of states. Main results of the thesis show diminishing effect of both national and individual income with rising national income; a large difference between high and low income countries in perception of quality of government and of a concept of personal unemployment; highly appreciated democracy among high income countries; insignificance of attained education in the lower income groups; a positive effect of quality of education and health care among countries with lower national income; and a high effect of freedom of choice across all groups. The thesis points out high importance of taking levels of development into consideration when trying to isolate patterns in subjective wellbeing.

Keywords

Subjective Wellbeing, Happiness, Life Satisfaction, Development, Developed countries, Developing countries, Economics

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Abstrakt

Dosavadní studie o subjektivním blahobytu nebraly v úvahu rozdílné podmínky vyspělých a rozvojových zemích. Také různé typy faktorů ovlivňujících subjektivní blahobyt byly jen zřídkakdy studovány společně. Tato bakalářská práce se snaží vyplnit danou mezeru. Jejím hlavním záměrem je porovnání vlivu osobních, ekonomických, politických a institucionálních faktorů určujících spokojenost se životem v rámci skupin států rozdělených podle stupně ekonomického rozvoje. K analýze jsou zde použíta data z posledních tří vln World Values Survey. Závislost spokojenosti se životem na zmiňovaných faktorech je zkoumána pomocí ordered probit modelu. Výsledky ukazují na podstatné rozdíly mezi jednotlivými skupinami států. Mezi hlavní výsledky této práce patří klesající vliv národního i osobního příjmu s rostoucí hodnotou národního příjmu; veliký rozdíl mezi zeměmi s vysokým a nízkým národním příjmem ve vnímání kvality vlády a konceptu nezaměstnanosti; vysoce oceňovaná demokracie mezi bohatými státy; nesignifikance dosaženého vzdělání ve skupinách zemí s nižším národním příjmem; pozitivní efekt kvality školství a zdravotní péče v zemích s nízším národním příjmem; a vysoký vliv svobody výběru napříč skupinami. Práce tedy ukazuje, jak je velmi důležité zohledňovat úroveň rozvoje při snaze izolovat vzorce v subjektivním blahobytu.

Klíčová slova

Subjektivní blahobyt, Štěstí, Spokojenost se životem, Rozvoj, Vyspělé země, Rozvojové země, Ekonomie

Rozsah práce: 81559

Declaration of Authorship

The author hereby declares that he compiled this thesis independently, using the listed resources and literature. The author also declares that he has not used this thesis to aquire another academic degree.

Prague, May 18, 2012 Radek Halamka

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Contents

List of Figures and Tables

Introduction

Happiness is a life goal for most humans. But as well as people are often uncertain about their life goal, 'what does happiness exactly mean' and 'how can one achieve it' become everlasting questions. Besides mere philosophizing, another way emerged enabling us to get deeper into understanding of happiness. Happiness quantification is the way. It would be silly to take it as superior to philosophizing but it can provide another point of view.

The term *happiness* is relatively blurred and tricky to study as each of us seeks different things that make him or her happy. For one happiness can mean possessing a big house with a big car in a garage, for another one it can be finding true love, exercising freedom or doing good. Moreover, some people look (and perhaps also are) happier than others without any visible cause. Thus, to say what makes people happy or at least happier is not an easy task.

Nonetheless, happiness, in all its forms, has been a subject under investigation for a long long time, ancient Greek philosophers already discussed happiness in their works. But a quantitative approach was not introduced until ca. 1930s. The first ones who studied happiness in the quantitative way were psychologists who focused mainly on personal characteristics of people (Wilson, 1967).

Economists became interested in happiness long time after the initial studies. When sociological surveys got more widely available, economists could, contrarily to other social scientists, benefit from comprehensive quantitative data of various economic factors. Despite the first dating in 1970s, the real boom came in 2000s and the field still broadens.

Alongside the development, happiness proved not to be the best and only indicator, and *life satisfaction* with *subjective wellbeing* were introduced. Since subjective wellbeing has been perceived as a general term for both happiness and life satisfaction I will shift to subjective wellbeing as a wider concept from now on.[1] Further, a recent quantification of political performance or societal environment has also enabled us to study more and more possible determinants of subjective wellbeing.

[1] The term *subjective wellbeing* is used where there is no necessity to distinguish between happiness and life satisfaction. While the terms *happiness* and *life satisfaction* are used in the cases where there is a substantial difference between them and their specificity needs to be captured. Definitions and explanation in more detail follow in Chapter 1.

There would be plenty of subjective wellbeing determinants even if everyone had the same starting point and opportunities, which is obviously not the case here. In spite of the diversity, some patterns in determining sources of subjective wellbeing are observable around the world. The patterns and sources vary in terms of cultural or religious characteristics of societies. They became deep-rooted as habits, customs and traditions which despite modern impersonalizing ages still exist.

Besides the societal characteristics, economic, institutional and political structures constitute another layer of potential phenomena affecting subjective wellbeing. Through modern, although already quite distant, evolution people got more involved in the structures and they began to shape each other. Moreover, globalization contributed to high universality of such systems. A change of political system (i.e. breakdown of Eastern Bloc), liberalization of economic rules or recognition of human rights can serve as an example of such structures. Compared to the societal characteristics they develop more quickly and thus the changes are seen better.

So far, most studies involved in the area of economic, institutional and political structures attempted to isolate correlations in a sample of all available countries, although there are substantial differences between them. The differences lie primarily in a level of development, and diverse patterns determining subjective wellbeing likely hold on different levels of development. In this thesis I will examine whether there really are such differences and so previous studies missed such important phenomenon.

But since the concept of development is relatively broad, and sometimes as blurry as the happiness, there are various perceptions of development. Some determine a level of development by well-working political institutions and some by accessibility of health care and education. Since all divisions are set arbitrarily I decided to use a widely known, even though also imperfect, economic perception, which means to study determinants of subjective wellbeing among, and within, countries divided according to their national income.

Lack of studies taking the groups of countries into consideration has been caused by an insufficient number of surveys for less developed countries. Although several scholars attempted to reflect different effects of determinants regarding different level of economic development (Schyns, 1998; Helliwell & Huang, 2006) their method to divide a sample into two halves seems inappropriate to me. The reality is more complex and I assume that the most significant differences lie in extremes – the least and the most developed countries. This thesis works with a recent wave of World Values

Survey adding more developing countries into the earlier available sample which makes this type of analysis possible, despite many limitations.

The main research question therefore becomes whether and how patterns and determinants of subjective wellbeing differ according to a level of development. I apply ordered probit model on three groups of countries divided according to their economic development. The more detailed division allows me to re-examine an exchange held between economic and political determinants or reveal other patterns hidden behind an insufficient reflection of development grouping. The research could furthermore disclose new information about treating developing countries.

In the beginning of the thesis, I will focus on the blurriness of the concept of happiness and present basics of quantitative happiness analyses. In order to introduce the studies on subjective wellbeing made so far, a review of the major ones relating to the aim of this thesis follows. Variables used, their effects on happiness and methods of research are of the highest concern here. The analysis itself begins by description of data and introduction into the division used. In the end, results and conclusions are provided.

1 Definitions, Concept and Measurement Techniques

1.1 Definitions

Blurriness of terms used here and in an area of quantified analysis itself should be clarified first. In general, literature covering the topic deals with more terms than just *happiness*. *Life satisfaction* and *subjective well-being* fall within the concept as well. They are very similar but they are not the same.

A difference between happiness and life satisfaction had not been theoretically presupposed and it is rather based on empirical evidence. So the terms happiness and life satisfaction are defined mainly by their questions. The question about life satisfaction – in World Values Survey named "Satisfaction with your life" – run:

"All things considered, how satisfied are you with your life as a whole these days? Please use this card to help with your answer,"

where the possible answers are recorded as:

"1 Dissatisfied 2 3 4 5 6 7 8 9 10 Satisfied"

and the question and answers concerning happiness – in World Values Survey named "Feeling of happiness" – are:

"Taking all things together, would you say you are: [...] 1 Very happy 2 Quite happy 3 Not very happy 4 Not at all happy."

(World Values Survey, 2011)

Contrarily to those two, subjective wellbeing is not defined by a question. The term was set later as a general term comprising both happiness and life satisfaction to ease use of them.[2]

Twelve years ago, Veenhoven (2000) still proposed to use happiness, life satisfaction and subjective well-being as interchangeable terms, which was understandable in that time with the country sample he had.[3] However, there have been serious arguments since then that life satisfaction and happiness are not perceived in the same way.

[2] Some scholars use term subjective wellbeing for an index compiled from both happiness and life satisfaction (e.g. Inglehart et al., 2008).

[3] The study by Schyns (1998, p.11) showed that the correlation of happiness and life satisfaction in the contemporary country sample was 0.90.

Main evidence of the difference in measurements emerged when data from transition countries established after a breakdown of the Eastern Bloc in 1989 became available for longer time period. That enabled to conduct analysis of time trends in subjective wellbeing. Inglehart et al. (2008) studied time trends in both happiness and life satisfaction and they found that while happiness was rising after the breakdown, life satisfaction was declining. Regarding characteristics of the events under inquiry, the authors concluded that life satisfaction applies more to economic conditions and happiness rather to the political ones. Or in other words, happiness represents a realization of ideals whereas life satisfaction is a more realistic view on one's life.

The same conclusion, but based on a slightly different proof, was made by Stevenson & Wolfers (2008). They researched the difference in relation to income and found life satisfaction to be really more economically sensitive than happiness.

On the other side, Easterlin & Sawangfa (2010) put forward a case of the Republic of South Africa where surveys containing questions about both variables were conducted as well. Changes experienced after the first national full-suffrage election showed a similarity in trends of both happiness and life satisfaction. First, they largely increased in the year of election and then sharply fell down together.

1.2 Theory Behind the Concept

Subjective wellbeing surveys should bring statements about "the overall quality of his or her present 'life as a whole'." (Veenhoven. 2000, p. 267, originally in italics) In spite of using the word *present* in the quote, it is always stressed so that answers would not be biased by recent events, e.g. a purchase of a new car. The answer should not reflect just short-term emotions but rather happiness or satisfaction experienced in a longer time period.

According to Veenhoven's (2000) thoughts, different periods of life – the past, the present and the future - are taken into account while thinking about a response. And an overall feeling of subjective wellbeing consists ultimately of two parts – "'hedonic level of affect' and 'contentment'." (p.268) The former represents a sum of one's affects and the latter represents assessment of a real life in comparison to the dreamed one.

Thus, all the terms represent a certain type of utility that a person experiences. But unlike theoretical utility usually used by economists, they should reflect real personal preferences (Kahneman & Krueger, 2006). However as we could see,

subjectivity of the expressed personal preferences can cause benefits as well as problems.

