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Working Paper

Non-employment, Ill-being and Subjective Well-being

IEHAS Discussion Papers, No. MT-DP - 2009/22

Provided in Cooperation with:

Institute of Economics, Centre for Economic and Regional Studies, Hungarian Academy of Sciences

Suggested Citation: Kapitány, Zsuzsa (2009) : Non-employment, Ill-being and Subjective Well-being, IEHAS Discussion Papers, No. MT-DP - 2009/22, ISBN 978-963-9796-80-5, Hungarian Academy of Sciences, Institute of Economics, Budapest

This Version is available at:

<https://hdl.handle.net/10419/108170>

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DISCUSSION PAPERS

MT-DP – 2009/22

Non-employment, Ill-being and Subjective Well-being

ZSUZSA KAPITÁNY

Discussion papers
MT-DP – 2009/22

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Non-employment, Ill-being and Subjective Well-being

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November 2009

ISBN 978 963 9796 80 5

ISSN 1785 377X

Non-employment, Ill-being and Subjective Well-being

(A review of literature on variables associated with subjective well-being)

Zsuzsa Kapitány

Abstract

Recent happiness studies by economists, sociologist and psychologists have produced many important new approaches and attitudes to focus less on objective variables and more on subjective well-being (SWB). Studies investigating life satisfaction (as a proxy of SWB) have identified strong relations with income, labour market status and health state. In this literature review we try to be acquainted with and analyse the dynamic effect of income, health state (ill-being) and labour market status (non-employment) on SWB. Studies collected together have numbers of evidence suggesting that money (own and others') really does matter, and subjective health state (ill-being) and non-employment status are strongly and negatively associated with SWB. The connection between SWB and health, SWB and employment, as well as health and employment has been widely investigated in the literature. However, the dynamics of poor health and non-employment, and their interrelation with SWB were rarely analysed. The review also deals with a range of methodological problems and contradictory evidence concerning the direction of causality between the investigated variables. Our research motivation is quite clear as Hungary is "unique" among the developed market economies and the transition countries with respect to some features: Hungary has almost the lowest employment rate, the highest involuntary early retirement share, the highest mortality rate, and almost the lowest SWB score.

Keywords: Subjective Well-being, Relative Income, Non-employment, Ill-being, Dynamic Panel Models

JEL: D1, D12, D60, I1, I31, J20, J60

Acknowledgement:

I wish to thank György Molnár and Miklós Kedves for their support and help.

Nem foglalkoztatottak, egészségi állapot és szubjektív jóllét (Irodalmi szemle)

Kapitány Zsuzsa

Összefoglaló

Irodalmi szemlénkben olyan kutatási eredményeket gyűjtöttünk össze, melyek az általános elégedettség (szubjektív jóllét) kialakulásának és időbeli változásának elemzéséhez, valamint jobb megértéséhez nyújtanak segítséget. Az elégedettséget (szubjektív jóllétet) meghatározó tényezők között fontos szerepet játszik a relatív jövedelem, a munkaerő-piaci pozíció és az egészségi állapot. Magyarország – számos országgal összehasonlítva – a felsorolt tényezőket tekintve hosszú ideje a legkedvezőtlenebb értékekkel rendelkezik. A marginális munkaerő-piaci helyzetben lévők és a rossz egészségi állapotúak – jövedelmüktől függetlenül – lényegesen elégedetlenebbek, mint a többiek, és ez az elégedetlenség a családtagokat is jellemzi. Az elégedettségre igen erős hatást gyakorolnak még a munkaerő-piaci státussal, valamint az egészségi állapottal kapcsolatos várakozások is. Az irodalomban azonban arra is számos példát találunk, hogy a fordított hatás érvényesül, az elégedettség változó hat az egyének munkaerő-piaci viselkedésére, és közvetve az egészségi állapotára is. Tanulmányunkban elsősorban olyan publikációk eredményeit ismertetjük, melyek a vizsgált változóink között meglévő dinamikus és szimultán kölcsönhatásokat háztartáspanel adatbázisok segítségével elemzik.

