ANALYSIS OF LIFE SATISFACTION IN UKRAINE

by

Kramarska Olena

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Approved by _____
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Abstract

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Head of the State Examination Committee: Ms.Svitlana Budagovska,
Economist, World Bank of Ukraine

In my work, I studied determinants of reported life satisfaction in Ukraine. For this purpose I used panel data from Ukrainian Longitudinal Monitoring Survey encompassing 2 consecutive years 2003 and 2004. I was interested in finding out whether results obtained for other countries hold for Ukraine too, in particular that income does not have large effect on reported life satisfaction and that being unemployed has a large negative effect on reported well-being. My expectations fully realized. Income indeed proved to be far not the largest determinant of reported life satisfaction, although statistically significant and unemployment turned out to be one of the main depressants of life satisfaction.

TABLE OF CONTENTS

Chapter 1: Introduction……..……1
Chapter 2: Literature review……...……5
Chapter 3: Methodology……...……15
Chapter 4: Data description and preliminary results……...…….21
Chapter 5: Regression results……24
Chapter 6: Conclusions and policy implications……32
Bibliography…….35
Appendix A: Data…….. ……..…….40
Appendix B: Employment status variable description……...….48
Appendix C: Regression results…….49

LIST OF FIGURES

Number *Page*
Table 1: Stability of life satisfaction responses……..……..…..16

Diagram 1: Evolution of life satisfaction over time……..…...21

Table 2: Conditional logit: percentage change in odds...…….29

Table A1: Life satisfaction ……40

Table A2: Frequencies and percent of observations of main variables……...44

Table A3: Descriptive statistic of some variables……..…..46

Table A4: Indicators of economic growth……..47

Table A5: Life satisfaction over time…… 47

Table C1: Ordered probit and marginal effects for the year 2003……...49

Table C2: Ordered probit and marginal effects for the year 2004……...51

Table C3: Conditional logit……...54

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Chapter 1

INTRODUCTION

In 1991, when there was time for Ukrainian people to choose whether they want their country to be independent or to stay a member of USSR, there were many promises from politicians that with independence everything would change for better in Ukraine. The first years of independence, however, turned out to be very difficult, accompanied with rising unemployment, high budget deficit, inflation, falling output, deteriorating standards of living, etc. Thus people became disappointed in the new regime and longed to return the past. Namzie and Sanfey (1998) analyzed life satisfaction in Kyrgyzstan, one of the former USSR republics, in early stages of transition. They found out that dissatisfaction with life was widespread in Kyrgyzstan in late 1993.

Recently, however, economic situation in Ukraine began to improve: inflation has been reduced and kept on the level lowest among the CIS countries; rates of GDP growth increased substantially and even became the highest among FSU countries in the last year (in 2004 it was 12%), industrial production expanded, and with it increased the variety of products and services available on the market; wages and people's disposable incomes began to increase as well. Although there are still many problems in Ukraine which have to be solved such as corruption, poverty, poor state of ecology, of education and health care, and many others, there are reasons to expect that people became happier and more satisfied with life compared to how they felt about life 15, 10 or 5 years ago.

The purpose of my research is to study the level and determinants of reported life satisfaction in Ukraine. The data that I am going to use is Ukrainian Longitudinal Monitoring Survey (ULMS) data for the year 2003 and 2004 provided by Kyiv International Institute of sociology.

In my analysis of determinants of life satisfaction in Ukraine I am going to use ordered probit regression models, since life satisfaction is measured on an ordinal scale and conditional logit to take into account individual specific fixed effects.

A natural question may arise: of what interest is the analysis of life satisfaction to economists? One economic columnist noted, "There's not a big difference between subjective well-being and the economists' goal of maximising utility or satisfaction" (Gittins, 2004). Thus, life satisfaction is not a remote from economists' interests field of study. Frey and Stutzer (2002), define three major reasons for economists to care about happiness research. They are economic policy, effect of institutional conditions on individual well-being and understanding of formation of subjective well-being. The first one is, at the micro level, evaluation of the net effects, in terms of individual utilities, at the macro level, calculation of trade offs such as a trade off between unemployment and inflation or compensating variation for being unemployed rather than holding a job. The second reason implies evaluation of how such things as the control of corruption, improved accountability, effectiveness and stability of government, the rule of law, etc. influence the individual well-being. Finally, understanding of formation of subjective well-being sheds new light on the basic concepts and assumptions in economic theory and helps solve the puzzles that economic theories cannot explain. The puzzles involve relationship between income and happiness, and unemployment and happiness which will be discussed later.

Results of happiness research may be used by policy makers. In case of Ukraine, understanding what influences Ukrainians' reported well being may, help Ukrainian government to decide which course of actions to choose (fight corruption or increase pensions) and politicians to see what they have to do in order to win sympathy from people. A bright example were the presidential elections in the fall of 2004, where each of the candidate promised to do what he/she thought would increase the well-fare of people and would make people willing to vote for him/her. One of the candidates, among other things, promised to fight corruption, another -- increased pensions and promised to continue with it.

The data at my disposal does not allow me to address the questions of corruption elimination or rise in pensions directly, but it allows me study the effects of other factors on reported well-being. These factors are employment status, age, gender, education, health, marital status, income, place of residence, household size and number of children. One of the questions of interest is to examine the relation between employment status and life satisfaction. Many studies show that unemployment is a strong depressant of reported well-being, and negative effect of unemployment is found in some studies to be close in size to that of divorce or separation (Blanchflower and Oswald, 2004; Clark and Oswald, 1994, 2002; Winkelman and Winkelman, 1997 and others). Even loss of income as a result of unemployment does not cause so much unhappiness as the state of being unemployed itself. Another question of interest is the relation between income and happiness. According to economic theory, more income should make people more satisfied (rise their utility) since it allows to consume more. However, as numerous studies show income and happiness are positively correlated only at a point in time and not over the life circle. Finally, of no less interest is the examination of other social-economic factors such as age, education, and marital status. For example, satisfaction is often found to be U-shaped in age which may

reflect evolution of expectations over the life cycle such as optimism in young age, disappointment in middle age, and adjustment to reduced expectations in old age (Eggers, et al (nd)).

The rest of the paper is structured as follows. Chapter 2 presents literature review of happiness research. Next chapter tells about the methodology. Chapter 4 and 5 are devoted to data description and regression results. The last chapter presents conclusions and policy implications.

Chapter 2

LITERATURE REVIEW

The literature review is based on the one presented in the paper by Frey and Stutzer, A. (2002).

For long time studying subjective well-being was considered to be a domain of psychologists; economists' interest in happiness research evoked only recently. The first who established a link between economics and happiness was a social scientist Easterlin, who in his work Easterlin (1974) studied relationship between income and happiness. One of his aims was to argue that individual well-being is the same across poor and rich countries and that economic growth does not bring happiness to society. However, not until the late 1990s, the issue of symposium in Economic Journal on economics and happiness (Dixon (1997), Frank (1997), Ng (1997), Oswald (1997)), did economists begin contributing to happiness research. Since then effects of different macro and micro economic factors on individual well-being has been intensively analyzed. Depending on the factor which effect on happiness is studied, research done by economists in that area can be categorized into several groups: 1) effect of income; 2) effect of unemployment; 3) effect of institutions on individual well-being.

It is logical to assume that higher income leads to higher reported happiness. Indeed, numerous studies of relationship between income and happiness at a particular point in time and place (Blanchflower and Oswald (2004) and Easterlin (1995, 2001) for the United States, Di Tella et al (2001) for the member countries of the European Union, and Frey and Stutzer (2000) for Switzerland, and others) showed that happiness and income are positively associated. However, studies also showed that over the life cycle there is no or even negative relation between

income and happiness (Blanchflower and Oswald 2004; Diener and Oishi 2000; Myers 2000; Kenny 1999; Lane 1998; and Easterlin 1974, 1995, 2001). This can be explained by aspiration level theory, which says that happiness is determined by the gap between aspiration and achievement (Michalos, 1991 and Inglehart, 1990, ch. 7). Extra income helps to achieve aspirations formed in the past, but soon people form new aspirations, become dissatisfied with their current income and strive to get more (for detailed explanation see Easterlin, 2001). Thus, over the life cycle, material aspirations grow along with income and undercut the effect of income growth on happiness. Rising aspirations also helps to understand why most people think that they felt less happy in the past, but expect to be more happy in the future (Easterlin 2001). Namely, people expect current aspirations to be the same throughout the life cycle while income grows. But since aspirations actually grow along with income, experienced happiness is different from expected happiness.

Aspirations in turn are formed, as identified in psychology, by two sets of factors: one's past personal experience and experience of others. The two sets correspond to adaptation level theory and social comparison theory (Helson (1964); Brickman and Campbell (1971); Myers (1992), Olson et al (1986), and others). The counterparts in economics of these two theories are habit formation models and theories of interdependent preferences (Day (1986), Duesenberry (1949), Frank (1985, 1997) and others). According to adaptation level theory people get used to continued stimulus and this forces them to form and strive for new aspirations. Social comparison theory finds its reflection in the suggestion of Easterlin (1974, 1995, 2001) that happiness is relative: people get utility from a comparison of themselves with others close to them. Hirsch (1976), Scitovsky (1976), Layard (1980), Frank (1985, 1999) and Schor (1998) argue the same thesis. It is not the absolute level of income that matters most but rather one's position relative to other individuals. Thus, aspirations are formed by comparison—in the

first case with one's past experience; in the second with experience of others (Easterlin, 2001).

In an attempt to learn relative to what people compare themselves to others Clark and Oswald (1996) in a study of 5,000 British workers formed the reference group comprising persons with the same labor market characteristics. They conclude that the higher the incomes of the reference group, the less satisfied people are with their job. Neumark and Postlewaite (1998) studied social comparisons within the family. They find that the decision of a woman to go for paid work depends on whether her sisters and sisters-in-law are employed and how much they earn at their job.