1.3 Measurement Techniques, Validity and Comparability

There have been several attempts to find the right measurement of subjective wellbeing. Techniques how to do it vary and several examples from literature can be employed in order to show differences. As Easterlin (1974) described, there are two ways to ask direct questions about subjective wellbeing. Gallup World Poll was quoted posing a simple question without other explanations: "In general, how happy would you say that you are – *very* happy, *fairly* happy, or *not very* happy?" (p. 91) Another approach was introduced by Hadley Cantril who used Self-Anchoring Striving Scale technique. It consisted of anchoring the best and the worst possible life situations between which ten-level ladder is put. Then a respondent chose from that ladder (ibid.). The World Values Survey's happiness question matches the Gallup type while life satisfaction question is posed in a way similar to Gallup's but responses are recorded into a ten-level ladder with visual help of an answer card which makes it similar to the Cantril's way.

There are also other, more sophisticated, ways of measuring subjective wellbeing. Kahneman and Krueger (2006) mention the Experience Sampling Method or the Day Reconstruction Method. The former one is based on asking about current emotions during all day, the latter requires surveyed people to record emotions experienced during the day retrospectively. Then records are analysed by recognizing pleasant and unpleasant emotions and creating the "U-index as the fraction of time that is spent in an unpleasant state." (ibid., p.20) The problem of such measurements is that they are very costly to conduct and so the direct questions prevail.

Although it was an issue in first steps of subjective wellbeing literature, just few people argue about validity of the direct questions measurement these days. Validity of responses has been proven by several facts. First, a number of 'don't know's to a survey question about subjective wellbeing is permanently very low (Kahneman & Krueger, 2006). Second, claims that people rather assess how others see them were refused. Results of surveys have shown variance in subjective wellbeing within groups of people who should have been perceived as the most or the less happy. So all that refers to subjectivity of responses and a real reflection of subjective feelings (Veenhoven, 2000).

Representativeness and comparability of survey responses were also examined by several scholars. They found that subjective assessment of wellbeing is in accordance with other individual measures or one's demonstrated behaviour, e.g. friends' and relatives' evaluations (Radcliff, 2001; Frey & Stutzer, 2000) or clinical studies (Rothstein, 2010) are correlated with the responses. On national level, aggregate data on subjective wellbeing shows consistency to suicide or hypertension data which can be accounted as extreme measurement of subjective wellbeing (Helliwell & Huang, 2006; Frey et al., 2008).

International comparison of subjective wellbeing has been challenged by some critics. They have pointed out language differences and inability to translate the survey questions properly. Few checks have been carried out and the complaints were not confirmed (Veenhoven, 2000).

2 Theories

Some theories have been developed about subjective wellbeing either based on results of data analyses made so far or by an adjustment of theories from other social sciences. The basic ones are: 1) comparison theory; 2) cultural theory and; 3) need theory (Schyns, 1998; Radcliff, 2001). Although the first steps were made in accordance with comparison theory, in recent literature there is a certain trend to use mostly need theory.

Comparison theory is principally based on Easterlin's (1974; 1995) findings. They say that people determine how they are happy or satisfied with their lives in relation to living conditions of others. A level on which the conditions are usually compared is a state. Therefore the theory assumes that differences exist within states but there are no significant differences on the cross-national level.

Another concept it uses is adaptability to living situations. So a level of subjective wellbeing more or less oscillates around stable values, which is also called a hedonic treadmill. That has been proved by many examples, e. g. lottery winners or paraplegics. After short-term deviation – positive or negative – they came back to their initial level of subjective wellbeing. This concept could disqualify many studies done so far but there is an ongoing discussion whether all, some or none determinants are under influence of the adaptability and to what extent (Kahneman & Krueger, 2006).

Cultural theory proposed by Alex Inkeles or Ronald F. Inglehart supposes that there are cultural predispositions causing differences in levels of subjective wellbeing among states or nations (Radcliff, 2001). Therefore, the levels can differ but not due to objective – non-cultural – determinants. This theory is opposed by Veenhoven (2000) who alleged that a difference in reported subjective wellbeing has not been proven between cultures – but it is necessary to add that he did not support the claim with evidence or a reference.

Contrarily to the previous ones, need theory[4] allows for broader range of factors affecting one's subjective wellbeing. The mastermind of the theory is Abraham Maslow who alleged that there is a hierarchy of needs in human existence. People attempt to satisfy primarily their physiological and safety needs. When those needs are met people begin to seek 'growth needs', which could be described as more human. Moreover, it holds that "[t]he gratification of the lowest needs has […] a certain point of diminishing marginal utility, whereas gratification of higher needs is, according to Maslow, unlimited." (Schyns, 1998, p.9) That explains why there are unsatisfied people with already satisfied primary needs and why even those who seemingly do not miss anything feel unhappy. What makes them unhappy is impossibility to reach their desired needs. Thus, not only economic but also cultural, societal and human conditions play a significant role in determining happiness. As Radcliff puts a basic notion: "People will be happier in countries that do a better job of meeting the needs of the population." (2001, p.940)

3 Literature Review

Studies of subjective wellbeing had been for a long time overlooked by mainstream economics and other fields of social sciences, too. Knowledge about subjective wellbeing developed more during 1990s and since 2000s one can see a boom in subjective wellbeing research. Nowadays, it is in focus of many scholars from different fields of study and such influences contributed to broadening in determinants of subjective wellbeing (see Blanchflower & Oswald, 2011).

In connection with used theories, literature on subjective wellbeing can be divided into within-country and cross-country analyses. In a simplified way, within-

[4] Sometimes also called "livability theory". (Veenhoven in Schyns, 1998, p.9)

country analyses deal with micro, or individual, variables while cross-country analyses can cover both micro level and macro variables based on aggregate values.

A range of possible factors influencing happiness is very wide and almost every social phenomenon can affect human feelings. Sometimes, the macro level factors are not as urgent as personal experiences and rather express future expectations which people bear or describe an environment in which they live.

An example of unemployment studied by Di Tella et al. (2001) can give a more detailed explanation. The authors pointed out that being unemployed presents much more depressing situation than living in a country with a high unemployment rate. While individual unemployment represents cruel reality, an unemployment rate captures "a 'fear of unemployment' effect." (ibid., p.339) Nevertheless, a 'fear of unemployment' affects one's happiness, too. Similar micro-macro pairs also exist in other areas such as quality of health care (personal health vs. life expectancy or child mortality) and education (individual's education vs. enrolment or literacy rates).

3.1 Micro Level Variables

Micro level variables are likely more important determinants of subjective wellbeing than the macro level ones. It is not difficult to find their correlations with a dependent variable but explanation of some correlations need often an insight of psychologist or cultural anthropologist. Economic theories hardly could explain why, on average, females feel happier, though. On the other side, it does not mean that economists or political scientist should not take micro variables into account, for example effects of household income or personal unemployment are very relevant for them.

In addition, Frey & Stutzer (2002) emphasize that it is very convenient to use micro level data as controls for macro level analysis. Besides the household income and personal unemployment variables there are, of course, many other factors: age (U-shaped), gender, health, a close relationship or a marriage and education (Frey & Stutzer, 2002), a number of children (Frey et al., 2008; Tavits, 2008), religiosity (Inglehart et al., 2008) or political orientation defined on left-right scale (Alesina et al., 2003).

Effects of some micro variables are easy to explain while others can be more complicated, Frey & Stutzer (2002) made a comprehensive summary containing most of

micro variables from both the groups. Health belongs to the former group. Any type of health problem causes decline of one's mood. Moreover, it was observed that subjective perception of health problems, which will be of interest later in my analysis, has a stronger effect than objective assessment by physicians.

Women are on average happier than men. And there are many various explanations why it is so, among others, the difference is explained by "a higher genetic capacity to experience happiness or by lower aspiration levels" (Frey & Stutzer, 2002, p.55). Effects of a marriage or a close relationship are somewhat clearer. Both provide self-esteem and suppress loneliness which as a consequence has a positive effect on subjective wellbeing.

It was also discovered that subjective wellbeing decreases and then rises in age, thus it seems to have a U-shape (Frey & Stutzer, 2002, p.53). That is often linked with loosing of ideals in youth, reconciliation around age of 40 and an increase in subjective wellbeing afterwards. Age is not the only one of variables having a U-shape, a religiosity expressed by importance of God in one's life is another example. A U-shaped relation says that atheists and very religious people are happier (Frey & Stutzer, 2002). Besides strong religion, even atheism can produce strong belief either in oneself or in something else and it seems that those people who are doubtful in religious terms are also unhappier (Inglehart, 2010). However, an effect of religiosity is difficult to grasp. As Inglehart et al. (2008) claim, less happy people tend to become religious so that they get a hope and at the same time happy people living in modern societies leave religion.

Household income was researched together with national income by Easterlin (1974). Contrarily to national income, a household income shows relatively unambiguous results. There is a clear positive relation between subjective wellbeing and a level of household income.

On the other side, an effect of education is often found as insignificant which could be caused by its indirect contribution to subjective wellbeing through other variables. E.g. educated people have usually better opportunities to earn more money and so the effect of higher education is stolen by household income variable. On the other side, educated people are also more reflective about their life situation and more sensitive to negative changes in their surroundings (Frey & Stutzer, 2002).

Oswald (1997) and Di Tella et al. (2001) found a large negative effect of personal unemployment in Western societies. What is, however, more important is that experienced distress was not probably caused by a drop in one's income but rather by

other non-pecuniary causes because “an enormous amount of extra income would be required to compensate people for having no work.” (Oswald, 1997, p.1821)

Besides the conventional micro variables described above, there are others which reflect subjective perception of society. Inglehart et al. (2008) introduced a freedom of choice variable. Using a framework of needs theory they stated that higher economic security shifts one’s “emphasis from survival values toward self-expression and free choice.” (ibid., p.266) So a positive effect of freedom of choice should be increasing with a level of economic development. A similar determinant is a variable of social trust which has been primarily used as a mean value for a country-year unit (Rothstein, 2010). But it is of the same relevance on micro level –friendlier surroundings, whether on national or individual level, should have a positive effect on one’s subjective wellbeing.

3.2 Macro Level Variables

3.2.1 National Income and Other Economic Determinants

National income is a macro level variable researched for the longest time. A pioneering article about happiness by Easterlin (1974) studied more or less rich countries which caused that the author did not find a larger effect of national income. Following works by Frey & Stutzer or Layard came up with a concept of a satiation point. After exceeding a satiation point which most likely lays somewhere between $10,000 (Frey & Stutzer, 2002) and $15,000 (Layard in Stevenson & Wolfers, 2008, p.22) national income loses its effect.