Tárgyszavak: szubjektív jóllét, relatíve jövedelem, foglalkoztatottság, egészségi állapot, háztartáspanel adatbázis

JEL: D1, D12, D60, I1, I31, J20, J60

INTRODUCTION¹

Recent happiness studies by economists, sociologists and psychologists have developed many important new approaches and attitudes to focus less on objective variables and more on subjective well-being (SWB). International comparisons of countries focusing mostly on GDP are supplemented by new success indicators and unique, country-specific subjective variables as well. In the same time, public policy also puts more emphasis on factors of SWB, like uncertainty, stress, perceived inequality, demand for redistribution, or self-reported health and different forms of non-employment. Researchers using “subjective well-being approach” accept the fact that rising income is one of the major factors for improving well-being, but they argue that even with low income levels, people can still achieve relatively high self-reported levels of well-being, and reported levels of well-being can be very different between countries with similar levels of national income.

The majority of economists still tend to be skeptical about the use of subjective data and the author of this study also knows well the constraints of the subjective well-being (SWB) measure. However, it is important to emphasize that traditional characteristics of households and individuals including family structure, income, education, health, and labour market status do not give any kind of information whether an individual finds satisfaction in his work activities or whether a disability welfare recipient perceives the support as humiliating.

Studies looking at happiness (or life satisfaction as a proxy of SWB) have identified strong relations with income, job status and health. When we look at trade-offs in terms of which variable explains most of the variation (getting the “most” happiness) usually health yields the highest number. The other two specific issues that generated the most interest in the happiness literature are: the effect of labor market status – especially unemployment and non-employment – on happiness, and the relationship between income and happiness. Our main issues are very similar. We try to analyze the effect of health and labor market status (non-employment) on SWB, and the relationship between relative income and SWB. We mainly deal with studies analyzing panel data to control for unobserved individual fixed effects, and studies concluding that changes in health and labour market status, and changes in relative income as well are strongly correlated with changes in SWB.

Our work is based on the concept of income comparisons, both to others and to oneself in the past. Studies collected together in this paper have a large number of evidence suggesting that money (own and others’) really does matter. Regressions of happiness on income using cross-section survey data of countries generally produce a significant and positive estimated

¹ Our study is part of an OTKA project (K 76867) titled ‘Non-employment, Health Status and Subjective Well-being’, Institute of Economics HAS, Budapest.

coefficient on income. This holds for both developed and developing countries. However, the income-happiness slope is larger in developing or transition than in developed economies.

This paper provides a detailed but not complete review of the relevant part of the subjective well-being literature. It focuses on the newest published and non-published papers having evidence that subjective health status (ill-being) and non-employment status are strongly and negatively associated with SWB.

This review also highlights a range of methodological problems and contradictory evidence concerning the impact of unobserved variables and the direction of causality between the investigated variables.

In the next chapter we briefly review the literature of (un)happiness in transition countries. In chapter 3 we present the most important and relevant-to-our-research literature on relationship between relative income, happiness and utility, and the newest results on the marginal utility of income studies. Chapter 4 presents the newest findings on the link between non-employment and SWB, chapter 5 deals with the link between health and SWB. In chapter 6 we put up some methodological questions and special approaches used in the literature what we would like to adopt. Chapter 7 concludes.

(UN)HAPPINESS IN TRANSITION

Recent studies using panel data (GSOEP, BHPS, and RLMS)² conclude that changes in real incomes are correlated with changes in happiness. Furthermore, a number of these studies have been able to utilize exogenous variables in income to establish more firmly the causal effect of income on happiness. Income has a larger effect in transitional economies than in developed countries. In addition, the slope of the income-happiness relationship is not necessarily the same between groups. (See Clark et al. (2008), Frijters et al. (2004), Lelkes (2006), Senik (2005, 2006).)

As with previous studies for other transition countries, in our last study (see Molnár and Kapitány (2007)) we find that income and employment status are very important predictors of life satisfaction in Hungary. The key stimulus for writing this study was a surprising and “uncomfortable” finding that between 2000 and 2002 both factual relative mobility and subjective mobility had significant, but opposite – negative and positive – effect on satisfaction despite a much higher living standard and a remarkable up-warding income mobility. Between 2000 and 2002 the growth rate of the real income was extraordinary high in Hungary, almost 24 per cent, and we got considerable differences in the changes in absolute, relative and

² GSOEP: German Socio-Economic Panel, BHPS: British Household Panel, RLMS: Russia Longitudinal Monitoring Survey

subjective income positions of people. While it was clear that unemployment leads to a substantial loss of life satisfaction, the relationship between income and satisfaction was less clear, because at that time the most widely accepted viewpoint in the literature was that income does matter, but not very much. This paradox has led to our interest in the important role of relative rather than absolute income, of subjective rather than objective income mobility and income position, and of past rather than present income position. We began to concentrate on relative income, subjective mobility and subjective economic status of people. Our results suggest that the relationship between relative mobility and SWB is much stronger than that between absolute income changes and SWB. People valued the changes in their income positions by the changes in their relative positions, rather than the changes in their absolute income levels.