How income distribution influences self-rated happiness has not been widely studied yet, mainly due to lack of data. Morawetz et al (1977) studied income distribution using the data drawn from two small communities in central Israel. The conclusion of the study is that more unequal income distribution, the lower the individual's self-rated happiness. A study by Alesina et al (2001) showed that inequality has negative and statistically significant effect on happiness in Europe, but not in the United States. This may be explained by the fact that Europeans have an inequality aversion, while Americans do not.

It is reasonable to assume that in rich nations people are happier than in poor countries and there are number of studies that support this assumption (for example, Diener et al (1995) and Inglehart (1990), Veenhoven,1996). In particular Veenhoven (1996) notes that in western countries the number of happy people outweighs the number of unhappy people by about three to one and the reverse holds true for the third-world countries. Positive correlation between income and happiness across countries may, however, be caused by other factors other then income. Thus countries with higher per capita incomes tend to have more

stable democracies than poor countries. Moreover, the higher the income is, the better the average health and the more secure the basic human rights. All this may make happiness seem to rise with income (Frey and Stutzer, 2002). In addition, as was already mentioned, over time increase in income does not lead to increase in happiness and there are studies which found no robust relationship between income per capita and happiness. In a study of six groups of countries it was found that national income per capita has a very small effect on reported subjective well-being. A 10 percent increase in per capita income in a country with half the level of the United States (and unchanged income distribution) raises average satisfaction with life by only 0.0003 score points on a scale from one to ten, and the gain disappears even before the US 1997 level of real per capita income is achieved (Helliwell 2001, p. 15). Easterlin (1974) comes to similar conclusion. On the trend in well-being over time, Easterlin's paper concludes: "... in the one time series studied, that for the United States since 1946, higher income was not systematically accompanied by greater happiness" (p.118).

Besides income, there are other factors that influence individual well-being and that have been widely studied. One such factor is unemployment. Although in standard economic theory labor has been considered as disutility for agent, numerous empirical studies show that for many people unemployment is undesirable state. For example, Di Tella et al. (2001), using macroeconomic data and life satisfaction responses from panel surveys, find that high unemployment has a strong negative effect on reported wellbeing, even for those who are employed. The loss of subjective well-being experienced by unemployment amounts to 0.33 units in the satisfaction scale, ranging from 1 ("not at all satisfied") to 4 ("very satisfied"). Similar conclusion is reached by Clark and Oswald (1994) in their study for Britain: Unemployed people in Britain in 1991 have much lower level of mental well-being than those in work. Moreover, they explore, and reject, hypothesis that unemployment is voluntary, which again

contradicts the assumption that labor brings disutility. They also find that people with high education experience a larger decrease in their subjective well-being due to unemployment than employees with low education; the largest negative effect from unemployment is for individuals aged between 30 and 49; distress from unemployment is the greatest for those surrounded by low unemployment. In addition, Clark et al (2001) found that past experience of unemployment has a negative effect on happiness too. Using eleven waves of the German socio-economic panel (GSOEP) data set, he showed that, over the whole sample, well-being is lower the greater has been the past experience of unemployment.

It is interesting to know whether unemployment affects people similarly in different countries. Blanchflower and Oswald (2001) in their study of unemployment in Eastern and Western Europe show, using (reported) well-being equations, that unemployed people in transition countries seem to be as unhappy, relative to the employed, as those who are jobless in the industrialized countries. Furthermore, they find no evidence in the data for the Eastern Europe that would support the belief that voluntary unemployment is unusually high in the East. The micro econometric structure of unemployment regression equations appears to be approximately the same in the nations of Eastern Europe as in the industrialized West. Variables like education and age, for example, enter unemployment equations in similar ways in the two halves of Europe.
Both Clark and Oswald (1994) and Blachflower and Oswald (2001) conclude that being without work is apparently one of the worst things that can happen to individual.

All the results mentioned above were got with income effect controlled for, and thus, they are the "pure" effect of being unemployed. It may be argued, however, that causation runs the other way: unhappy people are less likely to get a job. As Clark and Oswald (1994) note, although this objection is hard to overturn

conclusively, there is longitudinal evidence, collected by psychologists from smaller samples that shed doubt on such an interpretation. Summary is provided by Warr et al (1988). Moreover, there are works by economists and sociologists that provide evidence that the main causation runs from unemployment to unhappiness (Winkelmann and Winkelmann (1997) for German panel data, or Marks and Fleming (1999) for Australian panel data).

Thus, lower life-satisfaction from unemployment is neither due to decreased income nor due to the fact that causation runs the other way. This means that there should be reasons other than loss in income that makes jobless people feel unhappy. As Sen (1975) puts it, unemployment deprives people of recognition effect, non-pecuniary benefit that stems from "recognition aspect of employment". In other words, unemployment imposes on individual an additional burden referred to as "psychological cost" of unemployment. The finding that unemployment is associated with substantial negative non-pecuniary effects is provided by Jensen and Smith (1990), Junankar (1991), Winkelman and Winkelman (1997). In particular, Winkelman and Winkelman (1997) test for the importance of non-pecuniary costs of unemployment (indirect costs through reduced well-being) using a longitudinal data-set on life-satisfaction of working-age men in Germany. They showed that unemployment has a large negative effect on satisfaction after individual specific fixed effects are controlled for. The non-pecuniary effect turns out to be much larger than pecuniary effect or the loss of income effect.

However, there are studies that show that detrimental effect of unemployment is less in regions with high unemployment rate. For example Eggers et al (nd) studied the effect of regional unemployment rates on subjective well-being in post-Soviet Russia. They estimated that during the period of their study (1995-2001), each percentage point increase in the local unemployment rate was

correlated with the average well-being of people in the region increasing by an amount equivalent to moving 2% of the population up one level in life satisfaction measured on a five-point scale. This can be explained by already mentioned fact that happiness is relative and that people compare themselves to others.

Relating to the above mentioned research are the studies of relationship between macroeconomic factors, such as inflation, business cycles, and happiness. Thus Di Tella et al (2001) analyzed happiness and business cycle using a panel of 12 European countries over the period 1975-91. They found out that satisfaction declines with inflation and that one percentage point increase in the unemployment rate is compensated for by a 1.7 percentage point decrease in the inflation rate. As a continuation this research is a study by Wolfers (2002) who analyzed the effect of business cycle volatility on well-being using the same but updated survey that covers sixteen countries running from 1973-98. He showed that conditional on levels of unemployment and inflation, greater macroeconomic volatility lowers wellbeing. These effects are moderate but important: eliminating unemployment volatility would raise wellbeing by an amount roughly equal to that from lowering unemployment by a quarter of a percentage point.

Besides the effects of unemployment, income and inflation on life satisfaction, the institution effects have also been widely studied. An example is a work by Frey and Stutzer (2000). In a cross-regional econometric analysis they found that institutional factors in the form of direct democracy (via initiatives and referenda) and of federal structure (local autonomy) systematically and sizably raise self-reported individual well-being. They suggest that this positive effect can be attributed to political outcomes closer to voters' preferences, as well as to the procedural utility of political participation. Another researcher Veenhoven (2000) looked at the interaction between democracy and happiness using index of

freedom which captures the extent to which constitution is democratic and allows its citizens to take decisions according to their own preferences. This index of freedom refers to political, economical and individual freedoms. He found out that all three are strongly and statistically significantly correlated with happiness. Controlling for differences in per capita income, the correlation with economic, but not political and personal, freedom remains statistically significant. Analyses with sub-samples suggest that economic freedom contributes to happiness particularly in poor countries with a low level of general education, while political freedom is more strongly correlated with subjective well-being in rich countries with a high level of education. In both cases, differences in income per capita are controlled.

Life satisfaction has been widely studied for advanced industrial countries and not so widely for countries in transition. One of the happiness studies for the transition countries is a work by Senik (2002) where the author analyzed relation between subjective life satisfaction and income distribution, using data from Russian Longitudinal Monitoring survey (RLMS) for the years 1994-2000. She showed that variables reflecting income distribution do not influence satisfaction through social comparisons; the reference group's income affects individual satisfaction positively. An explanation to this lies in the conjecture by Hirschman et al (1973) that an individual can use the observation of his reference group's income as an information about his own perspectives hence derive a positive utility from it. Another study for Russia based on the RLMS data for the years 1995-2001 was done by Eggers et al (nd) and was already described above. Namzie and Sanfey (1998) analyzed happiness in Kyrgyzstan in 1993, early stages of transition, and Andren and Martisson (2003) studied life satisfaction in transition Romania eleven years after the beginning of transition. Namzie and Sanfey (1998) found that in Kyrgyzstan in 1993 dissatisfaction with life was widespread with more dissatisfied people among the older, unemployed, and

divorced. Gender and educational level in Kyrgyzstan seemed to be uncorrelated with happiness, while the effect of income on happiness appeared to be large. Andren and Martisson (2003) found that in Romania housing standards, health, economic situation, education, trusting people, and living further from town have positive influence on reported life satisfaction, whereas unemployment has a negative effect.

Hayo and Seifert (2002) studied determinants of subjective economic well-being in a number of Eastern European countries including Ukraine in the period form 1991-1995. They refer to subjective economic well-being as a subcategory of overall wellbeing since it is more narrowly defined than overall well-being and correlates highly with overall life satisfaction in Eastern Europe. Relation between subjective economic and overall well-being is, however, not perfect. Some of their results coincide with general findings in happiness research. In particular, they found that subjective economic well-being is positively correlated with income, education, and negatively correlated with settlement size and unemployment. Furthermore, it is U-shaped in age with minimum reached at the age of 37. In contrast to many studies on happiness, Hayo and Seifer found no effect of gender and marital status on subjective economic well-being. In the same work, the authors also study the relationship between subjective economic well-being, objective economic well-being and GPD per capita. They found small correlation coefficient between GDP per capita and subjective economic well being during early stages of transition. Furthermore, they found no one-to-one correspondence between subjective and objective economic well-being. The immediate policy implication the authors offer is that booming economy may have no effect on individual well-being if there is an expectation that it is a temporary phenomenon.