However, a recent extensive study by Stevenson & Wolfers (2008) did not prove existence of the satiation point. They (and also Inglehart et al., 2008) rather suggest using logarithmic function which reflects diminishing dependence between subjective wellbeing and national income. Or in other words, marginal effect of each extra percentage point of GDP per capita is all the time constant. Thus, a level of national income matters more in low income countries than in the high income ones.

Although a positive relation between subjective wellbeing and income is quite well-established by evidence of cross-section data, Easterlin & Sawangfa (2010) found no such relation in time. They studied developing countries, which should have been more sensitive about economic growth, and even among them economic growth did not

imply higher subjective wellbeing. As an explanation can be taken an offsetting effect of other economic and non-economic variables or adaptability of people.

A distribution of national income is another determinant under scrutiny. Its negative effect varies, as Alesina et al. (2004) showed, according to cultural characteristics of a state or a region. This diversity was described by example of Europe and the U.S. In total, happiness of Europeans was affected by inequality more than the one of Americans which reflected perceived social mobility in those regions. While in Europe the poor and the leftist suffered the most from the unequal income distribution, in the U.S. it was the opposite – the rich were the most affected by a negative effect of inequality.

Bjørnskov et al. (2008) showed that economic openness[5] and price level of investment[6] are positively related to happiness. Openness should represent international interconnection of national economy which "imply higher welfare due to international price levels and greater variety of goods, both implying an increased ability to make purchases closer to one's preferences" (ibid., p.8) and an investment price level should reflect a quality of business environment within a country.

3.2.2 Democracy and Transition

Perhaps the second most discussed determinant of subjective wellbeing is a level of democracy. Democracy provides a lot more than just franchise. In extreme, it is good means of avoiding famines (Sen, 2000) which can raise one's feeling of security and also a level of subjective wellbeing, especially in countries with lower national income. However, a relation between subjective wellbeing and democracy is more complicated. If starving people established democracy they would not probably suffer hunger anymore, but it does not mean that they would feel happier or more satisfied with their life, as evidence shows.

Contrarily to a positive effect of high levels of democracy, experiencing low levels of democracy or transition to democracy have rather a negative effect on subjective wellbeing (Helliwell & Huang, 2006; Inglehart et al., 2008).

[5] Openness is defined as exports plus imports divided by GDP per capita (Heston et al., 2011).
[6] Price level of investment is defined as PPP over investment divided by a national currency exchange rate to US$ (Heston et al., 2011).

Transition countries formed after breakdown of the Eastern Bloc showed no increase in levels of life satisfaction (Schyns, 1998; Inglehart et al., 2008). As Inglehart et al. (2008) explained it, the breakdown meant a loss of established political, economic and social structures and a large increase of uncertainty which as a consequence probably outweighed a positive effect of newly acquired freedom.

However, there are other positive consequences of democracy besides avoiding famines such as high gender equality and social tolerance of minority groups. (Inglehart et al., 2008). And further, tolerance is connected with social trust of people which express one's optimistic approach to the future. Although a direction of causation is not established, the fact is that social trust is three times higher in Nordic countries than the world's average (Rothstein, 2010). And it is almost common knowledge that these countries excel in subjective wellbeing values.

Democracy is not an unbeatable determinant of subjective wellbeing, though. A proof can be found in comparison of China and India, the two most discussed developing countries. In China there is a lack of democracy and freedom paid by rapid economic growth. And what is more, as Sen (2000) pointed out, the growth was triggered by state investments in education and health care which are all together well-known determinants of happiness. Underdevelopment of public infrastructure and thus lower economic performance in India were not balanced out by a higher level of democracy. Country means of life satisfaction were one point higher in China (in 2007) than in India (in 2006) (Inglehart et al., 2008).

3.2.3 Political and Economic Freedoms

A concept of democracy is strongly interconnected with freedoms so let us go through literature which has been dedicated to the freedom issue, since many scholars (Schyns, 1998; Kim & Kim, 2011; Veenhoven, 2000) have dealt with the problem. Freedom House's indices of Political Rights (PR) and Civil Liberties (CL) were primarily used as political freedom variables. Whereas a strong relation was found between happiness and a level of freedom among countries classified as 'free', there was not a significant effect among the 'restricted' ones (Schyns, 1998).

Veenhoven (2000) dipped deeper in the freedom issue. In his study he described overall freedom as a possibility to choose, which requires both an opportunity and a capability to make a choice. The opportunity depends on extent of political (PR, CL),

economic (e.g. free trade policy) and personal (e.g. religion, marriage) freedoms. The capability is determined by education, information, fate-control and work attitude. Veenhoven concluded that, after controlling for economic performance, economic freedoms are significant determinants under the condition of low capability to choose and political freedoms in the case of high capability to choose. However, Frey & Stutzer (2002) cooled down the results pointing out that the relation could be inverse because happier people might be "politically more active and therefore achieve more freedom." (p. 149)

In addition, studying political participation (Frey & Stutzer, 2002) did bring the same results, thus a significant positive correlation. Non-voters had lower level of happiness than voters and voters of the winning party were the happiest (Tavits, 2008). But that still did not answer the question about the direction of causality.

3.2.4 Other Political Determinants

Corruption should definitely belong among political factors determining subjective wellbeing, since it is often the first thing that comes into one's mind when politics or politicians are mentioned. Tavits (2008) gave a proof that corruption has a significant negative effect on subjective wellbeing which even suppressed effects of inflation and unemployment. Furthermore, Rothstein (2010) added that the negative effect can be transferred both directly and also indirectly – through a decline in a level of social trust.

Quality of government closely relates to corruption. Helliwell & Huang (2006) and Ott (2010) studied quality of government on two variables[7] composed of Governance Matters partial indicators. And following the name of the index, they proved that governance really matters. After halving examined countries according to their national income, Helliwell & Huang (2006) saw that citizens of richer countries appreciates participation the most while in poor countries it is a strong but fair government what makes them happy. The authors further observed that within a state the poor also suffer from corruption more than the rich. Thus, a good government has the largest effect on the poor in low income countries. A negative effect of majority

[7] The two variables (and their indicators) were: GOVDEM (Voice and Accountability, Political Stability) and GOVDO (Governmental Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption) (Helliwell and Huang 2005).

system and preference of presidential system in richer countries count among other outcomes of that study.

Most of studies concerning quality of government find quantity of government as less important for subjective wellbeing. As Bjørnskov et al. (2007) described, excessive government spending has a negative effect on citizens' life satisfaction. However, a deeper look at government spending could reveal more complicated relations as Kim & Kim (2011) suggested. They identified a share of education budget on governmental spending as having a positive effect on life satisfaction.

3.2.5 Societal characteristics

An individualism-collectivism index has been used many times as one of determining cultural factors. Diener et al. (1995) explained extreme points of its scale as either relying on oneself in achieving individual goals or relying on others and achieving goals for a group. Although it may be against someone's thought, individualist societies are happier (Schyns, 1998; Veenhoven, 1999; Radcliff, 2001). Which implies that dependence on others is likely limiting for most people.

Cultural analyses providing data have been made by Triandis (in Diener et al., 1995) and Hofstede et al. (2010). Whereas Triandis' data are quite limited, Hofstede et al. cover large number of countries. However, indices for some states, e.g. those of Sub-Saharan Africa, are mentioned on a regional level instead of a state level. Another problem could be that the indices are only available for one point in time. If we take culture or some societal habits and patterns as invariable in time, the problem would not be that significant. However, I would say that this cultural aspect changes by development and, especially in some lower income countries, there was a huge leap forward which certainly affected a perception of societal habits.

Fractionalization within a state can cause social conflicts which may influence subjective wellbeing of citizens. Helliwell & Huang (2006) found negative relation between an ethno-linguistic fractionalization and subjective wellbeing in countries with lower income level and with worse quality of government. Religious fractionalization did not prove to be significant. Fractionalization indices were made by Alesina et al. (2003) and based on Herfindahl index. They reflect "the probability that two randomly selected individuals from a population belong to different groups." (Alesina et al., 2003) A problem could be that the index of each country was taken in a different year – the

range goes from year 1983 (e.g. Ethiopia) to 2001 (e.g. Singapore). Which could cause the same problems as in the case of individualism-collectivism index.

Not only indices brought from outside sources could be taken as values of macro level determinants. Country means of some survey responses can work well, too. Inglehart et al. (2008) using data from the World Values Survey took means of importance of God as proxies for country religiousness. They proved that to a certain extent it can explain an upward deviation in subjective wellbeing of Latin American countries. They achieved higher levels than one would expect according to their economic and political situation.

3.2.6 Violence

Curiously, there are only a few studies about effect of violent conflicts on subjective wellbeing. One of the few is a paper by Frey et al. (2008) who studied impact of terrorist attacks in France and British Isles. They found a significant effect of a number of incidents and fatalities. Even though terrorist attacks cannot be usually anticipated they found a sign of adaptability – the effect was smaller in Britain where there were more terrorist attacks than in France.

Further, Wills-Herrera et al. (2011) examined perceptions of insecurity in a case of rural conflict in Colombia. They focused on personal, economic and political insecurities, and also violent events were included in the analysis. Findings of that study can be surprising: "violence facts have a limited influence over perception of insecurity." (ibid, p. 95) The authors proposed that people adapt to the insecurities and develop strategies to cope with the insecure situations. Social capital significantly moderates a negative effect of a perceived insecurity.

4 Methods

4.1 A Model Matching the Aim of Study

Sometimes efforts to report significant relations had seemed to be of higher importance than the use of relevant variables and econometric means. Majority of scholars had focused only on the variables of their interest and had not studied their effects in relation with additional variables, as Bjørnskov et al. (2008) pointed out. The

authors also expressed objections about trustworthiness of those results. In fact, the paper by Bjørnskov et al. (2008) is the only work I found which compares determinants from various fields of study.

The authors have studied a large amount of political, economic, institutional and human developmental/cultural factors together. This approach differs from other studies which use other variables rather as controls than fully fledged variables (Helliwell & Huang, 2006). Focusing on one phenomenon is nothing bad and it can produce very valuable results but considering the fact that the reality is very complex there should be more studies putting determinants into wider context.

Another dimension on which methods can differ is a division of the sample into various sub-samples. Bjørnskov et al. (2008) researched differences across groups in society so they divided their dataset according to household income, gender, right-left political scale. Closer to my intended division are studies of Helliwell & Huang (2006) or Schyns (1998). However, they just divided their dataset into two halves to see differences. Although it can also produce interesting results, it does not reflect the real distribution of countries according to their national income.

This thesis intends to fill the gap I see in recent subjective wellbeing literature. By a division into three groups according to real economic classification, not according to half of dataset, and by an inclusion of wider spectrum of determinants I seek my model to reflect the reality properly.

4.2 Econometrics

Econometric methods have been developing since initial studies. The first ones about happiness used very simple measures to assess effects of its determinants (e.g. Wilson, 1967) while today a quite sophisticated method of multilevel analysis is used.