Frijters, Haisken-DeNew, and Shields (2004) were also particularly interested in a quite similar phenomenon, the income impact of – a large-scale but – exogenous shock of the German reunification, when the life satisfaction in East Germany was significantly below that of West Germany. They also tried to identify the contribution that the substantial increase in real household income in East Germany in the post-reunification years (around 60 per cent between 1990 and 2001) made to reported level of life satisfaction. Using data from the German Socio-Economic panel (GSOP) they applied a new conditional fixed-effect ordinal estimator to measure life satisfaction. The central variable in their analysis is derived from the same question what Molnár and Kapitány (2007) used: “How satisfied are you at present with your life, all things considered?” The responses run from 0 (completely dissatisfied) to 10 (completely satisfied). The main explanatory variables of life satisfaction were marital status, number of children, health, employment status, and real household monthly income. The measure of health was based on whether or not the individual is registered as being disabled and the extent of their disability. It was found that both employment status and real household income are the most important predictors of life satisfaction for East Germans. Both having a disability and the extent of disability are negatively associated with life satisfaction.

According to the newest literature the average difference between life satisfaction in transition and non-transition countries is robust and large (see Deaton (2008), Guriev and Zhuravskaya (2009)). Seemingly paradoxically subjective well-being scores of countries in transition are significantly lower than the score of non-transition countries with same low or middle income, but people in most of the transition countries (we can say in the “average” transition countries) express commensurately increasing degrees of life satisfaction in periods when the national income increases. Summing up, as research shows the former communist countries were the least happy in the world and also inefficient. However, evidence of the newest Hungarian and international surveys suggests that the level of subjective well-being in

Hungary is still much below than that of Western Europe and has not trended up over time as in Eastern Europe. Hungary is still one of the main exceptions (see Easterlin (2009)).

Data from which the earliest life satisfaction observation is available is the World Values Survey (WVS), containing 13 countries falling into two groups in terms of GDP index and the unemployment rate. Analyzing the trend in well-being in 1990s by Easterlin (2009) it can be seen that life satisfaction fails to recover commensurately with GDP. The most obvious hypothesis given by Easterlin (2009) is the sharp deterioration in employment conditions in the observed countries. In the WVS data in every one of the 13 transition countries the employment rate, the percentage of the population employed, decreases substantially with most countries experiencing double-digit declines. The declines reflect increases in both the unemployment rate and the proportion of the population not in the labor force. Trends in the absolute level of real wages also provide evidence of the deterioration of employment conditions. In the former GDR satisfaction with work, health, and child care all declines, but satisfaction with conditions relating to living level is typically greater in 1999 than in 1990. In Hungary, satisfaction with work and health care are all lower in 1997 than in 1992, while satisfaction with income and standard of living are virtually unchanged.

Further findings of Easterlin (2009) are that after 2000, consistently with the recovery of GDP, life satisfaction has rebounded sharply almost everywhere. By early 2005, the mean life satisfaction of every country - except Bulgaria – was above 6.0, in contrast with the values for the mid- and late- 1990s. As Easterlin (2009) explains, the socialist system was deficient in supplying material goods, but provided substantial security for individuals in other domains of SWB such as job security, provision of child care, or health insurance. The domain satisfaction result suggest that while the transition from socialism to capitalism in Eastern Europe has, on average, been rising satisfaction with material living levels, this has occurred at the expense of the satisfaction with employment, health and family security. The positive contribution to life satisfaction of improved material living levels was outweighed by losses in employment security, health and child care, and provision for old age.