Thus, the study of well-being in Ukraine has already been pioneered by Hayo and Seifer. However, they concentrated on a study of specific category of well-being, subjective economic well-being. Moreover, they use pooled data over time

and countries. In contrast, in my study I will study determinants of life satisfaction specifically in Ukraine and will employ panel data which will allow me to take into account individual fixed effects and avoid biases caused by inter-individual differences in anchoring of satisfaction. In addition, Hayo and Seifer studied subjective economic well-being at the beginning of transition, and I will study subjective life satisfaction after more than 10 years after the beginning of transition.

Chapter 3

METHODOLOGY

To study the question of life satisfaction in Ukraine I will use the panel data from Ukrainian Longitudinal Monitoring survey (ULMS) conducted by Kiev International Institute of Sociology and provided to me by EROC. The survey includes two questionnaires - Household and Individual—and encompasses 2 consecutive years, namely, 2003, 2004. Number of observations is 5784 in each year.

There are 5 different answers to life satisfaction question, and it is therefore possible to assign arbitrary values to these 5 different answers. In particular, the question sounds as "to what extent are you satisfied with your life in general?" and the 5 possible answers and their arbitrary assigned rankings are: 5 fully satisfied; 4-satisfied; 3-rather satisfied; 2-less than satisfied; 1-not satisfied at all. Validity and reliability of replays to such questions have been extensively studied in literature (see Diener (1984) and Veenhoven (1993)) and general conclusion is that subjective indicators such as these though not perfect, do reflect real feelings of well-being. Furthermore, there is intra-personal variation in life satisfaction responses which means that individual's responses are not stable over time. Table 1 shows how life satisfaction responses changed over the years 2003 and 2004. The idea of the table was taken from Eggers et al (nd), and it is the follows: the number in each cell shows probability of choosing a particular response in the year 2004 conditioned on the response chosen in the year 2003. The probabilities of choosing the same answer in both years are shown in diagonal entries. Eggers et al (nd) did the same with life satisfaction responses of people living in Russia.

Table 1: Stability of life satisfaction responses.

		Year 2004				
		Not at all satisfied	Less than satisfied	Rather satisfied	Satisfied	Fully satisfied
Year 2003	Not at all satisfied	**40.38 %**	32 %	17.88 %	8.94 %	0.78 %
	Less than satisfied	21.47 %	**30.43 %**	25.44 %	19.56 %	3.1 %
	Rather satisfied	13.56 %	26.09 %	**27.36 %**	27.03 %	5.95%
	Satisfied	6.8 %	18.89 %	26.29 %	**35.88 %**	12.12%
	Fully satisfied	3.58 %	13.18 %	22.95 %	40.74 %	**19.54 %**

As can be seen from Table1, probability of choosing the same answer in both years was highest for people who answered to be not at all satisfied or satisfied in the first year of observation. This is in contrast to the finding of Eggers et al (nd): In Russia, the probability of repeating the answer given in the previous year was highest for people in two most negative categories. Moreover, probabilities of giving the same answers in two consecutive years are on the whole lower for Ukraine than for Russia, which means that there are more variations in satisfaction responses in Ukrainian data. This fluctuation in responses may reflect uncertainty associated with the results of presidential elections in the second half of the year 2004. At the same time, as Egger et al (nd) indicate, these variations in satisfaction responses will make the statistical results more powerful.

Life satisfaction is an ordered variable and hence it would be appropriate to use ordered probit or logit models. However, since the data is panel, there arises a problem of unobserved individual specific fixed effects which make estimated coefficients biased. So fixed effects model should be used, in particular, fixed

effect logit, since fixed effect probit is not possible. There is no ready formulation of model available for fixed effects case and I employ the one proposed by Winkelman & Winkelman (1997). According to them, satisfaction variable is collapsed into satisfied/dissatisfied dichotomy and the following underlying latent model is considered:

$$Y_{it}^{*} = a_i + x_{it}^{'}\beta + \varepsilon_{it}, \quad i = 1,\ldots\ldots,N,\ t = 1,\ldots T,$$

where Y_{it}^{*} is a index of life satisfaction of individual i in period t, x_{it} is a vector of explanatory variables, and a_i is an idiosyncratic fixed effect which accounts for inter-individual differences and scaling and anchoring of responses, intrinsic differences in satisfaction and unobserved explanatory variables, as long as these differences are constant over time (Winkelman & Winkelman 1997, p.8). ε_{it} is logistically distributed.

I reduce the response scale of the life satisfaction equation according to the following rule: individuals with response of 3 and higher are classified as "satisfied", $Y = 1$, others- as "dissatisfied", ($Y = 0$). The rational for such a division is that mean of reported life satisfaction lies between 2 and 3 (see Table A3) in both years and this division is therefore equivalent to classifying people into those who report above- and those who report below-average satisfaction. It may be argued that such classification may lead to having more satisfied than dissatisfied people. However, as data descriptive statistic shows, with reduced response scale, the percentage of unsatisfied respondents is 58.81 % and 49.9 % in 2003 and 2004 respectively. As a final word, it should be noted that binary logit estimator was shown to be consistent whatever the choice of the breaking point is (Crouchley, 1995).

Thus I will observe:

$$Ya_{it} = \begin{cases} 1 & if\ Y_{it}^{*} \succ 0 \\ 0 & otherwise \end{cases}$$

Conditional probabilities are

$$P(Y_{it} = 1 | x_{it,} \alpha_i) = \frac{\exp(\alpha_i + x_{it}^{'})}{1 + \exp(\alpha_i + x_{it}^{'})};$$

$$P(Y_{it} = 0 | x_{it,} \alpha_i) = \frac{\exp(\alpha_i + x_{it}^{'})}{1 + \exp(\alpha_i + x_{it}^{'})}.$$

To test for the fixed individual effects I will use Huasman-type test:

$H = (\beta_{CML} - \beta_{ML})^{'} (V_{CML} - V_{ML})^{-1} (\beta_{CML} - \beta_{ML})$, where CML refers to conditional MLE and ML refers to logit MLE estimated ignoring the individual effects. H is asymptotically χ^2 distributed with k degrees of freedom.

It should be noted that in fixed effects logit model all individuals with unchanged binary satisfaction response over the two years of observation are excluded. Hence the number of observations is lower than total sample size which may result in less precise estimates, that is, higher standard errors. Moreover, all time invariant regressors are dropped from the model too.

To see the effect of the time invariant regressors on the reported level of life satisfaction I use ordered probit model, separately for each year. The ordered probit model is

$$y_i^* = x_i \beta + u_i$$

$$y_i = 1 \text{ if } y_i^* \le 0; \qquad y_i = 2 \text{ if } 0 \prec y_i^* \le \gamma_1;$$

$$y_i = 3 \text{ if } \gamma_1 \prec y_i^* \le \gamma_2; \qquad y_i = 4 \text{ if } \gamma_2 \prec y_i^* \le \gamma_3;$$

$$y_i = 5 \text{ if } \gamma_3 \prec y_i^*,$$

where y_i^* is a latent index of life satisfaction of individual i, x_i -vector of explanatory variables. Normalizations imposed on the model are that one of the boundaries is normalized to 0 ($\gamma = 0$) and that disturbance term u_i is normally

distributed with variance equal to 1 (u_i is NID (0,1)). The implied probabilities are

$$P(y_i = 1 \mid x_i) = P(y_i^* \leq 0 \mid x_i) = \Phi(-x_i'\beta)$$

$$P(y_i = 2 \mid x_i) = P(0 \prec y_i^* \leq \gamma_1 \mid x_i) = \Phi(\gamma_1 - x_i'\beta) - \Phi(-x_i'\beta)$$

$$P(y_i = 3 \mid x_i) = P(\gamma_1 \prec y_i^* \leq \gamma_2 \mid x_i) = \Phi(\gamma_2 - x_i'\beta) - \Phi(\gamma_1 - x_i'\beta)$$

$$P(y_i = 4 \mid x_i) = P(\gamma_2 \prec y_i^* \leq \gamma_3 \mid x_i) = \Phi(\gamma_3 - x_i'\beta) - \Phi(\gamma_2 - x_i'\beta)$$

$$P(y_i = 5 \mid x_i) = P(\gamma_3 \prec y_i^* \mid x_i) = 1 - \Phi(\gamma_3 - x_i'\beta).$$

Choosing the regressors, determinants of life satisfaction, I orient on the causes of happiness determined by social psychologist Hadley Cantril (1965). In the early 1960's he conducted an intensive survey in fourteen countries with highly diverse cultures and at widely different stages of socio-economic development, asking open-ended question of what people want out of life. The results showed that on the first place are material circumstances such as level of living, on the second-family concerns followed by one's personal or family health. On the 4rth place are one's work and personal character. Concerns about broad international or domestic issues were not often mentioned. Results similar to Cantril's have been obtained by others too (Andrews and Withey, 1976; Campbell, 1981, Campbell et all, 1976; Veroff et al. 1981).

Thus, determinants that I chose are income, personal health, employment, level of education, marital status number of children and size of household. The individual characteristics that I am going to use are age, age squared, gender. Moreover, I will also use regional and type of settlement dummies.