The part of subjective wellbeing literature concerning national income effect has used particularly bivariate econometric models and has not covered more variables in it (Easterlin & Sawangfa, 2010; Stevenson & Wolfers, 2008). There could have been more explanations why it was so. Running a simple regression of subjective wellbeing on national income can make understanding of effects clearer or, what should be considered as well, it can make an outcome more significant. When looking at other studies one can find that after including additional variables, the income loses its

privileged position, primarily among rich countries (Bjørnskov et al., 2008; Inglehart et al., 2008).

But there is another issue of which one should be aware of. Some variables, such as democracy, do not have a direct connection with national income but some variables do. Then they can act as a channel of a national income effect. Although there would be a real effect of national income on subjective wellbeing, the effect would be channelled through other variables of which performance depends on a level of national income and statistical significance with a size of its coefficient would diminish. For example certain size of a national income effect can be stolen by lower negative effect of bad health. The link is as follows: an increase of GDP p.c. makes availability of good health care more likely and so illness does not have too depressing effect since one knows that recovery will not take a long time.

Including more variables into a model raised more problems, though. There are several methods of researching data which strongly depend on a research question. One of the easier methods is to use only aggregate data and country means of subjective wellbeing (e.g. Oswald, 1997; Schyns, 1998; Inglehart et al., 2008). There are not serious problems to use ordinary least squares (OLS) method without many adjustments. But when one wants to touch also on individual level, this method is not sufficient any more.

Combining micro and macro level data can cause substantial problems, particularly with unreliability of standard errors. Di Tella et al. (2001) tried to avoid the problems by employing two stage regression to estimate their model. In the first stage, they ran an OLS regression of life satisfaction on micro level variables and second, they used mean residuals from the first equation as dependent variables to run regression on macro level variables. A division into the two regressions does not allow variables to affect each other and ascribes a priority to the micro level variables.

Effects of micro and macro variables can be estimated together in one model but a model has to comply with it. As it was outlined above, use of macro variables goes with a problem of interrelated error terms. The problem is caused by constancy of macro variables within a country unit. However, econometric techniques used in panel data analyses provide serviceable means for a correction.

The most used option, when applying a cross-sectional regression, is to cluster data by country-year sample (Helliwell, 2003) where a concept similar to fixed effects is applied. The idea is that a certain part of error term is correlated within the group. By

switching an usually applied time dimension for a country-year figure $c = \{1, 2, ...k\}$ a suitable equation emerges: $y_{ic} = \beta_{ic} x_{ic} + a_c + e_{ic}$, where $i = \{1, 2, ..., n\}$ is a number of observation, x_{ic} represents a vector of variables and a_c is an error term which causes the correlation while e_{ic} is an independent error term.

The correlation can cause that reported standard errors are substantially smaller than the real ones. Such error term correction should be performed even if one studies only micro level variables on groups of interrelated individuals. By addition of macro level variables a necessity to correct the errors rises because a repetition of the same values of macro variables increases their significance (Moulton, 1990).

Although there are almost no additional assumptions for using the clusters, the most important seems to be a total number of observations and a number of clusters in a sample. Exact numbers differ but as Kézdi (2004) concluded, a small number of clusters within a sample is not as problematic as if a total number of observations is small. However, the more clusters in a sample the better estimate of standard error.

The most recent econometric approach used in subjective wellbeing analyses is multilevel modelling. Individuals (using micro variables) are treated in level 1 and countries (using macro variables) in level 2, continuing further cultural areas or continents could be included in next levels – a rule is that the lower level is always nested in the higher one. A multilevel approach uses, contrarily to the clustering, a concept similar to random effects.[8] A random intercept and random slopes can be included in equation so that they reflect differences between countries and solve the error term correlation problem. A comparison of the cluster and multilevel method shows that the multilevel fits 'clustered' data better that the clustering which often over-reports significant values (Cheah, 2009).

Characteristics of a dependent variable should be also taken into consideration. Since both happiness and life satisfaction are ordinal, the mostly used is ordered probit model. The main reason here is that a distance between two adjacent outcomes is not of the same size. In other words, if we have a dependent variable with values from 1 to 10,

[8] A level 1 model is $y_{ic} = \beta_{0c} + \beta_{1c} x_{ic} + \varepsilon_{ic}$, where x_{ic} represents a vector of first level variables, $i = \{1, 2, ..., n\}$ stands for an observation, $c = \{1, 2, ..., k\}$ for a country and ε_{ic} is an error term.
A level 2 is hidden in betas: $\beta_{0c} = \gamma_{00} + \gamma_{01} z_c + \delta_{oc}$ and $\beta_{1c} = \gamma_{10} + \gamma_{11} z_c + \delta_{1c}$, where z_c are second level variables and deltas are disturbances. Put together the simple two-level model looks like this: $y_{ic} = (\gamma_{00} + \gamma_{01} z_c + \delta_{0c}) + (\gamma_{10} + \gamma_{11} z_c + \delta_{1c}) x_{ic} + \varepsilon_{ic}$ (Steenbergen & Jones, 2002).

the change from 2 to 3 need not to be just as demanding as the change from 9 to 10. An ordered probit model transforms original outcomes into probabilities of achieving the outcomes. That also causes that real partial effects cannot be obtained directly from reported estimates but marginal effects have to be computed.

From the theoretical facts described in this chapter it seems that the best means for analysing is a multilevel ordered probit model. However, practical realization of the theorized is unexpectedly complicated. Multilevel models are very demanding on computational hardware, especially in the case of ordered dependent variable and large dataset. Also statistical software is hard to get, the software used in some mentioned studies (MLwiN, HLM) is expensive. The only freely available program for multilevel modelling is STATA program named *gllamm,* but in this very case the large dataset and model of more variables caused that computation could not make sufficient approximation so that the estimation come to an end.

Thus, instead of the multilevel model I use an ordered probit model containing both micro and macro variables with clusters according to country-year units. It should report estimates with certain accuracy and show which determinants in each group matters. However, since real effect of coefficients differs regarding a distribution of cutpoints which vary across the groups, ordered probit models are not ideal for comparisons. Referring to conclusion of Ferrer-I-Carbonell & Frijters (2004, p.21) who did not find large differences between results using ordinality or cardinality, I use auxiliary regressions using ordinary least squares to compare sizes of effects across the groups. Although an insignificance appears in some cases,[9] most of the coefficients reported have very similar both magnitude and statistical significance as the ordered probit estimates.

5 Data

Different measurements of subjective wellbeing, described in Chapter 2, were not the only things under consideration when I was choosing which data source for dependent variable should be used here. There were other characteristics which make some datasets more usable than others, e.g. a number of countries covered in survey, a distribution of those countries according to their national income per capita or whether a

[9] All the variables I compare using the OLS satisfy 10% significance level.

given dataset was used in previous surveys and critically reviewed. And last but not least, availability of dataset played an important role.

Taking these things into consideration, the World Values Survey met the requirements the best. It covers most of the world's population, it is freely available and since World Values Survey has been broadly used in previous studies its shortcomings have already been recognized by other authors.

5.1 Country Sample

The World Values Survey as my basic data source contains a dependent variable and all micro level variables used here. Although I would like to use as much data as possible there are some limitations which do not allow me to do so. After all necessary cuts, my dataset contains waves three, four and five of the World Values Survey.

Because of non-representativeness of survey coverage, Stevenson & Wolfers (2008) were forced to drop several country-year samples from their analysis. They made a list of the problematic surveys which includes: Argentina (all except fourth wave), Bangladesh (third wave), Chile, China (all except fourth wave), the Dominican Republic, Egypt, India (all except fourth wave), Nigeria (all except fourth wave), Northern Ireland (because of missing GDP data), Pakistan (third wave), South Africa (first wave) (ibid., Appendix B). I stuck to their list when forming present dataset.

Besides the variables provided by the World Values Survey, I had to deal with availability of macro level explanatory variables. The main source of the economic ones, the World Bank's database does not encompass all values of macro level variables needed to match available country-year units. Due to their unavailability, I had to drop Andorra, Puerto Rico and Taiwan from the dataset.

Another problem was caused by limited availability of desired political variables since The Worldwide Government Indicators are available only since 1995. However, as I had to drop some countries due to non-representativeness there were only 18 country-year units left from before 1995 and what is more, the number of low income countries did not decrease. Thus, although the lost is considerable, it is not critical.

To keep the dataset as large as possible, I sometimes used values which did not exactly match the year of survey. I was aware of possible bias caused by unsuitable data and I substituted missing data sensitively. In most of the cases I used a value for adjacent year or a computed value according to distinct trend of a given variable.

5.2 Developed vs. Developing Countries

To pursue the aim of my thesis I needed to divide countries in my dataset into groups according to their level of development. As I mentioned in the introduction a definition of developed and developing countries is vague and problematic and classification systems are often made arbitrarily (see Nielsen, 2011). I was considering using either an economic division based on values of national income or a division according to Human Development Index (HDI). Here are some reasons why I chose the former.

For economic division, classification according to the World Bank is mostly used. Countries are divided into four groups according to 2010 GNI per capita using Atlas Method (World Bank 1):

1) Low Income 2) Lower Middle Income 3) Upper Middle Income 4) High Income Countries.

As well as in initial happiness literature, even here one could criticize the focus purely on economic factor. Another classification system taking other values into consideration is based on the Human Development Index (HDI) created by United Nations. Countries are classified according to their performance in three, equally weighted, dimensions - health, education and living standards (Nielsen, 2011; United Nations Development Programme). The ranking is following:

1) Low Human Development (HD) 2) Medium HD 3) High HD 4) Very High HD.

However, the HDI division has several problems. There are no HDI figures for some countries from my dataset and a distribution of country-year units into groups is very strict in extreme values (see Table 1). On the contrary, the World Bank division covers all country-year units under analysis and its distribution better suits my purposes.

According to the World Bank's terms, low income and both middle income groups are denoted as *developing* (World Bank 2). Since I assumed that the most significant differences would lie in extremes, I made use of the more detailed division. Finally, I use adjusted a three groups division consisting of high income and low income groups and a merged middle income group.

WB: Income	*No. of country-year units*
High income	40
Upper middle income	27
Lower middle income	47
Low income	22
Total	136
UN: HDI	No. of country-year units
Very High Human Development	3
High Human Development	35
Medium Human Development	74
Low Human Development	10
Total	122

Table 1: Distribution of country-year units according to economic and HDI divisions

5.3 Dependent and micro variables

There have been questions asked about both possible dependent variables available in the World Values Survey - happiness and life satisfaction. Although happiness question has changed a few times, life satisfaction question has been invariable in time. But life satisfaction measurement is not perfect, either. There was a change in a position of the question between third and fourth wave – a question about financial satisfaction was moved before the life satisfaction one. Some scholars had pointed out that if a question about financial satisfaction precedes a question about life satisfaction it could cause that responses to the latter are affected by the former. However, according to Easterlin & Sawangfa (2010) it did not cause significant bias. Responses to a life satisfaction question are also recorded on a larger scale than happiness responses so the measurement should be more sensitive to one's opinion

(Easterlin & Sawangfa, 2010). For these reasons I use life satisfaction as dependent variable in the thesis.