In a new and internationally comparative analysis of nineteen European countries by TÁRKI in 2008 only Russians and Bulgarians were less happy than Hungarians. One and half thousand Hungarians average happiness score was only 6.4 on the ten degrees scale, which is much lower than the 7.21 European score. Furthermore, the average happiness did not increase during the last years: in 2005 the same average score was 6.48 in Hungary. According to the analysis of TÁRKI (2008) people aged between 18 and 39, the highly educated and those who live in west part of Hungary feel much happier than the average. The middle-aged people and the low educated, as well as people living in south part of Hungary are much unhappier with 6.0 average score.

Labor market status is a major element of dissatisfaction in East Europe and in Hungary as well. (See again Molnár and Kapitány (2007).) The unemployed, the non-employed in active age, and the quasi-unemployed are significantly less satisfied than workers and than other inactive, after controlling for income. Furthermore, their family members are also less satisfied than the average. When viewed at the macro level, Hungary is also more unique among the developed market economies and the transition countries with respect to the combination of three features: Hungary has almost the lowest employment rate (especially for males), the highest mortality rate, which is a macro level proxy for the health status (again, particularly for males), and almost the lowest subjective well-being score. Both in the following part of this study and in our wider research in the future we want to investigate the impact of non-employment and health status on subjective well-being, and the originality of this research comes from the above mentioned unique position of Hungary. Using the Hungarian experience could help us to gain new insights into the important interaction of non-employment, perceived health status and subjective well-being.

Our policy hypothesis is that decreasing uncertainty in the labor market and increasing quality of the health system should have positive effect on subjective well-being, and this effect should be longer than the direct effect of increasing in incomes. Methodologically, the most important part of our research is that how we could disentangle the effect of non-employment and health variables from the income effect.

Results of Guriev and Zhuravskaya (2009) imply that life satisfaction in transition countries will continue to rise conditional on continued economic growth. This prediction is based on the subsequent growth of personal income and the eventual improvement in public goods provision. The issue of reverse causality that may arise due to the effect of life satisfaction on income, employment and health also may contribute to the increase of the SWB.

Deaton (2008) agrees that subjective well-being surveys “might provide a straightforward and easily collectable measure of individual or national well-being that aggregates over the various components of well-being, such as economic status, health, family circumstances, and even human and political rights.” He also agrees, what is consistent with the micro-level evidence of Di Tella, Haisken-DeNew, and MacCulloch (2007), who regress life satisfaction on income and several lags of income in Germany, that life satisfaction adapts completely to income within some years. However, Deaton’s analysis of the Gallup World Poll – confirming a number of earlier findings of happiness research – also yields some different results: neither life satisfaction nor health satisfaction responds strongly to objective measures of health. Turning to health and its effects on life satisfaction, conditional on income, longer life expectancy has no apparent effect on life satisfaction, but changes in the expectation of life seem to have an effect, no matter whether life expectancy is high or low. He also finds that

people in much of Eastern Europe are particularly dissatisfied with their health, and older people in those countries are much less satisfied with their lives and with their health than are younger people. National income moderates the effects of aging on self-reported health, and the decline in health satisfaction and rise in disability with age are much stronger in poor countries than in rich countries.

Easterlin (2009) also deals with the problems of marginal utility of income in transition focusing on two periods: during the 1990s and the half-decade after the late 1990s. In the first period the GDP per capita collapsed, but recovered in the second one in all but one of the transition countries included in the investigation. In the same two periods unemployment rates were low and declined in most countries. Consistent with the collapse and recovery of GDP, life satisfaction followed these trends, but in the second period failed to recover proportionally. Although the evidence is limited Easterlin suggests that life satisfaction in the 1980s was probably higher than at the beginning of the 1990s transition, and higher also than in 2005. Increased satisfaction with material living levels – in the first period – and decreased satisfaction with work, health, and family life – in the whole period – determined the declining trend of life satisfaction in transition, but the recovery of life satisfaction to 2005 means that life satisfaction under capitalism is typically greater than it was under socialism.

However, the mean value of life satisfaction for Hungary in these years by Easterlin (2009, p. 140) are as follows:

1982	1990	2005
6.93	6.03	6.30

These numbers indicates – according to Easterlin – that life satisfaction in 2005 in Hungary may have been less than in the 1980. Easterlin gives a speculative explanation for these phenomena: the socialist system provided substantial security for individuals in domains very important for personal happiness such as job security, child care, health insurance, and support in old age for oneself and one's parents. “On the road to capitalism” increased level of satisfaction with material living levels occurred at the expense of uncertainty, decreased satisfaction with work, health, and family life.