As a measure of individual income I use net household income in the last month (month preceding the interview). For my analysis it would be better to have

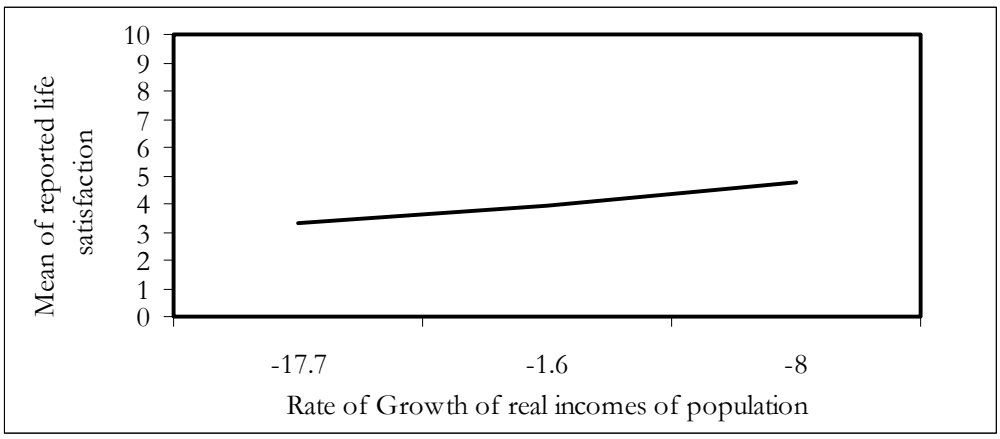
reported income at the time of the interview, but since the questionnaire asks net household income in the last month only, I have no other alternative. To determine the employment status I used a number of questions from the individual questionnaire such as questions about availability of job, job search, reasons for not searching for job, willingness to start working, pensions, age, gender, registration at state employment bureau as job seeker, employment status. I ended up classifying individuals into 6 categories: employee, unemployed, self-employed, unpaid family helper, member of production cooperative, retired, students. Their definitions are presented in the appendix B.

Chapter 4

DATA DESCRIPTION AND PRELIMINARY RESULTS

As can be seen from the Table 4, the mean of life satisfaction increased slightly over the two years from 2.35 to 2.59. The same table shows that mean of reported household income increased as well from 518. 43 to 737.04 grn. Thus satisfaction increased with income over a short period of time. To see the evolution of happiness responses with respect to income over the previous years I took happiness responses form World Happiness Database (Table A5) and real incomes data from Ministry of Economy and European Integration of Ukraine (Table A4). The result is the Diagram 1 below that shows that reported life satisfaction increased only slightly, while real incomes rose and declined significantly.

Diagram 1: Evolution of life satisfaction over time (the years considered are 1996, 1999, 2001).



Thus there seem to be no relationship between income and happiness over time which is in accordance with conclusions of other studies (Blanchflower and Oswald 2004; Diener and Oishi 2000; Myers 2000; Kenny 1999; Lane 1998; and Easterlin 1974, 1995, 2001). However, as Table A1 shows, at a point in time, there appear to be strong correlation between income and life satisfaction. There are more satisfied people (fully satisfied+satisfied +rather satisfied) and less dissatisfied people (less than satisfied +not satisfied at all) among those whose are in the highest income group (income between 601 and 15000 grn).

As Table A1 shows further, in 2003 more than half of the total population was not happy, with more females being unhappy than males. For comparison, in Russia, in 2001, 51.4 % of respondents reported they were not at all or rather dissatisfied (Eggers, et al (nd)); in Romania, in the same year, 73 % of respondents said they were not satisfied; in European countries, as Euro-Barometer data for the years 1975-92 show, more than 80% of people reported that they were "very satisfied" or "fairly satisfied", and 20 % -- "not very satisfied" or "not satisfied at all" (Di Tella, et all, 2002, Table1a).

In 2004, proportion of dissatisfied individuals decreased by 9 % from 58.98 % to 49.95 %. Moreover, proportion of dissatisfied females decreased by about the same 9 % in 2004, but number of dissatisfied females still overweighed number of dissatisfied males.

In 2003 and 2004 there were more satisfied people among young, singles, people with good and very good health, working (unpaid family helpers, member of production cooperatives self- employed, employees) and students. In addition, there were more satisfied and less dissatisfied among people with incomplete professional higher education, with specialist, master and candidate of science degrees. The relationship between types of settlement and reported life

satisfaction is not clear; however, it can be noted that percentage of not at all satisfied people is lower among those living in very big cities than among people living in village. To sum up, happiness seems to be positively correlated with health, education, employment, and negatively correlated with age, and being not working.

Chapter 5

REGRESSION RESULTS

Since form my data set I eliminated observations with household income of 0 as well as observations with educational level "other" the number of observations in each year decreased to 5772. First, I will describe the results from ordered probit regressions ran for each year separately. Although, the estimates obtained may not be reliable due to possible bias discussed in methodology part, they are directly comparable to the estimates obtained in other studies such as the ones made for Romania (Andren et al, 2003), Kyrgyzstan (Namezie et al, 1998), Britain (Clark and Oswald, 1994), US and UK (Blanchflower and Oswald, 2004), where cross sectional or pooled data was used. Moreover, ordered probit regressions use 5 point measurement scale of the dependent variable, while conditional logit model reduces it to binary scale; and ordered probit model uses information that fixed effects logit excludes. Thus results of ordered probit model are more specific regarding the scale of dependent variable and more extensive, regarding the number of regressors. Finally, as has already been mentioned, sample size used in ordered probit regressions is larger than that of conditional logit, which makes results of ordered probit models more precise (i.e. with smaller standard errors). All this makes ordered probit regressions worthwhile to consider. Conditional logit regressions can be used then to check for the robustness of the results.

As can be seen from marginal effects computed after ordered probit regressions (Tables C1 and C2), changes in employment status from unemployed to self-employed, employee, student, out of labor force, retired increase probability of

falling into satisfied categories and these results are statistically significant (at 10 % significance level) in both years. For example, moving an individual from unemployed to employee status in 2004 increases the probability of falling into fully satisfied category by 2.5 %, and decreases the probability of falling into not all satisfied category by 10.3 %. So, at this stage we may conclude that unemployment is a one of the depressants of reported life satisfaction, which corresponds to the results of many other studies.

Income has a positive and statistically significant effect on reported life satisfaction; however, this effect is not large and much lower than the effect of being unemployed. This is consistent with what many others have found. In our case, in both years, income has to be doubled to increase the probability of falling into the highest satisfaction category by the same percentage as moving an individual from unemployed to employee status.

Males are a little bit less satisfied than females, but the difference in gender is statistically significant (at 10 % significance level) only in one of two years, which means that gender effect is not strong. This is in accordance with the results obtained in studies made for transition counties such as Kyrgyzstan (Namezie et al(1998), Romania (Andren et al, 2003) and in contrast to the results of Russian study (Eggers et al (nd)) and US study (Blanchflower and Oswald, 2004), where males turn out to be happier than females. For comparison, in many studies for developed countries, such as EU countries (Di Tella et al., 2001), Switzerland (Frey and Stutzer, 2000), females are found to be happier than males.

Age has a negative sign implying that satisfaction decreases with age. Age squared coefficient is positive and statistically significant which means that satisfaction is U-shaped in age with minimum reached around the age of 55. For comparison, in Russia, the minimum was found to be reached at the age 53

(Eggers et al (nd)), in Kyrgyzstan- 63 (Namezie et al, 1998), Romania - around the age of 25 (Andren et al, 2003), US -- in the late thirties (Blanchflower and Oswald, 2004), and in UK-in late thirties (Blanchflower and Oswald, 2004) or mid thirties (Clark and Oswald, 2004). In Germany, however, satisfaction was not found to be U-shaped in age (Winkelman & Winkelman, 1997).

Type of settlement does not have clear-cut effect on happiness: signs and significance of coefficients change in both years. For comparison, economic subjective well-being was found to be negatively correlated with settlement size, which was explained by existence of income inequalities in large cities (Hayo and Seifert, 2004).

Size of household is negatively correlated with satisfaction in both years. Since household income is included in the regression, negative effect of household size is not due decline in income per person as household size increases, but due to some other social-economic factors. Such factors may be lack of care of family members to each other, not enough private space, etc. Relationship between satisfaction and number of children is ambiguous and not statistically significant.

People with all educational levels are more likely to be satisfied with life compared to people with only 7-11 classes of high school education without diploma. The exceptions are people with the high school diploma and vocational school levels, but coefficient for these groups are not statistically significant. Probability of falling into higher categories of satisfaction increases with educational level. This result coincides with the conclusion of Veenhoven (1996) that education is usually highly positive correlated with satisfaction in low income countries. The same results were found for Romania (Andren et al, 2003), Russia (Eggers et al, nd), and also for US (Blanchflower and Oswald, 2004). Different results, however, were found for Kyrgyzstan (Namezie, 1998), UK (Clark and

Oswald, 2004) where education does not have any or has negative effect on reported well-being.

Health is positively correlated with satisfaction in both years with likelihood of being satisfied increasing with the state of health.

Being in non-registered, registered marriage and widowed as compared to being single increases the probability of being satisfied, while being divorced or separated decreases this probability. However, marginal effect coefficient of registered marriage only is statistically significant in both years. Eggers et al (nd) obtained similar results for Russia: being single, married or widowed do not have statistically significantly different effects on the probability of falling in least satisfied category, although divorced are less satisfied of all. In developed countries the situation is different. Clark & Oswald (2002) have found that in life satisfaction regressions based on British data, marital status variables have a strong and similar to labor force status variables effect on well being with widowhood having the largest effect that they detected. Similarly, Blanchflower and Oswald (2004) found that in the US being separated, closely followed by being widowed, has the greatest negative effect on reported happiness.