A range of questions asked during the WVSs is vast and a scale of answers, as well. I chose primarily the variables previously studied and proved to be significant. Those contain basic demographics as well as personal beliefs; summary of used variables is in Table 2. For better interpretation of results, I created several dummies to capture only desired options from a wider scale of responses to a given question and rescaled the variables of which a respond scale begins from 1 so that now it starts from 0.

Nickname: *Name of original variable*	*Question or description of a newly created variable*
Life satisfaction: Satisfaction with your life	All things considered, how satisfied are you with your life as a whole these days?
Health: State of health (subjective)	All in all, how would you describe your state of health these days?
Age: Age	This means you are __ years old.
Female: Sex	Sex.
Unemployed: Employment status	A dummy for being unemployed. [10]
Married: Marital status	A dummy for being married or living together as married. [11]
Distrustful: Most people can be trusted	Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people? [12]
Household income: Scale of income	A three-level variable for low, middle and high household income.[13]

[10] All offered answers are: "*full time job, part time job, self employed, retired, housewife, student, unemployed and other."* (World Values Survey, 2011)

[11] All offered answers to the question about marital status are: "*married, living together as married, divorced, separated, widowed, single*." (World Values Survey, 2011)

[12] Social trust is a dummy variable, the answers are 0 – Most people can be trusted; 1 – Need to be very careful. (World Values Survey, 2011)

[13] Household is measured on a ten-point ladder where the points reflect deciles of societal income distribution. To ease an interpretation I merged the deciles into three categories: low (1^{st} - 3^{rd} decile), middle (4^{th} – 6^{th}), high (7^{th} – 10^{th}).

Nickname: *Name of original variable*	*Question or description of a newly created variable*
God: How important is God in your life	How important is God in your life?
Choice: How much freedom of choice and control	Some people feel they have completely free choice and control over their lives, while other people feel that what they do has no real effect on what happens to them.
Education: Highest educational level attained	Dummies for completed primary, secondary and tertiary educational level.

Table 2: Used micro variables

5.4 Macro variables

5.4.1 Economic area

From the literature review could be seen that there is a lot of macroeconomic variables which have been studied. Economic data in this thesis are taken from the World Bank database and Penn World Table. The economic variables included in my model are GDP per capita based on purchasing power parity, investment price level relative to US, inflation and openness.

Although it could be deduced from the literature review, for the sake of completeness, I summarize hypothesized effects of included variables regarding the division. Using the suggested logarithmic form of GDP p.c. I attempt to capture the diminishing positive effect of national income. The effect of the variable will probably weaken from low income group to high income group.

Then I expect inflation to have a negative effect and since it is one of the macro level measures which people feel in everyday life I suppose it will be significant. Its effect could have the opposite trend in comparison with national income. There is one outlier in the sample with inflation rate higher than 1000% (Bulgaria in 1997) and since all other inflation rates are lower than 200%, I omit the whole country-year unit from regressions.

Both an investment price level describing a level of business environment and openness showing a links to international markets and their benefits should have positive effects on life satisfaction. But I cannot guess whether any trend would appear among groups.

5.4.2 Politics, Policy, Polity

It is very difficult to distinguish particular political determinants. In the end, I chose Democracy index from Polity IV Project (Marshall et al., 2011), government spending as a share of GDP p.c. (Heston et al., 2011) and a Quality of Government[14] measure compounded from indices of the Worldwide Governance Indicators (Kaufmann et al., 2010). In addition, I apply dummy variable for post-communist countries.

I would prefer to divide the Quality of Government into two variables, let us describe them as Government Efficiency and Government Justice[15] indices, representing different streams of governmental performance which should be recognized and treated separately. However, the reality does not show such difference – there is high correlation among all particular indices (see Table 3). To avoid a multicollinearity problem I use only the Quality of Government variable.

Variable	*DEM*	*GOVSP*	*QOG*	*GOVJUS*	*GOVEF*
DEMocracy	1	-0.1648	0.6056	0.5707	0.6310
GOVernment SPending (% of GDP p.c.)		1	0.0048	0.0296	-0.0242
Quality Of Government			1	0.9900	0.9865
GOVernment JUStice				1	0.9536
GOVernment EFficiency					1

Table 3: Correlations among political variables on full sample

Referring to the literature review there should be a certain positive effect of democracy among high income countries. On other levels it is uncertain whether democracy would show significant values but the effect should be positive since negative effects of transition should be captured by a post-communist dummy. A mature democracy is meant by author of Polity IV project as "one in which (a) political

[14] The Quality of Government is just renamed GOVDO variable firstly introduced by Helliwell and Huang (2006).

[15] Government Efficiency is a country's average of Government Effectiveness and Regulatory Quality indices and Government Justice is the average of Rule of Law and Control of Corruption indices.

participation is unrestricted, open, and fully competitive; (b) executive recruitment is elective, and (c) constraints on the chef executive are substantial." (Marshall et al., 2011, in Dataset User's Manual) The government spending completes the political variables, it represents a quantity of government of which an effect is usually negative but its performance regarding groups is not estimable.

5.5 State provided public services and security

Enrolment rates represent possibilities to get better education which then leads to higher opportunities to get a job and also to higher personal freedom. Studying effects of primary, secondary and tertiary education enrolment rates, Bjørnskov et al. (2008) found that the most significant is primary education and I would expect the same result, especially among developing countries.

Life expectancy is an appropriate proxy for quality of state provided health care. The higher quality of health care the happier people should be since personal health is one of the most significant determinants of happiness.

6 Results

The intention of my model is to discover differences in patterns and determinants among development groups. If an effect of economic variables vanishes out with a higher level of national income and the effect is overtaken by other determinants or if there are some other trends. Thus, I ran the life satisfaction model on full dataset containing all country-year surveys, and then on samples according to the division into three groups determined by national income (see Table 4). I focus on description of how individual variables vary across the groups and significance and strength of aggregate variables within the groups.

Since the dependent variable values range from 1 to 10 it is inefficient to enumerate marginal effects on each outcome. Thus, I computed marginal effects at probabilities of outcomes $y = \{2, 6, 10\}$ to capture real effects of variables (see Appendix C). For comparison between groups, I use coefficients of the mentioned auxiliary ordinary least squares (OLS) regression (see Appendix B).

Life Satisfaction	*Full Sample*	*Low Income*	*Middle Income*	*High Income*
	β	β	β	β
Health	-0.28473***	-0.32186***	-0.25405***	-0.36430***
Age	-0.02733***	-0.02480***	-0.02300***	-0.02928***
Age^2	0.00032***	0.00027***	0.00027***	0.00036***
Female	0.08021***	0.06714***	0.09613***	0.03526**
Unemployed	-0.19395***	-0.06369	-0.22549***	-0.24765***
Married	0.17241***	0.05709*	0.16940***	0.31774***
Distrustful	-0.07838***	-0.10235**	-0.06590**	-0.10063***
Choice	0.13949***	0.11617***	0.13332***	0.17977***
God	-0.03227***	-0.00523	-0.03497**	-0.02389**
God^2	0.00524***	0.00137	0.00506***	0.00587***
Household Income	0.19206***	0.30339***	0.20593***	0.11616***
Primary Education	0.05221	-0.02207	-0.00377	0.15169*
Secondary Education	0.06134	0.05747	-0.03483	0.18551**
Tertiary Education	0.01485	-0.01779	-0.01467	0.11046
Quality of Government	-0.11537	-0.42360**	-0.09693	0.13648**
Government Spending	-0.00785	0.01355	-0.0071	-0.00583
Democracy	0.02187*	0.01779	0.03601**	0.13083***
Post-communism	-0.33786***	-0.24337*	-0.41300***	-0.07984
log(GDP p.c.)	0.13707***	0.29658**	0.20207***	-0.09992
Investment	0.00062	0.00778**	-0.00026	0.00481**
Inflation	-0.00163*	-0.02124***	-0.00103	-0.00206
Openness	0.0001	0.00147	-0.00107	0.00306***
Prim. Educ. Enrolment Rate	0.00534**	0.00550**	0.00323	-0.00575
Life expectancy	0.01058**	0.01454***	0.01669**	-0.00786
		* p<0.05, ** p<0.01, *** p<0.001		

Table 4: Results from ordered probit model[16]

[16] For more detailed results see Appendix A.

6.1 Micro variables

It is no surprise that most of micro level variables are significant since they work closer to a respondent. Due to a high number of significant micro level variables I limit myself to a description of differences and their possible explanations.

Personal health is one of the strongest determinants as would be expected. Responses about one's state of health are in decreasing order, i.e. a basic zero-value represents a "very good" health and then the state deteriorates, so a sign of health estimates is negative. The highest effect has the state of health in low income countries.

A level of household income is another important determinant in my model. Its effect across the national income groups significantly decreases; its OLS estimate is more than three times higher in low income group than among high income countries. It is easily understandable, to have a low income in higher national income country is not as limiting as it could be in country with lower national income. A certain living standard is guaranteed by social security in developed countries while in developing countries it does not have to be the case.

Life Satisfaction	*Low Income*	*Middle Income*	*High Income*
	β / se	β / se	β / se
All variables included			
Household Income	0.63519***	0.47068***	0.20138***
	0.08950	0.05557	0.03011
Only age, age^2, female			
Household Income	1.01358***	0.61099***	0.51448***
	0.11244	0.10292	0.03712
	* p<0.05, ** p<0.01, *** p<0.001		

Table 5: Estimates of household income in restricted and unrestricted OLS model

To further support the finding I ran regressions of life satisfaction on household income controlling only for two demographics, age and gender. A span between the effect in high income countries and in low income countries decreased a little but a new OLS coefficient of low income countries is still approx. two times bigger than that of the high income ones (see Table 5).

Results concerning personal unemployment are relatively surprising. Its effect is negative in low and middle countries and its size is relatively similar. On the contrary, its coefficient in the low income group is not significantly different from zero.

The results show that there is very different perception of unemployment across countries. While the negative effect in countries with higher income could be ascribed to "the non-pecuniary distress" (Oswald, 1997, p.10) experienced as boredom or social contempt, such explanation probably cannot be used for low income countries. At least partially due to unavailability of unemployment benefits, a border between the employed and the unemployed is not so strict since even the unemployed usually work. They either look after their household to ease family living or in a worse case they just try to earn their living by any type of business. If there was any contempt, the unemployed would unlikely care about it.