Easterlin (2009) agrees – similarly to Sanfey and Teksoz (2007), Guriev and Zhuravskaya (2009) – the V-shaped pattern of life satisfaction in the transition countries and the very differential impact of the transition on demographic groups. However, study of Easterlin differs from that of Sanfey and Teksoz (2007) in some other respects. First of all, the Easterlin paper underlines the asymmetrical character in the response of life satisfaction to decreases versus increases in income relative to an initial reference point. Second, the paper stresses the importance of analysis of inequality in life satisfaction and domain satisfaction that reveal the differing direction of changes in satisfaction with material living levels versus work, health and

family. Within the population, in different subgroups, differences in life satisfaction rose noticeably, but the impact of changes on people's personal lives and their well-being is almost totally missed in GDP per capita or even in changes of income inequality. The life satisfaction measure, the SWB which reflects not only material well-being, but the every day life and stresses about work, health, and family is more sensitive and indicative for measuring of lost in transition.

EFFECTS OF INCOME

Dolan, Peasgood, and White (2008) provide a detailed review of the literature of SWB and its determinants. Their paper collected articles published both in economics and psychological journals and unpublished papers as well. The evidence of that paper suggests positive but diminishing returns to income and that poor health, unemployment, and lack of social contact are all strongly and negatively associated with SWB. The review also highlights a range of problems and some contradictory evidence concerning the relative income effects and the complex problems of marginal utility of income. Studies that have included relative income suggest that well-being is strongly affected by relativities (see Ferrer-i-Carbonell (2005), Luttmer (2005)). These studies show that additional income may not increase well-being if those in the relevant reference and comparison group also gain – or they have already gained – a similar increase in income before. For a given income level, having high aspirations and expectations have a negative effect on SWB (see Stutzer (2004)). Aspirations are determined in part by past incomes, implying adaptation to higher levels of income (see Di Tella, Haisken-De New and MacCulloch (2007)). Perceptions of changes in financial status (namely, the subjective mobility or immobility) have stronger predictive power than actual income (see Haller and Hadler (2006)). These findings imply that additional income for those who are not at low levels of income is unlikely to increase SWB in the long run if the additional income leads to increase expectations of necessary income. (These findings may also imply that additional income for those who are not at low levels of income is unlikely to increase SWB in the long run if the additional income arrives too late or later than it was expected, or if the additional income is much less than it was expected.)

Clark, Frijters, and Shields (2008) also provide a very comprehensive review of the general relationship between income and SWB, and the results generally suggest positive but diminishing returns to income. On macro-level, according to the Easterlin paradox, average happiness has remained constant over time despite sharp rises in GNP per head. At the same time, several micro-studies have found positive correlations between individual income and individual measures of SWB. This paper suggests that these two findings are not contradictory

but rather consistent: due to the presence of relative income terms in the utility function, income may be evaluated relative to others (comparison effect) or to oneself in the past (habituation, adaptation). However, data on transition countries suggest a much larger role for income in SWB than in developed countries. East-Germans – for example – experienced a substantial increase in real income between 1991 and 2002, and reported a considerable rise in their life satisfaction over the same period (see again Frijters, Haisken-DeNew, and Shields (2004)). The substantial increase in real household income in East Germany in the post-reunification years made important contribution to the reported levels of life satisfaction.