Some of the regional dummies are statistically significant and have the same (positive or negative) sign in both years. It is reasonable to expect life satisfaction to be the highest in Kyiv, since it is capital and the most highly developed city of Ukraine. However, as regression results show, there are regions where people are more satisfied with life than in Kyiv. They are Zakarpatska, Rovenska, Chernovitska, Jitimirska regions, which are located in the Western Ukraine. The signs of Odeska, Chernigivska, Cherkasska, Kharkivska region dummies are negative and statistically significant in both years, which implies that changing the place of residence by individual form Kyiv to any of these regions decreases the

probability for an individual to be in higher satisfaction categories. These regions are located in the South, North, Center and East of Ukraine respectively. The sizes of regional dummies coefficients are comparable in size to those of employment status.

Results for conditional logit model are given in Table C3. Hausman test shows that individual specific effects are indeed present and that fixed effect model is better than pooled logit model (Huasman test statistic is 115.84 ($= \chi^2_{(32)}$) and H_0 of no systematic difference in coefficients is rejected). Thus, whatever the results of ordered probit regressions are I should disregard them if they do not coincide with the results obtained in conditional logit regressions. Regressors dropped from conditional logit regression are settlement, regional, gender dummies and I will not be able to check for their robustness. But this is not as important since the main questions of interest to me are the effects of income and employment status on reported life satisfaction.

As can be seen, the results are somewhat different from what was obtained form ordered probit models, namely, some of the regressors change their signs and are not statistically significant. For example, age coefficient is not negative and not statistically significant any more. Age squared is not statistically significant too which means that life satisfaction is not U-shaped in age. Furthermore, satisfaction turns out to decrease with education, but this result is also statistically insignificant. The only statistically significant at most at 10 % significance level and consistent with the previous findings results are that for 4 categories of employment status, income, health, marital status category "divorced" and number of children category "more than 3". For ease of interpretation, I use percent changes in the odds for coefficients statistically significant at 10 % significance level.

Table 2: Conditional logit: percentage change in odds.

Life satisfaction	Coefficient	Standard Error	Percentage Change in Odds, %
Employment status			
Self-employed	0.526*	0.291	69.3
Employee	0.352**	0.148	42.2
Out of labor force	0.348**	0.178	41.7
Student	0.756***	0.282	112.9
Health			
Very good	0.806**	0.351	124
Good	1.021***	0.153	177.7
Avarage, not good	0.459***	0.115	58.4
Marital status			
Divorced	-0.571*	0.331	-43.6
Number of children			
3 and more	-2.541*	1.362	-92.1
Log Income	0.355***	0.083	42.7

* indicates significant at 10%, **- at 5 %, ***- 1 %

Thus, conditional logit confirms that being unemployed decreases life satisfaction. Being employee, self-employed, out of labor force or student as opposed to being unemployed increase the odds of being satisfied considerably: by 42.2 %, 69.3 % , 41.7% and 112.9 % respectively.

Income is also confirmed by clogit to have positive and statistically significant effect on life satisfaction. The size of the effect is comparable to that obtained in ordered probit regressions: holding all other variables constant, income has to be doubled to increase the odds of being in satisfaction category by roughly the same percentage as moving an individual from unemployed to employee status.

Another variable that passed the test of fixed effect logit is health: coefficients of all its categories remained positive and significant at 2 % significance level. Moreover, health status variable turns out to have larger effect on life satisfaction than income and employment status. Having good or very good health rather than bad health, increases the odds of reporting higher levels of satisfaction by 177.7 and 124 percent respectively. At the same time, holding all other variables constant, doubling income increases the odds of being in satisfied category by only 42.7 % and changing the employment status form unemployed to employee — by 42.2 %. Moreover, life satisfaction seems to be U-shaped in health: it increases with the increase in health status reaching the maximum at the health status "good" and then decreases again. Thus, the odds of reporting high level of life satisfaction are higher for people with good rather than excellent health holding all other variables constant.

As to other variables that are found to be statistically significant in conditional logit regression, their results are discussed next. Conditional logit confirms that being divorced has a negative effect on satisfaction, in particular, the odds of being satisfied are 43.6% smaller if a person is divorced compared to a single person, holding all other variables constant. Number of children had an ambiguous effect in ordered probit regressions, conditional logit, however, shows that having 3 or more children has a statistically significant negative effect on satisfaction. Interpreting in terms of odds, the odds of reporting higher satisfaction level are 92.1 % smaller for individuals with 3 or more children than for those without children, holding other variables constant.

It should be noted that the range of variables used in ordered probit and conditional logit regressions is limited and there may exist a lot of other factors that determine life satisfaction. This may cause omitted variable bias. In addition there may also be a problem of causality, such as between income and life

satisfaction. In the above regressions, household income was treated as a factor that influences life satisfaction. But this variable may in turn be influenced by life satisfaction too. Thus, more satisfied people may work harder and earn more money. If this is the case, and income is not exogenous, all estimated coefficients are biased. This problem can potentially be solved by finding an appropriate instrumental variable that is correlated with household income, but uncorrelated with life satisfaction. However, such an instrumental variable is hard to find. For example, average wage in a region is not a good instrument for income since it, although uncorrelated with life satisfaction, is only weakly correlated with household income (R^2 is only 0.1 when income is regressed on average wage). Similarly, income per person by regions is not a good instrument either, since correlation between it and household income per individual is also weak (R^2 is only 0.06). So, in view of presence of the mentioned above problems, obtained in the work results should be treated with caution.

Chapter 6

CONCLUSION AND POLICY IMPLICATIONS

Conclusions

In my work, I studied determinants of reported life satisfaction in Ukraine using panel data encompassing 2 consecutive years 2003 and 2004. My purpose was to test whether results obtained for other countries hold for Ukraine too. In particular, I was interested in relationship between income and satisfaction and employment status and satisfaction. I expected to find that income does not have large effect on reported life satisfaction and that being unemployed has a large negative effect on satisfaction. In my study I used ordered probit regressions for each year separately and fixed effect (conditional) logit regression. The later was used to take into account individual fixed effects and eliminate bias due to unobserved factors that do not vary over time but vary over individuals. Thus conditional logit served as a check for robustness of the results. My expectations fully realized. Income indeed proved to be far not the largest determinant of life satisfaction, although statistically significant. Unemployment turned out to be one of the main depressants of life satisfaction: treating unemployed as a base category, coefficients of all the employment status variables are positive in all the regressions, with some of the categories being statistically significant in both ordered probit and conditional logit regressions.

In addition to income and employment status, another variable that showed robust result is health. It remained highly statistically significant and did not change its sign in both types of regressions. Moreover, its effect on life satisfaction is found to be the largest.

Policy implications

Venhooven, in his work *Developments in satisfaction research* (1996) points out that according to consensualist approach to social well-fare which grounds on public consensus and in which view well-fare is a degree to which a society realizes its own goals, concept of satisfaction can serve the role of a "messenger" of well-fare state, with dissatisfaction indicating well-fare deficits. Applying this to our case, if being unemployed or having bad health decreases life satisfaction significantly, then something must be done to eliminate unemployment and help people deal with health problems. In other words, government, if willing to improve well-fare of Ukrainian people should set as a priority improving health care system in Ukraine and creating new workplaces.

Particular policy implications can be drawn. Let's consider health care first. Although officially, medical treatment is free in Ukraine, in reality it is not so. Usually for good medical treatment people have to spend a lot of money. But, since negative impact of bad health is non-pecuniary, it is not the costs of health care that cause unhappiness, but inconveniences that bad health causes and that cannot be eliminated with money. For example, this may be unavailability of hospitals or needed specialists in nearby area. This may also be lack of accommodations and low level of social support for disabled people. Thus, there is a room for government intervention to make everything possible to help sick people to get cure and make people with disabilities feel themselves full members of society.

The problem with health care can also be considered from another point of view. Namely, since income does not have large effect on happiness, a tax can be imposed to collect money from people for building new hospitals and maintaining health care sector.

As to unemployment, since being working is higher valued than money, companies should not hasten to fire people because of reduced production, or reduced demand for labor due to improvements in technology of production. Companies may offer instead to split one job between two people and pay somewhat less. In order to ensure that an employee who will continue to do the job good for reduced payment stay and those who will not -- leave, companies may provide an incentive scheme, such as deferred compensation or non-wage benefits. This will ensure that a worker does his/her part of job good and gets the prescribed salary or leaves if he/she can find another job with better payment.

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APPENDIX A: DATA

Table A1: Life satisfaction

	Fully satisfied	Satisfied	Rather satisfied	Less than satisfied	Not satisfied at all	
Total						
2003	234 (4.03)	935 (16.09)	1215 (20.91)	1651 (28.41)	1777 (30.57)	5812
2004	293 (5.04)	1249 (21.49)	1367 (23.52)	1594 (27.43)	1309 (22.52)	5812
Gender						
2003						
Male	105 (4.35)	405 (16.79)	524 (21.17)	669 (27.73)	708 (29.36)	2411
Female	129 (3.79)	530 (15.58)	692 (20.34)	982 (28.86)	1069 (31.42)	3401
2004						
Male	129 (5.35)	553 (22.93)	578 (23.96)	656 (27.19)	495 (20.52)	2411
Female	164 (4.82)	696 (20.45)	789 (23.19)	938 (27.57)	814 (23.92)	3401
Marital status						
2003						
Single	100 (9.19)	288 (26.47)	269 (24.72)	259 (23.80)	172 (15.80)	1088
In non-registered mar	6 (2.19)	37 (13.50)	59 (21.53)	70 (25.54)	102 (37.22)	274
In a registered marriage	103 (2.92)	521(14.81)	728 (20.70)	1048 (29.79)	1116 (31.73)	3516
Widowed	10 (2.06)	43 (8.8)	85 (17.56)	140 (28.92)	206 (42.56)	484
Divorced	14 (3.68)	40(10.52)	58 (15.26)	112(29.47)	156 (41)	380
Separated	1 (1.43)	6 (8.5)	16 (22.85)	22 (31.14)	25 (35.71)	70
2004						
Single	105 (10.37)	316 (31.22)	241 (23.81)	229 (22.62)	121 (11.95)	1012
In non-registered mar	10 (3.28)	59 (19.4)	63 (20.72)	75 (24.67)	97 (31.9)	304
In a registered marriage	149 (4.35)	711 (20.76)	821 (23.97)	989 (28.88)	754 (22.02)	3424
Widowed	14 (2.57)	70 (12.86)	107 (19.67)	160 (29.41)	193 (35.47)	544
Divorced	12 (2.88)	74 (17.78)	99 (23.79)	110 (26.44)	121 (29)	416
Separated	3 (2.75)	18 (16.51)	34 (31.19)	31 (28.44)	23 (21.1)	109
Health:						
2003						