Being married or living together as married has positive effect on one's life satisfaction. The effect is much lower and less significant in low income countries than in countries with higher national income. I have found no clear explanation why the marriage effect varies across countries.

Other demographic factors included in my model are sex and age. Both have effects as expected – females are happier than males and age is U-shaped. Yet, they slightly differ across the studied groups. While the most developed countries try to introduce gender equality even in terms of subjective wellbeing, the highest difference between genders is in the middle group. The age effect has its minimum at 45.93 in the low income group, 42.59 in the middle income group and 40.69 in the highest income one. If the theory is right it means that people in richer countries lose their dreams and ideals couple of years before others.

Those individuals who do not trust people are less satisfied with their life than the trustful ones. A negative effect of distrust is higher in the low and high income groups than in the middle group. Equally intuitive is an explanation of freedom of choice and control coefficients - the ones who feel freer in their choices are more

satisfied with their lives. There is a trend across the groups showing that the effect of the freedom increases with rising national income.

Moreover, since the freedom of choice and control is measured on a ten-level ladder, an overall effect can become very significant. So feeling of freedom could theoretically compensate lower level of household income or worse health. According to marginal effects, a change of three and more points has larger effect than a one point change in health or household income in low income countries. In high income countries, already a single point change in freedom of choice affects life satisfaction more than a 1% change in income and two point change of freedom approximately equals one point change in the perceived state of health.

A religiousness of an individual is captured by an importance of God in his life. According to the results, the presumption that atheists and the most religious people are happier holds in middle and high income countries. To be more precise, a minimum of parabola, i.e. the most negative effect, lies closer to the zero importance of God (for High Income: 2.03, for Middle Income: 3.43). Thus, those for whom God is very important are ceteris paribus more satisfied than atheists. On the other hand, the religiousness does not make any significant difference in one's life satisfaction when living in a low income country.

A level of attained education does not proved to be a significant determinant of happiness in other than high income group. Results show a significant positive relation to one's life satisfaction in cases of finished primary and secondary education. An effect of tertiary education has higher p-value (11.3%) but a size of its coefficient can still show certain information. Those who own a university degree seems to be less satisfied than both those with finished primary education and those with secondary education.

The insignificance of individual education seen in the two remaining groups is sometimes explained as caused by specificity of education. Higher education is often linked with better possibilities to earn more money (Blanchflower & Oswald, 2011; Frey & Stutzer, 2002) and so an indirect effect of education could be hidden in an effect of household income.

After excluding household income from the model, tertiary education became significant and its coefficient draw level with the coefficient of primary education (see Table 6). In the low income group, the exclusion caused substantially improved significance of secondary education. Effects of education stayed insignificant in the

middle income group. Thus, the proposed theory can have been confirmed only in some cases, basically only in the high income group.

Life Satisfaction	*Low Income*	*Middle Income*	*High Income*
	β / se	β / se	β / se
All variables included			
Primary Education	-0.02207	-0.00377	0.15169*
	0.03989	0.08002	0.06436
Secondary Education	0.05747	-0.03483	0.18551**
	0.04415	0.08649	0.06923
Tertiary Education	-0.01779	-0.01467	0.11046
	0.06156	0.08237	0.06979
Household Income Excluded			
Primary Education	0.02702	0.02118	0.13301*
	0.04634	0.07347	0.05657
Secondary Education	0.12647**	-0.00701	0.17803**
	0.04681	0.08005	0.06063
Tertiary Education	0.09376	0.07267	0.13227*
	0.06580	0.07771	0.06337
	* p<0.05, ** p<0.01, *** p<0.001		

Table 6: Estimates of attained education after exclusion of household income variable

Besides health which is more or less equally important in all groups of countries, overall comparison of micro-level variables across groups reveals some patterns. A level of household income is very strong determinant of life satisfaction in low income countries and only substantial increase in freedom of choice variable can substitute it. On the contrary, in high income countries the effects of marriage and unemployment

seems more important than the household income. The most important, however, becomes the freedom of choice and control. The middle income countries works as a notional intermediate stage in most variables.

6.2 Macro variables

Results regarding macro level variables turned up to be mostly well predictable with knowledge acquired from previous studies. Significant variables vary across groups and their coefficients have expected signs, except one unexpected anomaly.

National income matters among less developed countries while in the high income group it is not even significant. Comparison by OLS shows that its effect is stronger in the low income group than in the middle income group which further proves the theory of diminishing effect of national income with its rising level. An increase of one percentage point causes growth of possibility to reach the highest level of life satisfaction by about 0.29% in the low income group and about 0.35% in the middle income group. On the other side of life satisfaction scale the one per cent decreases probabilities, $\Pr(y = 2 \mid x)$ declines by about -0.009% for low income countries and -0.007% for the middle ones.

As it was mentioned in the literature review, from a certain, yet not exactly specified, level of national income people begin to take care rather about political issues than the economic ones. In accordance with this claim the results of high income group show positive effect of democracy and quality of government. A shift of one standard deviation at outcome $(y = 10)$ causes change in probability of that outcome by 1.07% in the case of quality of government and by 3.35% in the case of democracy. The same change of one standard deviation has already negative marginal effect on $\Pr(y = 6 \mid x)$ and its size is just 0.41% for quality of government and 1.30% for democracy.

In the low income group, the quality of government turned out to have different sign than expected which has no simple explanation. Not only is it in accordance with common knowledge that people want good government but also Helliwell & Huang (2006) concluded in the same way.

To verify whether the results are robust I ran two regressions, the first one included micro level variables, a logarithm form of national income and quality of government and the second included only micro level variables and the problematic

variable. Results differed substantially (see Table 7). While in the model with national income it still had certain significance, in the model without national income all the significance disappeared.

However, even if the estimate of quality of government is not absolutely reliable it brings some information. To certain extent, it disproves results of Helliwell & Huang (2006) who discovered a positive effect of quality of government in the half of their dataset containing countries with lower national income.

One of possible explanations lies in the fact that no one of low income countries actually has high quality government and it does not matter whether government is bad or worse. The relation between life satisfaction and quality of government is sketched in Figure 1 where different patterns can be seen to hold in low income countries with low quality government and in high income countries with higher quality government. While certain trend is in higher levels of quality of government, trend in lower levels is hardly visible.

Life Satisfaction	*Low Income*
	β / se
With national income	
Quality of Government	-0.23320°
	0.12677
Without national income	
Quality of Government	0.05304
	0.18944
	° p<0.10

Table 7: Robustness test of quality of government estimates

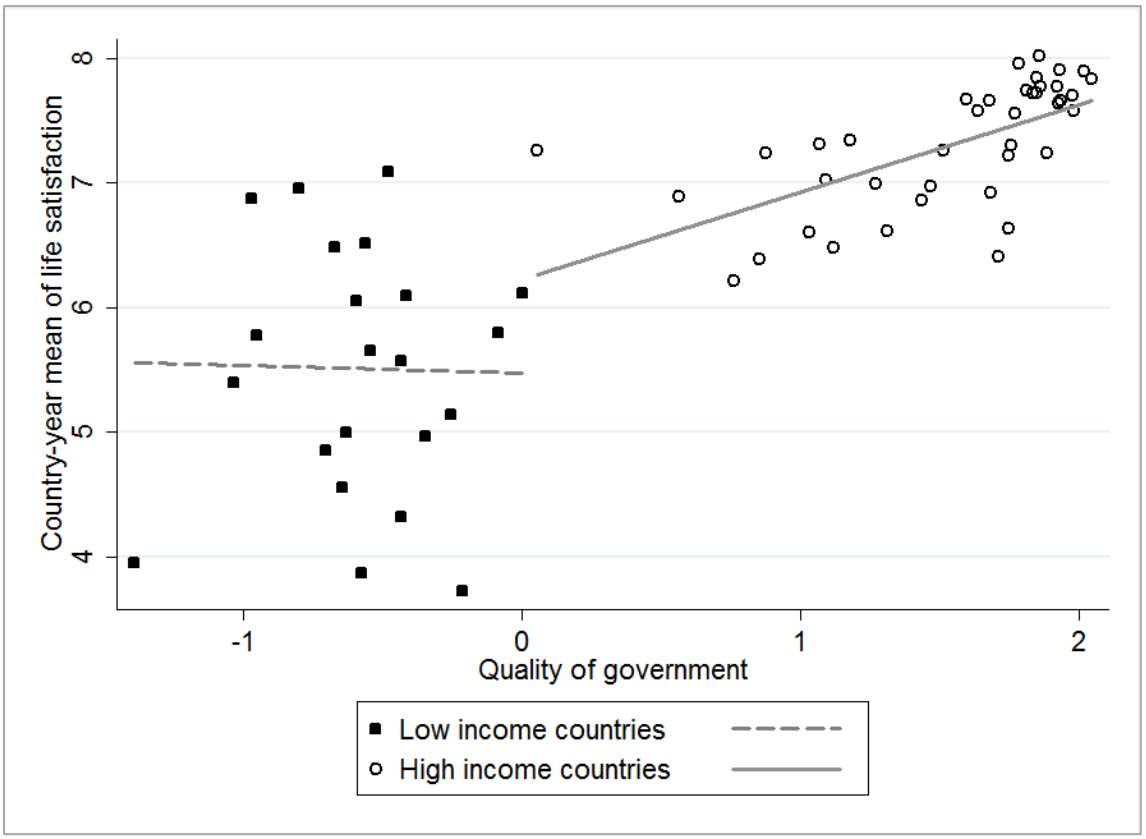

Figure 1: Country-year mean of life satisfaction against quality of government

Wrapping up all policy-related variables, once experienced communism has a long lasting negative effect on life satisfaction in the low and middle income groups, when a country reaches the high income group a difference disappears. The fact that one lives in a country with communist past decreases probability to feel the highest level of life satisfaction by 7.99% in the middle income group, and by 3.31% in the low income group.

Coming back to economic variables, inflation is an economic factor that affects people on daily basis. So one could expect it would be one of significant determinants across groups. However, the results indicate only an effect in the low income group as statistically significant. One per cent growth in inflation rate causes 0.28% decrease in $\Pr(y=10\,|\,x)$, 0.03% decrease in $\Pr(y=6\,|\,x)$ and 0.09% increase in $\Pr(y=2\,|\,x)$.

High income countries do not show high inflation values and the maximum of reported inflation is 8.32% (Trinidad and Tobago in 2006) to cause any decline in life satisfaction. A situation is different in the middle income group where inflation reaches

a wide span. Wealth of middle income countries probably provides a pillow to protect people from larger loss of life satisfaction.