In normative public economies it is very important to know how fast marginal utility of income declines as income increases. Layard et al. (2008) estimating the elasticity of marginal utility with respect to income mostly and basically differ from Deaton (2008). Using four large cross-sectional surveys of subjective well-being and two panel surveys – the GSOP (German Socio-Economic Panel Survey) and the BHPS (British Household Panel Survey) – their conclusions relate to time series between 1972 and 2005, and their data cover over 50 mainly developed countries. In each of the six very different surveys they were able to estimate the elasticity of marginal utility with respect to income, and they obtained very similar results from each survey. Their main question was not how strongly income effects utility, but how this effect changes with income. Focusing on this question they assumed that the elasticity of marginal utility with respect to income is constant, so there remains a problem arising from the possible non-linearity of the investigated function. If the function is non-linear, then equal intervals on the reported happiness scale do not reflect equal intervals of true utility. They used total household income, rather than the respondent's own income. It was not normalized to income per equivalent adult as they wanted to use children as a choice variable. In their analysis they measured employment by the following set of dummies: inactive (the omitted variable), unemployed job seeker, fulltime worker, and part-time worker. Using cross-sectional analysis they investigated first the logarithmic hypothesis assuming linear relationship between reported happiness and experienced utility. Estimating the elasticity of marginal utility of (log household) income they found a striking uniformity (linearity) in the estimates obtained from totally different surveys. In their panel fixed effects analysis they tested whether including persons fixed effects in the regressions substantially changes the estimated relationship between income and utility. The curvature parameter was estimated by maximum likelihood. In all the surveys the coefficient on the squared term was negative – meaning that the relationship between happiness and income is more concave than implied by the log function, the curvature parameter is greater than 1. Estimating directly the curvature of happiness income relationship in each of these six surveys, using different countries and time periods, the maximum likelihood estimate of the parameter falls in the narrow range of 1.19 and 1.30. This similarity is very surprising in spite of the great differences between countries

and surveys used, as well as the differences between the questionnaires in the different surveys. Their overall estimate is 1.26, which implies that marginal utility falls faster than the proportional one. They confirmed the (cardinal) assumption that marginal utility of income declines with income.

The book of Van Praag and Ferrer-i-Carbonell (2007) provides an overview of Van Praag's work of four decades. Van Praag argued already 40 years ago that it is reasonable to assume that cardinal utility as a function of income can be considered to be bounded above and below, and can be normalized. Given a sufficient number of persons one can do a regression of the utility function on the actual income of the person. The utility function itself shifts with actual income, so the utility of a given level of income is lower whenever the actual income of the person is higher. The utility function thus seems to adapt to the actual circumstances. The adaptation is not perfect, even after the adaptation the utility rises with rising income, albeit slower than would be the case with a fixed utility function. It is also shown that not only the utility function itself adapts to the level of actual income, but also the perception of inequality. This second subjective component of inequality depends strongly on the level of the actual income. For a given objective income distribution the perception of inequality is the higher the lower is the person's actual income. Thus the same objective situation is considered more unjust by the poor than by the rich. It also turns out that very young and old people are more past than future oriented. Old and young people compare their present income with their past income, whereas people in between compare it more with their expected future income.

EFFECTS OF NON-EMPLOYMENT

Old and new empirical studies on happiness consistently show a large negative effect of individual unemployment on SWB. Using European and Hungarian data, Lelkes (2006) found that unemployment reduces the probability of a high life satisfaction score and a high overall happiness score. Individuals who have low SWB may be more likely to become unemployed, they are less productive and have poorer health, or are more likely to choose to become unemployed. While a number of papers analyzed the link between one's own unemployment and own well-being, a small literature has dealt with the relationship between individual well-being and others' unemployment. Clark (2003) finds that – for those working – having an unemployed partner is also detrimental to well-being, but for the unemployed partner it is beneficial. Clark used seven waves of the BHPS to examine the impact of others unemployment on both the employed and the unemployed. Others' unemployment was measured at the regional, household and couple level. Turning back to the same topic Clark (2009) suggests that others' unemployment has a variety of different effects on SWB. First, it reduces the SWB

of those who move from employment into unemployment. It affects the well-being of those who remain in employment, and it affects the well-being of the existing unemployed. Using long-run German panel data a distinction made between the influence on the employed and the unemployed – aggregate unemployment reduces the well-being of the employed, but may have a smaller, or even positive effect on the unemployed – and between higher and lower levels of labor market security for the employed and the unemployed.

There is some old and new evidence of adaptation to unemployment. Using the BHPS, Clark and Oswald (1994) and newest paper by Di Tella (2009) find that the negative coefficient on unemployment reduces with the length of unemployment.

The connection between subjective well-being and health, subjective well-being and employment, as well as health and employment has been widely investigated. However, the dynamics of poor health and unemployment/non-employment and their interaction and interrelation with the subjective well-being were rarely analyzed.

The first attempt at investigating simultaneously these features was made by Van Praag et al. (2002). The authors postulated a two-layer model, where individual total subjective well-being depended on the different subjective domain satisfactions – satisfaction with health, the financial situation, job, leisure, housing and environment – that, beside being impacted by common explanatory variables, influence each other as well.