Very good	20 (20.61)	29 (29.89)	18 (18.55)	16 (16.49)	14(14.43)	97
Good	102 (8.48)	359 (29.87)	275 (22.87)	265 (22.05)	201 (16.72)	1202
Average	94(2.99)	459 (14.61)	738 (23.50)	961 (30.60)	888 (28.28)	3140
Bad	18 (1.31)	185 (13.47)	409 (29.78)	674 (49.09)	936 (68.17)	1373
2004						
Very good	9 (11.11)	30 (37)	14 (17.28)	11 (13.58)	17 (21)	81
Good	140 (11.10)	441 (34.97)	314 (24.9)	241 (19.11)	125 (9.9)	1261
Average	135 (4.27)	671 (21.26)	802 (25.41)	923 (29.25)	624 (19.77)	3155
Bad	9 (0.68)	107 (8.13)	238 (18.09)	419 (31.86)	543 (41.29)	1315
Income 2003						
<300	68 (3.37)	210 (10.42)	343 (17)	537 (26.65)	857 (42.53)	2015
>301, <600	73 (3.46)	338 (16.02)	449 (21.29)	625 (29.63)	624 (29.58)	2109
>601, <1500	85 (5.40)	348 (22.13)	395 (25.12)	461 (29.32)	283 (18.00)	1572
>1500, <5000	8 (7.01)	39 (34.21)	28 (24.56)	27 (23.68)	12 (10.52)	114
2004						
<300	25 (2.31)	121 (11.18)	187 (17.28)	338 (31.23)	411 (37.98)	1082
>301, <600	72 (3.65)	302 (15.33)	458 (23.26)	608 (30.87)	529 (26.86)	1969
>601, <1500	145 (6.20)	645 (27.58)	627 (26.81)	588 (25.15)	333 (14.24)	2338
>1500<15000	51 (12.08)	180 (42.65)	95 (22.51)	60 (14.21)	36 (8.53)	422
Status of employment: 2003						
Employee	80 (3.30)	441 (16.96)	564 (23.27)	761 (31.41)	577 (23.81)	2423
Member of a production cooperative	2 (3.12)	9 (14.06)	10 (15.62)	23 (35.94)	20 (35.93)	64
Out of labor force	10 (1.83)	83 (15.17)	100 (18.28)	151(27.60)	203 (37.11)	547
Retired	30 (2.35)	104 (8.17)	204 (16.05)	368 (28.90)	567 (44.54)	1273
Self-employed	9 (4.78)	40(21.27)	43 (22.87)	50 (26.59)	46 (24.46)	188
Student	72 (14.20)	176 (34.71)	138 (27.22)	79 (15.58)	48 (9.47)	507
Unemployed	24 (3.18)	72 (9.56)	151 (20.05)	207 (27.49)	299 (39.70)	753
Unpaid family helper	5 (45.45)	3 (27.27)	2 (18.18)	1 (9.09)	0 (0)	11
2004						
Employee	139 (5.42)	686 (26.76)	708 (27.62)	654 (25.52)	376 (14.67)	2563
Member of a production cooperative	1 (1.92)	18 (34.61)	11 (21.15)	13 (25.00)	9 (17.31)	52

Out of labor force	16 (2.93)	96 (17.61)	107 (19.63)	160 (29.36)	166 (30.46)	545
Retired	33 (2.63)	146 (11.72)	239 (19.06)	407 (32.45)	429 (34.21)	1254
Self-employed	16 (6.03)	69 (26.04)	59 (22.26)	53 (20.00)	68 (22.66)	265
Student	62 (15.94)	151 (38.82)	94 (24.16)	62 (15.94)	20 (5.14)	389
Unemployed	23 (3.30)	76 (10.92)	137 (19.69)	237 (34.05)	223 (32.04)	696
Unpaid family helper	0 (0)	4 (50.00)	1 (12.50)	0 (0)	3 (37.50)	8
Age group 2003						
17-29	115 (8.96)	351 (27.35)	341 (26.57)	296 (23.07)	180 (14.00)	1283
30-49	47 (2.42)	306 (15.77)	433 (22.32)	579 (29.84)	575 (29.64)	1940
50-74	72 (2.78)	278 (10.73)	441 (17)	776 (29.97)	1022 (29.47)	2589
2003						
17-29	127 (9.89)	411 (32)	326 (25.38)	275 (21.14)	145 (11.29)	1284
30-49	82 (5.85)	432 (22.27)	493 (25.41)	536 (27.62)	397 (20.46)	140
50-74	84 (3.24)	406 (15.68)	584 (21.17)	783 (30.25)	767 (29.63)	2588
Education level 2003						
Grades 1-11	85 (5.94)	240 (16.77)	270 (18.87)	369 (25.79)	467 (32.62)	1431
Diploma of high school	50 (4.46)	171 (15.25)	229 (20.43)	298 (26.58)	373 (33.27)	1121
Vocational education	21 (1.8)	141 (12.34)	277 (24.23)	335 (29.31)	368 (32.2)	1143
Technical, musical, medical school	30 (2.58)	170 (14.63)	246 (21.17)	349 (30)	367 (31.58)	1162
Incomplete professional higher education	6 (4.8)	31(24.8)	29 (23.2)	38 (30.4)	21 (16.8)	125
Bachelor degree	4 (5.48)	16 (21.92)	16 (21.92)	16 (21.92)	21(28.77)	73
Diploma of specialist	31(4.59)	142 (21)	134 (19.85	221 (32.74)	147 (21.78	675
Master degree	5 (8.47)	15 (25.42)	12 (20.34)	17 (28.81)	10 (16.95)	59
Candidate of sciences	1 (7.14)	5 (35.71)	2 (14.29)	5 (35.71)	1 (7.14)	14
Other	0 (0)	4 (44.44)	0 (0)	3 (33.33)	2 (22.22)	9

2004						
Grades 1-11	54 (4.29)	200 (15.9)	250 (19.87)	380 (30.21)	374 (29.73)	1258
Diploma of high school	54 (4.97)	201 (18.49)	266 (24.47)	268 (24.66)	298 (27.41)	1087
Vocational education	36 (3.19)	230 (20.37)	294 (26.04)	331 (29.32)	238 (21.08)	1129
Technical, musical, medical school	64 (4.92)	272 (20.89)	317 (24.35)	368 (28.26)	281 (21.58)	1302
Incomplete professional higher education	15 (10.56)	52 (36.62)	34 (23.94)	31 (21.83)	10 (7.04)	142
Bachelor degree	3 (4.17)	27 (3.75)	18 (25)	18 (25)	6 (8.33)	72
Diploma of specialist	58 (7.68)	240 (31.79)	177 (23.44)	185(24.5)	95 (12.58)	755
Master degree	7 (13.46)	20 (38.46)	9 (17.31)	11 (21.15)	5 (9.62)	52
Candidate of sciences	2 (15.38)	6 (46.15)	2 (15.38)	2 (15.38)	1 (7.69)	13
Other	0 (0)	1 (50)	0 (0)	0 (0)	1 (50)	2
Type of settlement						
2003						
Village	76 (3.78)	292 (14.56)	404 (20.14)	580 (28.91)	647 (32.25)	2006
Urban village	24 (3.31)	107 (14.80)	150 (20.74)	202 (27.93)	240 (33.19)	723
Small town	2 (1.37)	36 (24.82)	25 (17.24)	46 (31.72)	36 (24.83)	145
Middle-sized town	27 (4.11)	105 (15.98)	156 (23.74)	170 (25.87)	199 (30.29)	657
Big city	50 (4.32)	193 (16.70)	232 (20.08)	327 (28.31)	353 (30.56)	1155
Very big city	55 (4.88)	202 (17.93)	248 (22.02)	319 (28.33)	302 (26.82)	1126
2004						
Village	72 (358)	336 (16.75)	515 (25.67)	553 (27.56)	520 (25.92)	2006
Urban village	35 (4.84)	138 (19.08)	177 (24.48)	215 (29.73)	153 (21.16)	723
Small town	8 (5.51)	36 (24.82)	29 (20)	36 (24.82)	36 (24.82)	145
Middle sized town	42 (6.39)	177 (26.94)	136 (20.70)	175 (26.63)	127 (19.33)	657
Big city	70 (6.06)	257 (22.25)	252(21.18)	306 (26.49)	270 (23.37)	1155
Very big city	66 (5.86)	305 (27.08)	258 (22.91)	307 (27.26)	190 (16.87)	1126