Openness and investment price level are variables describing economic and business environment. They partly substituted other economic factors such as national income or inflation in the high income group. Diversity of products, fairness and profitability of business seems to matter among high income countries more than any increase in already satisfactory national income. Using words of need theory, people turned to higher needs.

Investment price level is also significant determinant in the low income group. Here, it probably reflects not only a state of business environment but, since it proxies returns to investment, even good prospects for the future in terms of economic development. So it is no surprise that its effect is stronger here than at high income countries.

Numerically, one per cent increase in investment price level has an effect on probability of the highest outcome of 0.08% and of the second lowest outcome of -0.01% among high income countries. Among low income countries the sizes are 0.10% and –0.03%. Values of the variable range from 46.88% to 165.28%. Openness, being significant only in the high income group, has even smaller marginal effect than investment level. But its values lie in wider range from 16.22% till 384.96%. A one per cent change causes a decrease in $\Pr(y = 6 \mid x)$ of 0.2% and an increase in $\Pr(y = 10 \mid x)$ of 0.05%.

Life expectancy appears as a significant variable in both the middle and low income group while primary education enrolment rates only in the latter. It shows us that also quality of public services can make a difference, especially assuming that on those income levels the services are often not assured.

In middle income countries results showed that living in a country with 1% higher GDP p. c. increases a probability of the highest life satisfaction level approximately as much as living in a country with one year higher life expectancy. Among low income countries, life expectancy has a lower effect. And an increase of percentage point in primary education enrolment rate causes increase in $\Pr(y = 10 \mid x)$ by 0.07% and in $\Pr(y = 2 \mid x)$ by 0.02%.

The only variable insignificant across the groups is government spending. However, it has a p-value equal to 9,9% and a positive sign in the group of low income countries which completes the peculiar perception of political variables in there.

Differences across groups can be seen in the case of macro level variables as well as in the case of the micro level ones. Previous conclusions about a diminishing effect of national income and growing importance of political variables with rising national income were more or less proved. Also quality of public services makes a difference in countries with lower income.

6.3 Testing for significance of the differences

The results show evident differences across groups, but in order to properly test statistical significance of the differences I ran regression on model with interactions for particular groups. In more detail, I use the same variables as in basic model plus their interactions with dummy variables for low income and middle income countries, high income countries served as a reference group. Results of that regression are in Table 8.

Not every difference described on previous pages passed the significance test but the most obvious ones did. Those are particularly personal unemployment, gender and household income from micro level variables and quality of government, democracy, national income and life expectancy from macro level variables. On the contrary, a fail of freedom of choice can be a little surprising. Although with p-value of 7.8% there is some indication of its uneven effect across groups.

Life Satisfaction	*Low Income (via dummy)*	*Middle Income (via dummy)*	*High Income (reference group)*
	β	β	β
Group Dummy	-4.13178***	-3.55638***	
Health	-0.02539	0.02333	-0.29642***
Age	-0.00128	-0.00045	-0.02382***
Age^2	-0.00001	-0.00001	0.00029***
Female	0.04211*	0.07593***	0.02628**
Unemployed	0.15588**	-0.02394	-0.21041***
Married	-0.19675***	-0.07575**	0.25505***
Distrustful	-0.02113	0.01048	-0.08024***
Choice	-0.02951	-0.00477	0.14743***
God	-0.00141	-0.02256	-0.01516
God^2	-0.00178	0.00128	0.00430***
Household Income	0.20364***	0.12435***	0.09491***
Primary Education	-0.14496*	-0.1356	0.12472*
Secondary Education	-0.09286	-0.1951	0.15099**
Tertiary Education	-0.10197	-0.10744	0.08778
Quality of Government	-0.49216***	-0.18919	0.09648*
Government Spending	0.01642	-0.00261	-0.00451
Democracy	-0.09452**	-0.07312*	0.11217***
Post-communism	-0.17674	-0.39339**	-0.05826
log(GDP p.c.)	0.36930**	0.29720**	-0.08299
Investment	0.00413	-0.00402	0.00388**
Inflation	-0.02008	0.00124	-0.00153
Openness	-0.00088	-0.00343*	0.00247***
Prim. Educ. Enrolment Rate	0.00909	0.00741	-0.00362
Life expectancy	0.01910*	0.02325*	-0.00489
	* p<0.05, ** p<0.01, *** p<0.001		

Table 8: Significance test of differences between the groups[17]

[17] [17] For more detailed results see Appendix D.

Conclusions

The division into groups according to economic development showed that determinants of happiness really differ among the groups and how they actually differ. Although some differences from separate regressions did not pass the significance test, most of them did. Here, I review the most important results.

The results disclosed that a Western concept of unemployment is apparently not valid in low income countries. Insignificance of unemployment in the low income group points out completely different perception of the term. Similarly, level of attained education does not cause any substantial differences among low and middle income countries. Even after filtering out household income effect, it is significant only in high income countries.

Importance of household income substantially rises from the high to the low income group which can be attributed to better basic living conditions in high income countries. At the same time, I might stress strength of freedom of choice. Although it does not significantly differ across the groups it could outweigh an effect of both low income and bad health.

The diminishing effect of national income appears to be one of basic facts of subjective wellbeing literature. The relation holds both within and across groups, even after the division. Although one could think that the effect of national income would disappear because of the division, the opposite is true. The variation within the groups is still high enough to capture its effect.

From the results within the high income group we could see that national income was substituted by other economic terms and political determinants. Economic and business environment matters more when you reach certain income level to be ranked among the most developed countries.

The political determinants which showed a significant difference across groups are democracy and quality of government. The difference in democracy is based on its high importance in high income countries while the difference in quality of government is caused by both its positive importance in high income countries and on the other side a slightly confusing negative effect among low income countries.

Not only economic factors turned out to matter among countries with lower income, also good quality of state provided public services can make an improvement in life satisfaction.

On both macro and micro levels the middle group worked as an intermediate stage between the high and low income groups. An influence of political determinants met here with the economic ones. But as it was expected the most interesting results emerged in the low income group.

Although there were some limitations during the research the results showed that treating countries within development grouping, based on either economic or other factors, is very useful means. Applying a multilevel model could change results but referring to very high significance of some variables I would not expect a major contradiction to my results.

Further, other variables could be included in the model. But there is substantial shortage of data matching country-year units of World Values Survey. Although a number of surveys in the low income group rises there are several macro level variables missing to enable studying their effect on subjective wellbeing.

Future studies on subjective wellbeing should take differences according to development level into consideration. They could disclose specificity of low income countries and show more limitations of Western economic concepts, such as in the case of personal unemployment, when dealing with them.

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List of Appendices

Appendices

Appendix A: Full results of ordered probit model regression (Table)

Life Satisfaction	*Full Sample*	*Low Income*	*Middle Income*	*High Income*
	β / se	β / se	β / se	β / se
Health	-0.28473***	-0.32186***	-0.25405***	-0.36430***
	0.01139	0.02841	0.01443	0.01535
Age	-0.02733***	-0.02480***	-0.02300***	-0.02928***
	0.00223	0.00349	0.00293	0.00267
Age^2	0.00032***	0.00027***	0.00027***	0.00036***
	0.00003	0.00003	0.00003	0.00003
Female	0.08021***	0.06714***	0.09613***	0.03526**
	0.01168	0.01443	0.01739	0.01294
Unemployed	-0.19395***	-0.06369	-0.22549***	-0.24765***
	0.0225	0.0434	0.02494	0.04536
Married	0.17241***	0.05709*	0.16940***	0.31774***
	0.0136	0.02664	0.01452	0.0221
Distrustful	-0.07838***	-0.10235**	-0.06590**	-0.10063***
	0.01897	0.03729	0.02455	0.01796
Choice	0.13949***	0.11617***	0.13332***	0.17977***
	0.00944	0.01729	0.01146	0.00921
God	-0.03227***	-0.00523	-0.03497**	-0.02389**
	0.00938	0.03396	0.01153	0.00921
God^2	0.00524***	0.00137	0.00506***	0.00587***
	0.0011	0.0032	0.0013	0.00108
Household Income	0.19206***	0.30339***	0.20593***	0.11616***
	0.02054	0.04451	0.02619	0.01747
Primary Education	0.05221	-0.02207	-0.00377	0.15169*
	0.05452	0.03989	0.08002	0.06436
Secondary Education	0.06134	0.05747	-0.03483	0.18551**
	0.05995	0.04415	0.08649	0.06923
Tertiary Education	0.01485	-0.01779	-0.01467	0.11046
	0.05862	0.06156	0.08237	0.06979
Quality of Government	-0.11537	-0.42360**	-0.09693	0.13648**
	0.05898	0.13694	0.10032	0.05039
Government Spending	-0.00785	0.01355	-0.0071	-0.00583
	0.00658	0.00822	0.00903	0.01395
Democracy	0.02187*	0.01779	0.03601**	0.13083***
	0.00938	0.01395	0.01334	0.03206
Post-communism	-0.33786***	-0.24337*	-0.41300***	-0.07984
	0.07445	0.11856	0.10864	0.08245
log(GDP p.c.)	0.13707***	0.29658**	0.20207***	-0.09992
	0.03971	0.09404	0.05889	0.09486

Investment	0.00062	0.00778**	-0.00026	0.00481**
	0.00132	0.00296	0.00306	0.00154
Inflation	-0.00163*	-0.02124***	-0.00103	-0.00206
	0.00067	0.00543	0.00074	0.02166
Openness	0.0001	0.00147	-0.00107	0.00306***
	0.00076	0.00136	0.00103	0.00093
Prim. Educ. Enrolment Rate	0.00534**	0.00550**	0.00323	-0.00575
	0.00192	0.00176	0.00195	0.00714
Life expectancy	0.01058**	0.01454***	0.01669**	-0.00786
	0.00409	0.00422	0.00615	0.01028
α_1	0.79427	2.48471*	1.61670**	-2.09811*
α_2	1.07304**	2.77036**	1.90223**	-1.83674
α_3	1.45965***	3.21701***	2.27374***	-1.42797
α_4	1.77764***	3.52728***	2.60163***	-1.09354
α_5	2.35012***	4.22730***	3.15503***	-0.54208
α_6	2.69619***	4.58292***	3.48798***	-0.12298
α_7	3.14341***	5.03369***	3.88785***	0.47855
α_8	3.74805***	5.47253***	4.41874***	1.35513
α_9	4.18121***	5.77497***	4.79634***	2.01419
	* p<0.05, ** p<0.01, *** p<0.001			

Appendix B: Results of auxiliary ordinal least squares regression (Table)