Table A2: Frequencies and percent of observations for main variables

Variables	Frequency		Percent	
	2003	**2004**	**2003**	**2004**
Life satisfaction				
Fully satisfied	234	293	4.03	5.04
Satisfied	935	1249	16.09	21.49
Rather satisfied	1215	1367	20.91	23.52
Less than satisfied	1651	1594	28.41	27.43
Not satisfied at all	1777	1309	30.57	22.52
Gender				
Male	2411	2411	41.48	41.48
Female	3401	3401	58.52	58.52
Marital Status				
Single	1088	1012	18.72	17.42
In non-registered m	274	304	4.71	5.23
In a registered m	3516	3424	60.50	58.94
Widowed	484	544	8.33	9.36
Divorced	380	416	6.54	7.16
Separated	70	109	1.20	1.88
Health:				
Very good	97	81	1.67	1.39
Good	1202	1261	20.68	21.70
Average, not good	3140	3155	54.03	54.28
Bad	1373	1315	23.62	22.63
Status of employment:				
Employee	2423	2563	41.98	44.40
Self-employed	188	265	3.26	4.59
Unpaid family helper	11	8	0.19	0.14
Member of production cooperative	64	52	1.11	0.90
Unemployed	753	696	13.05	12.06
Retired	1273	1254	22.05	21.73

Student	513	389	8.89	6.74
Out of labor force	547	545	9.48	9.44
Education level				
Grades up to 11th	1431	1258	24.63	21.65
Diploma of high school	1121	1087	19.29	18.70
Vocational education	1143	1075	19.66	19.42
Technical, medical, musical school	1162	1302	19.99	22.40
Incomplete professional higher education	125	142	2.15	2.44
Bachelor degree from institute, university, academy	73	72	1.26	1.24
	675	55	11.61	12.99
Diploma of specialist	59	52	1.02	0.89
Master degree				
Candidate of sciences, doctor of sciences	14	13	0.24	0.22
Other	9	2	0.15	0.03
Type of settlement				
Village	1980		34.30	
Urban type village	716		12.40	
Small town (under 20 thds)	145		2.51	
Middle-sized town (20-99 thds)	655		11.35	
Big city (100-499 thds)	1151		19.94	
Very big city (more than 500 thds)	1125		19.49	
Region				
Crimea	216		3.75	
Kyiv city	256		4.44	
Kyivskaya	142		2.46	
Vinnitskaya	261		4.52	
Volynskaya	93		1.61	
Dnepropetrovskaya	419		7.26	
Donetskaya	639		11.07	
Jjitomirskaya	97		1.68	
Zakarpatskaya	128		2.22	

Zaporojskaya	255	4.42
Ivano-frankovskaya	185	3.21
Kirovogradskaya	198	3.43
Luganskaya	348	6.03
Lvovskaya	248	4.30
Nikolaevskaya	59	1.02
Odesskaya	275	4.76
Poltavskaya	207	3.59
Rovenskaya	108	1.87
Sumskaya	212	3.67
Ternopolskaya	132	2.29
Kharkovskaya	476	8.09
Khersonskaya	184	3.19
Khmelnitskaya	177	3.07
Cherkasskaya	188	3.26
Chernovitskaya	89	1.54
Chernigovskaya	189	3.27

Table A3: Descriptive statistic of some variables

	Mean	Std. deviation	Min	Max
Age	45.82	16.4	17	74
Number of children	1.45	1.06	0	14
Household size	3.36	1.42	1	13
Life satisfaction				
2003	2.35	1.18	1	5
2004	2.59	1.19	1	5
Household Income				
2003	518.43	413.78	1	5000
2004	737.04	628.99	0	15000

Table A4:
Indicators of economic growth (present change over the same period last year)

	1994	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
Real GDP	-22,9	12,2	-10	-3	-1,9	-0,2	5,9	9
Industrial Output	-27,3	-12	-5,1	-0,3	-1	4	13,2	14.2
Agricultural Output	-16,5	-3,6	-9,5	-1,9	-9,8	-6,9	9,8	9.9
Capital Investment	-22,5	-28,5	-22	-8,8	6,1	0,4	14,4	17.2
Consolidated Budgetary balance (% to GDP)	-8,9	-6,6	-4,9	-6,6	-2,2	-1,5	0,6	-0.6
Real Incomes of Population	-14	1,8	-17,1	6,3	-1,6	-8	9,9	9.0
Inflation (yearly %)	401	181,7	39,7	10,1	20,0	19,2	25,8	6.1

Source: Ministry of Economy and European Integration of Ukraine

Table A5: Life satisfaction over time

	1996 [1]	1999 [2]	2001 [3]
Mean	3.2818781	3.9555555	4.727656
Std. dev.	2.533714	2.877778	2.635766

[1] Source: WorldValueSurvey 4, Inglehart 2004. General public, face to face, N 2811, age 16+, "All things considered, how satisfied are you with your life as-a-whole these days?"
1 dissatisfied; 10 satisfied;

[2] Source: WorldValueSurvey 4, Inglehart 2004.General public, face to face, N 1195, age 18+, "All things considered, how satisfied are you with your life as-a-whole these days?"
1 dissatisfied; 10 satisfied

[3] Source: LLH Survey, http://www.llh.at. General population, face to face, N 2400, age: adults, "How satisfied are you all things considered with your life as a whole these days?"
4 definitively satisfied; 3 quite satisfied; 2 rather dissatisfied; 1 definitely dissatisfied
Answers in table 2 are transformed on a 10-0 scale.

APPENDIX B: EMPLOYMENT STATUS VARIABLE DESCRIPTION

Unemployed: men, women in working age or older than working age but not supposed to receive a pension who were not working in the last week, did not have a job from which they were temporary absent because of illness, vacations, training, maternity leave, parental leave or any other reason, were searching for a job (answered positive to the answer about the job search or registration at the sate employment bureau), or willing to start working.

Employee, self-employed, unpaid family helper, self-employed, member of production cooperative: all those who were working in the last week, or had a job from which they were temporary absent because of illness, vacations, training, maternity leave, parental leave or any other reason (of all ages).

Retired: over working age and not working, supposed to receive a pension for retirement or years of service.

Out of labor force: 1) men and women out of working age are supposed to receive pension for disability; 2) of working age, not working, not searching for the job and not willing to start working; 3) not searching because of disability, own illness or injury or military service.

Student: not working in the last week because of studies

APPENDIX C: REGRESSION RESULTS

Table C1: Ordered probit and marginal effects for the year 2003.

Number of obs = 5772 LR chi2(62) = 1484.73
Log likelihood = -7745.0727 Prob > chi2 = 0.000
Pseudo R2 = 0.0875

Base categories are unemployed, female, Kyiv, village, household size 1, 7-11 grades of High school, bad health, single, no children

	Ordered Probit		ME Fully satisfied		ME Not satisfied at all	
Life Satisfaction	Coef	Std Error	Coef	Std error	Coef	Std. error
Employment status						
Self-employed	0.388***	0.089	0.029***	0.009	-0.114***	0.023
Employee	0.313***	0.048	0.017***	0.003	-0.103***	0.015
Out of labor force	0.221***	0.064	0.014***	0.005	-0.069***	0.019
Member of production cooperative	0.234*	0.144	0.015	0.012	-0.073*	0.041
Retired	0.128*	0.074	0.007*	0.004	-0.042	0.024
Student	0.619***	0.079	0.053***	0.010	-0.171***	0.017
Unpaid	1.777***	0.339	0.380***	0.131	-0.268***	0.010
Male	-0.052*	0.031	-0.002*	0.002	0.017*	0.011
Age	-0.063***	0.009	-0.003***	0.000	0.022***	0.003
Age squared	0.0006***	0.000	0.000***	0.000	-0.0002***	0.000
Region						
Crimea	0.045	0.111	0.002	0.006	-0.015	0.036
Vinnitska	0.126	0.107	0.007	0.007	-0.041	0.033
Kyivska	0.226*	0.123	0.014	0.009	-0.070**	0.036
Volynska	0.233*	0.139	0.015	0.011	-0.072*	0.039
Dneprop	0.028	0.088	0.001	0.005	-0.009	0.029
Donetska	-0.019	0.087	-0.001	0.004	0.006*	0.029
Jitomirska	0.479***	0.135	0.039**	0.016	-0.135***	0.031
Zakarpatska	0.281**	0.125	0.019*	0.011	-0.086**	0.034
Zaporizska	-0.316***	0.099	-0.012***	0.003	0.113***	0.038
Kirovogr	-0.114	0.114	-0.005	0.005	0.039**	0.040

Luganska	0.157	0.099	0.009	0.007	-0.051*	0.030
Lvivska	0.423***	0.103	0.032***	0.011	-0.123***	0.025
Mykolaivska	-0.241	0.167	-0.010*	0.005	0.086	0.063
Odeska	-0.221**	0.101	-0.009***	0.004	0.074**	0.037
Poltavska	-0.346***	0.114	-0.013***	0.003	0.125***	0.043
Rovenska	0.356***	0.132	0.029**	0.013	-0.106***	0.034
Sumska	-0.282***	0.113	-0.011***	0.003	0.101**	0.042
Ternopilska	0.367***	0.126	0.027**	0.012	-0.109***	0.032
Khersonska	0.029	0.115	0.001	0.006	-0.009	0.038
Kharkivska	-0.301***	0.089	-0.012***	0.003	0.107***	0.033
Khmelnitska	-0.100	0.118	-0.005	0.005	0.034**	0.033
Cherkasska	-0.412***	0.119	-0.015***	0.003	0.151***	0.046
Chernovitska	0.331**	0.141	0.024*	0.013	-0.099***	0.037
Chernigivska	-0.393***	0.118	-0.014***	0.003	0.143***	0.046
Ivano-Frank.	0.221*	0.116	0.014	0.009	-0.069**	0.033
Type of settlement						
Urban Village	-0.002	0.049	-0.001	0.002	0.007	0.017
Small town	0.189*	0.098	0.012*	0.007	-0.059**	0.029
Middle sized town	-0.022	0.053	-0.001	0.003	0.007	0.018
Big city	-0.047	0.045	-0.002	0.002	0.016	0.015
Very big city	0.037	0.054	0.002	0.003	-0.012	0.017
Household size						
2	-0.069	0.082	-0.003	0.004	0.023	0.028
3	-0.143*	0.084	-0.007*	0.004	0.048*	0.029
4	-0.176**	0.087	-0.008**	0.004	0.060*	0.031
5	-0.107	0.094	-0.005	0.004	0.037	0.033
6	-0.143	0.103	-0.007	0.004	0.049	0.037
7 and more	-0.257*	0.133	-0.010**	0.004	0.091*	0.049
Education						
High school	0.050	0.047	0.003	0.002	-0.016	0.015
Vocational	-0.044	0.049	-0.002	0.002	0.015	0.017
Technical or any other school-						
Incomplete professional higher education	0.030	0.047	0.001	0.002	-0.010	0.016
Bachelor; specialist	0.230***	0.056	0.014***	0.004	-0.073***	0.016
Master-Candidate	0.319**	0.131	0.022*	0.012	-0.095***	0.035
Health						
Very good	0.902***	0.119	0.107***	0.025	-0.212***	0.017
Good	0.674***	0.051	0.053***	0.006	-0.195***	0.013

Average, not good	0.372***	0.040	0.019***	0.002	-0.125***	0.013
Marital status						
In non-registered marriage	0.159*	0.093	0.009	0.006	-0.050*	0.028
Registered marriage	0.214***	0.075	0.010***	0.004	-0.072***	0.025
Widowed	0.156*	0.094	0.009	0.006	-0.050*	0.029
Divorced	0.045	0.091	0.002	0.005	-0.015	0.029
Separated	-0.020	0.150	-0.001	0.007	0.006	0.051
Number of children						
1	-0.082	0.066	-0.004	0.003	0.028	0.023
2	-0.042	0.069	-0.002	0.004	0.014	0.023
3 and more	-0.054	0.081	-0.003	0.004	0.018	0.028
Log income	0.249***	0.025	0.013***	0.002	-0.083***	0.008
_cut1	-0.023	0.249				
_cut2	0.829	0.250				
_cut3	1.544	0.251				
_cut4	2.594	0.252				

* indicates significant at 10%, **- at 5 %, ***- 1 %

Table C2: Ordered probit and marginal effects for the year 2004.

Number of obs = 5772 LR chi2(62) = 1797.27
Log likelihood = -7826.7741 Prob > chi2 = 0.000
Pseudo R2 = 0.1030

Base categories are unemployed, female, Kyiv, village, household size 1, 7-11 grades of High school, bad health, single, no children

	Ordered Probit		ME Fully satisfied		ME Not satisfied at all	
Life Satisfaction	Coef	Std Error	Coef	Std error	Coef	Std. error
Employment status						
Self-employed	0.256***	0.080	0.019***	0.007	-0.061***	0.017
Employee	0.397***	0.049	0.025***	0.004	-0.103***	0.012
Out of labor force	0.272***	0.065	0.020***	0.006	-0.064***	0.014

Member of production cooperative	0.349**	0.156	0.029*	0.017	-0.078***	0.028
Retired	0.237***	0.073	0.016***	0.006	-0.059***	0.017
Student	0.782***	0.082	0.089***	0.015	-0.146***	0.009
Unpaid	0.315	0.384	0.025	0.040	-0.071	0.072
Male	-0.006	0.031	-0.0003	0.002	0.002	0.008
Age	-0.049***	0.009	-0.003***	0.000	0.013***	0.002
Age squared	0.0004***	0.000	0.00002***	0.000	-0.00001***	0.000
Region						
Crimea	0.004	0.109	0.0002	0.006	-0.001	0.029
Vinnitska	0.036	0.106	0.002	0.007	-0.009	0.027
Kyivska	0.031	0.123	0.002	0.008	-0.008	0.032
Volynska	0.266*	0.137	0.020	0.013	-0.062**	0.027
Dneprop	-0.137	0.088	-0.007*	0.004	0.038	0.026
Donetska	0.055	0.086	0.003	0.005	-0.014	0.022
Jitomirska	0.495***	0.135	0.047***	0.018	-0.103***	0.021
Zakarpatska	0.451***	0.125	0.041***	0.016	-0.096***	0.020
Zaporizska	-0.148	0.097	-0.007*	0.005	0.041	0.029
Kirovogr	-0.257**	0.113	-0.012***	0.004	0.075**	0.036
Luganska	0.137	0.098	0.009	0.007	-0.034	0.023
Lvivska	-0.145	0.103	-0.007*	0.005	0.041	0.030
Mykolaivska	0.144	0.163	0.009	0.013	-0.036	0.037
Odeska	-0.215**	0.099	-0.011***	0.004	0.062**	0.031
Poltavska	0.153	0.110	0.010	0.008	-0.038	0.025
Rovenska	0.390***	0.131	0.033**	0.015	-0.086***	0.023
Sumska	-0.047	0.109	-0.003	0.006	0.013	0.030
Ternopilska	0.214*	0.124	0.016	0.010	-0.052**	0.026
Khersonska	-0.175	0.115	-0.009*	0.005	0.049	0.034
Kharkivska	-0.275***	0.087	-0.013***	0.003	0.080***	0.028
Khmelnitska	-0.162	0.117	-0.008*	0.005	0.046**	0.035
Cherkasska	-0.246**	0.115	-0.012***	0.004	0.072**	0.036
Chernovitska	0.417***	0.141	0.037**	0.017	-0.060***	0.023
Chernigivska	-0.836***	0.120	-0.024***	0.002	0.286***	0.047
Ivano-Frank.	0.246**	0.115	0.018*	0.011	-0.058**	0.024
Type of settlement						
Urban Village	0.048	0.048	0.003	0.003	-0.012	0.012
Small town	0.131	0.099	0.009	0.007	-0.032	0.023
Middle sized town	0.128**	0.053	0.008**	0.004	-0.032**	0.013
Big city	-0.104**	0.045	-0.0006**	0.002	0.028**	0.012
Very big city	0.015	0.054	0.0009	0.003	-0.004	0.014
Household size						
2	-0.232***	0.072	-0.012***	0.004	0.064***	0.021

3	-0.389***	0.075	-0.019***	0.003	0.111***	0.023
4	-0.431***	0.078	-0.021***	0.003	0.125***	0.024
5	-0.388***	0.087	-0.017***	0.003	0.117***	0.029
6	-0.644***	0.097	-0.023***	0.002	0.210***	0.036
7 and more	-0.627***	0.138	-0.021***	0.002	0.206***	0.053
Education						
High school	-0.022	0.047	-0.001	0.003	0.006	0.013
Vocational	0.052	0.049	0.003	0.003	-0.014	0.013
Technical or any other school-						
Incomplete professional higher education	0.135***	0.046	0.008***	0.003	-0.034***	0.011
Bachelor; specialist	0.352***	0.054	0.027***	0.005	-0.083***	0.011
Master-Candidate	0.497***	0.138	0.047***	0.019	-0.102***	0.021
Health						
Very good	0.799***	0.129	0.098***	0.026	-0.141***	0.013
Good	0.777***	0.051	0.073***	0.007	-0.165***	0.009
Average, not good	0.447***	0.040	0.026***	0.003	-0.120***	0.011
Marital status						
In non-registered marriage	0.028	0.088	0.032	0.005	-0.007	0.023
Registered marriage	0.131*	0.071	0.007**	0.004	-0.003*	0.019
Widowed	0.013	0.089	0.0008	0.006	-0.003	0.023
Divorced	-0.051	0.086	-0.003	0.005	0.014	0.023
Separated	-0.006	0.124	-0.0003	0.007	0.001	0.033
Number of children						
1	0.018	0.063	0.001	0.004	-0.005	0.016
2	0.039	0.065	0.002	0.004	-0.010	0.017
3 and more	0.042	0.078	0.003	0.005	-0.011	0.020
Log income	0.406***	0.026	0.024***	0.002	-0.107***	0.007
_cut1	1.0079	0.244				
_cut2	1.9131	0.245				
_cut3	2.6656	0.245				
_cut4	3.8571	0.248				

* indicates significant at 10%, **- at 5 %, ***- 1 %

Table C3: Conditional Logit

Number of obs = 3992 LR chi2(32) = 253.54
Log likelihood = -1256.7515 Prob > chi2 = 0.0916
Pseudo R2 = 0.0916

Base categories: unemployed, female, household size 1, 7-11 grades of High school, bad health, single, no children

Life satisfaction	Coefficient	Standard Error	Percentage Change in Odds, %
Employment status			
Self-employed	0.526*	0.291	69.3
Employee	0.352**	0.148	42.2
Out of labor force	0.348**	0.178	41.7
Member of production coopearative	0.246	0.607	27.9
Retired	0.035	0.484	3.6
Student	0.756	0.282	112.9
Unpaid family helper	0.621	0.843	86.0
Age	0.215	0.161	24.0
Age squared	0.002	0.002	0.2
Household size			
2	0.061	0.357	6.3
3	-0.173	0.374	-15.9
4	0.067	0.393	7.0
5	-0.145	0.421	-13.5
6	-0.029	0.446	-2.8
7 and more	-0.562	0.561	-43.0
Highschool	0.090	0.130	10.3
Vocational	0.050	0.154	5.1
Technical or any other school; Incomplete professional	-0.159	0.176	-14.7

higher education			
Bachelor; Specialist	-0.202	0.302	-18.3
Master; Candidate	-0.558	0.468	-42.8
Health			
Very good	0.806**	0.351	124
Good	1.021***	0.153	177.7
Average, not good	0.459***	0.115	58.4
Marital status			
In Non registered marriage	-0.207	0.331	-18.7
Registered marriage	-0.113	0.298	-10.7
Widowed	-0.102	0.420	-9.8
Divorced	-0.571*	0.331	-43.6
Separated	-0.108	0.431	-10.3
Number of children		0.506	-15.3
1	-0.165		
2	-0.519	0.738	-40.5
3 and more	-2.541*	1.362	-92.1
Log Income	0.355***	0.083	42.7