Life Satisfaction	*Full Sample*	*Low Income*	*Middle Income*	*High Income*
	β / se	β / se	β / se	β / se
Health	-0.57244***	-0.66483***	-0.53951***	-0.56775***
	0.0232	0.05346	0.03348	0.02228
Age	-0.05432***	-0.05151***	-0.04862***	-0.04595***
	0.0045	0.00821	0.00643	0.004
Age^2	0.00062***	0.00056***	0.00056***	0.00054***
	0.00005	0.00008	0.00007	0.00005
Female	0.15713***	0.13833***	0.20051***	0.04268*
	0.02533	0.03295	0.03942	0.01806
Unemployed	-0.42119***	-0.12902	-0.50214***	-0.45914***
	0.04761	0.08751	0.05542	0.08156
Married	0.33802***	0.11689*	0.35301***	0.49240***
	0.02616	0.05487	0.03069	0.03212

Distrustful	-0.17226***	-0.21258*	-0.15236**	-0.18387***
	0.03735	0.07665	0.05042	0.02911
Choice	0.27654***	0.23630***	0.27888***	0.28244***
	0.01639	0.03094	0.02087	0.01324
God	-0.03932*	-0.00885	-0.04683*	-0.00533
	0.01839	0.06559	0.02251	0.01497
God^2	0.00739***	0.00264	0.00766**	0.00530**
	0.00211	0.0062	0.00247	0.00168
Household Income	0.41983***	0.63519***	0.47068***	0.20138***
	0.04246	0.0895	0.05557	0.03011
Primary Education	0.10368	-0.03267	-0.0126	0.23475*
	0.11273	0.08183	0.17403	0.1067
Secondary Education	0.12423	0.13136	-0.06999	0.27404*
	0.12249	0.09	0.18678	0.11433
Tertiary Education	0.05014	-0.02281	-0.00713	0.19036
	0.12093	0.12308	0.17986	0.11397
Quality of Government	-0.23078	-0.90013**	-0.20578	0.17285*
	0.11691	0.29161	0.2115	0.08466
Government Spending	-0.01453	0.02765	-0.01505	-0.00142
	0.01332	0.01684	0.01899	0.02179
Democracy	0.04388*	0.0374	0.07650**	0.23632***
	0.01907	0.0293	0.028	0.0515
Post-communism	-0.71600***	-0.52526*	-0.90097***	-0.10016
	0.15246	0.24493	0.22533	0.13241
log(GDP p.c.)	0.29478***	0.60098**	0.44870***	-0.07004
	0.07973	0.20278	0.12082	0.13667
Investment	0.00159	0.01633*	-0.00079	0.00738**
	0.00262	0.00627	0.00621	0.00234
Inflation	-0.00386**	-0.04428**	-0.00257	0.00128
	0.00141	0.01179	0.0016	0.03194
Openness	0.00048	0.0036	-0.00199	0.00465**
	0.00153	0.00273	0.00219	0.00139
Prim. Educ. Enrolment Rate	0.01082**	0.01138**	0.00697	-0.00427
	0.0038	0.00375	0.00405	0.01098
Life expectancy	0.02127*	0.02927**	0.03552**	-0.00628
	0.00832	0.00892	0.01291	0.01533
Intercept	0.63772	-2.92959	-1.28195	4.26457*
	0.83236	2.03559	1.22395	1.74836
	* p<0.05, ** p<0.01, *** p<0.001			

Appendix C: Marginal effects of all significant estimates except square terms for ordered probit model at $\Pr(y=2|x)$, $\Pr(y=6|x)$ and $\Pr(y=10|x)$ (Table)

Life Satisfaction	*Low Income*		*Middle Income*	
	m.eff. (y=2)	m.eff. (y=10)	m.eff. (y=2)	m.eff. (y=10)
	m.eff. (y=6)		m.eff. (y=6)	
Health	0.014206	-0.04377	0.009618	-0.04912
	-0.00572		0.004581	
Female	-0.00296	0.009131	-0.00364	0.018587
	0.001194		-0.00173	
Unemployed	.	.	0.008537	-0.0436
	.		0.004066	
Married	-0.00252	0.007764	-0.00641	0.032752
	0.001015		-0.00305	
Distrustful	0.004517	-0.01392	0.002495	-0.01274
	-0.00182		0.001188	
Choice	-0.00513	0.015799	-0.00505	0.025777
	0.002066		-0.0024	
Household Income	-0.01339	0.041262	-0.0078	0.039816
	0.005396		-0.00371	
Quality of Government	0.018696	-0.05761	.	.
	-0.00753		.	
Democracy	.	.	-0.00136	0.006962
	.		-0.00065	
Post-communism	0.010741	-0.0331	0.015636	-0.07985
	-0.004328		0.007447	
log(GDP p.c.)	-0.09373	0.294055	-0.0667	0.346812
	0.0357854		-0.03375	
Investment	-0.00034	0.001059	.	.
	0.0001384		.	
Inflation	0.000938	-0.00289	.	.
	-0.000378		.	
Prim. Educ. Enrolment Rate	-0.00024	0.000748	.	.
	0.0000978		.	
Life expectancy	-0.00064	0.001977	-0.00063	0.003228
	0.000259		-0.0003	

Life Satisfaction	*High Income*
	m.eff. (y=2) m.eff. (y=10) m.eff. (y=6)
Health	0.005483 -0.06258 0.024374
Female	-0.00053 0.006056 -0.00236
Unemployed	0.003727 -0.04254 0.016569
Married	-0.00478 0.05458 -0.02126
Distrustful	0.001515 -0.01729 0.006733
Choice	-0.00271 0.03088 -0.01203
Household Income	-0.00175 0.019952 -0.00777
Primary Education	-0.00228 0.026056 -0.01015
Secondary Education	-0.00279 0.031865 -0.01241
Quality of Government	-0.0020541 0.023443 -0.00913
Democracy	-0.0019691 0.022473 -0.00875
Investment	-0.0000723 0.000826 -0.00032
Openness	-0.0000461 0.000526 -0.0002

Appendix D: Full results of significance test (Table)

Life Satisfaction	*Low Income (via dummy)*	*Middle Income (via dummy)*	*High Income (reference group)*
	β / se	β / se	β / se
Group Dummy	-4.13178***	-3.55638***	
	1.25094	1.0425	
Health	-0.02539	0.02333	-0.29642***
	0.02801	0.02056	0.01244
Age	-0.00128	-0.00045	-0.02382***
	0.00443	0.0039	0.00222
Age^2	-0.00001	-0.00001	0.00029***
	0.00005	0.00005	0.00003
Female	0.04211*	0.07593***	0.02628**
	0.01911	0.02097	0.00983
Unemployed	0.15588**	-0.02394	-0.21041***
	0.05708	0.04636	0.03841
Married	-0.19675***	-0.07575**	0.25505***
	0.03249	0.02351	0.01862
Distrustful	-0.02113	0.01048	-0.08024***
	0.03954	0.02989	0.01487
Choice	-0.02951	-0.00477	0.14743***
	0.01673	0.01261	0.00797
God	-0.00141	-0.02256	-0.01516
	0.0337	0.01415	0.00774
God^2	-0.00178	0.00128	0.00430***
	0.00325	0.00161	0.00091
Household Income	0.20364***	0.12435***	0.09491***
	0.04342	0.03124	0.01476
Primary Education	-0.14496*	-0.1356	0.12472*
	0.06416	0.10298	0.05237
Secondary Education	-0.09286	-0.1951	0.15099**
	0.07026	0.11084	0.05604
Tertiary Education	-0.10197	-0.10744	0.08778
	0.081	0.10727	0.05657
Quality of Government	-0.49216***	-0.18919	0.09648*
	0.13939	0.11565	0.04055
Government Spending	0.01642	-0.00261	-0.00451
	0.01385	0.01494	0.01135
Democracy	-0.09452**	-0.07312*	0.11217***
	0.02927	0.02955	0.02589
Post-communism	-0.17674	-0.39339**	-0.05826

	0.1311	0.13236	0.06564
log(GDP p.c.)	0.36930**	0.29720**	-0.08299
	0.12023	0.09923	0.07602
Investment	0.00413	-0.00402	0.00388**
	0.00314	0.00352	0.00124
Inflation	-0.02008	0.00124	-0.00153
	0.01796	0.0171	0.0171
Openness	-0.00088	-0.00343*	0.00247***
	0.0015	0.00136	0.00074
Prim. Educ. Enrolment Rate	0.00909	0.00741	-0.00362
	0.00592	0.00606	0.00565
Life expectancy	0.01910*	0.02325*	-0.00489
	0.00917	0.01046	0.00816
α_1			-1.69135*
α_2			-1.40909
α_3			-1.01621
α_4			-0.69321
α_5			-0.11387
α_6			0.23631
α_7			0.68911
α_8			1.30117
α_9			1.73865*

Appendix E: Bachelor Thesis Proposal (copy of original PDF) (Figure)

Bachelor Thesis Proposal

Institute of Economic Studies
Faculty of Social Sciences
Charles University in Prague

Author	Radek Halamka
Supervisor	Matěj Bajgar, M.Sc.
Specialization	Economic Theory
Defense Planned	June 2011

Proposed Topic

Determinants of Subjective Wellbeing: Comparison of Developed and Developing Countries

Preliminary outline in English

In this work, I will study differences (or similarities) among determinants influencing a degree of happiness in a developing and a developed country.

Firstly, I will attempt to sum up acquired knowledge in the field of the economics of happiness so far. I will focus especially on the dependence discovered between happiness and such independent variables which I will use in my thesis – e.g. education, income, etc. Studying of published texts would help to choose the most suitable way of processing the data and to avoid already known mistakes.

Then I will analyse panel survey data from Ghana and a chosen developed country. The main criteria for the choice of a developed country will be an availability of data of similar variables and, within the bounds of possibility, a similarity in socio-economic characteristics with Ghana.

The research of determinants of happiness could ease the assessment of targeting of development aid.

Preliminary outline in Czech

V této práci budu zkoumat odlišnosti (nebo podobnosti) mezi determinanty ovlivňující úroveň štěstí v rozvojových zemích a rozvinutých zemích.

V první části své práce se pokusím shrnout doposud nabyté poznatky v oblasti ekonomie štěstí. Zaměřím se na již vyzkoumané závislosti mezi štěstím a těmi nezávislými proměnnými, které budu používat v této práci – vzdělání, příjem, apod. Zkoumání publikovaných textů mi stejně tak pomůže ve výběru nejvhodnějšího způsobu zpracování dat a ve vyvarování se známých chyb.

Ve druhé části provedu analýzu panelových dat z průzkumů prováděných v Ghaně a vybrané rozvinuté zemi. Hlavními kritérii pro výběr rozvinuté země bude dostupnost dat podobných proměnných a v rámci možností i socio-ekonomická podobnost s Ghanou.

Průzkum determinantů štěstí by mohl umožnit lepší zhodnocení cílování rozvojové pomoci.

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Prague, June 8, 2011

2