Unemployment among economic variables and bad health among demographic variables were found to have a depressing effect on subjective well-being in Russia by Ravallion and Lokshin (2001, 2002). However, they found that returning to work does not restore welfare without accompanied by income gain.

Not having a job when you want to work and you are able to work is a major source of low well-being. Not having a job when you are not able to work (because of your age, poor health, chronic disease, physical or mental disability) may have a significant, sometimes enormous negative effect on SWB. However, these people might choose (voluntary or involuntary) not to work and may improve well-being by other kind of activities which may make them more satisfied. Not having a job, but being informally employed also may lower or higher the levels of life satisfaction compared to most other labor market states. While the informal job helps people cope, but the formal sector provides better prospects for well-being. Social capital and social activities are important predictors of levels of well-being, but there is no evidence that they really moderate the effect of unemployment on well-being (see Winkelmann (2009) using data from the German Socio-Economic Panel between 1984 and 2004)). Furthermore, being unemployed may have a considerable negative effect on happiness at lower happiness scores only, but no significant effect at high happiness levels.

Studies analyzing the interrelation between non-employment and health demonstrated that poor health is one of the key determinants of labor market inactivity. Poor health is driving individuals out of work and reducing probability of entry into employment. This is especially the case for older workers, who voluntary choose not to work or being forced to retire, as health deteriorates with age. Poor health may also mean chronic illness and physical disability which is especially the case for early retirement in active age. Because of a strong relationship of both health and employment with age it seems natural to model the two processes (health and employment) jointly. Haan and Mych (2009) produce a dynamic bivariate logit model, assuming sequential causality, in which the last period health variable effects on the current period unemployment and vice versa. The results confirm a strong and significant relationship between the risks of poor health and non-employment, and underline the separate and considerable role of aging. This study also finds a significant interaction between the health and the employment dynamics. Poor health at time ($t - 1$) increases the probability of non-employment, and there is evidence that lagged non-employment at ($t - 1$) has a positive effect on the probability of being in poor health at time t . These findings are relevant to the psychological findings that lack of employment has an effect on physical and mental health, and that bad health leads to lower employment. Health plays an especially strong role in determining labor market outcomes among those aged over 50.

Retirement (independent of age at which someone retires) might be beneficial because individuals are able to enjoy more leisure, but it is also might be harmful because individuals who stop working may lose social contacts, everyday activities and interests. The effect of early retirement however can only be evaluated properly if compared with normal retirement. Individuals' retirement age depends on several factors, health, labor force status, labor force status of spouse, education of children. Persons in bad health are likely to retire earlier but also report worse life satisfaction. Those who hope or believe that life satisfaction will increase after retirement are more likely to retire at any age. Among people can choose freely when to retire we have to separate those who gain most from early retirement from those who are most likely to retire early. Early retirement is not always voluntary: elderly workers with low re-employment chances who become unemployed will stay unemployed until they can change social security payments instead of unemployment insurance.

Börsch-Supan and Jürges (2006) analyses the effect of early retirement using data of GSOP. In Germany early retirees are mostly people on disability pensions. Controlling for disability status the well-being differential between early retirees and those still working vanishes. It means that it is not retirement but rather disability that reduces life satisfaction. Early retirement (because of disability) increases well-being significantly, early retirement – which most probably is a reaction to a health shock – is more beneficial than normal retirement.

Involuntary early retirement is an empirically important phenomenon in Europe. The incidence of involuntary early retirement varies considerably among countries. (See Dorn and Sousa-Posa (2007) using ISSP data.) In the United States and Denmark only ten per cent of early retirees moved into retirement involuntary. An important observation is that all three eastern European countries of the study (Hungary, Slovenia, and Poland) have large shares of involuntary retirement. They differ from other countries by having much lower health (life expectancy) levels and more retirements due to poor health. A surprising fact is that in some countries, including Germany and Portugal, more than a half of the early retirees declare that their retirement was involuntary. The share of involuntary early retirements is particularly high in countries with low labor market participation rates of older persons. According to the findings a better health level (higher life expectancy) decreases the share of involuntary early retirement, but an increasing unemployment rate yields a large share of involuntary early retirement. More rigid employment protection legislation does also increase the share of involuntary early retirements. However, generous early retirement provisions of social security systems lead also to more early retirement, but less voluntary early retirement. Advantageous early retirement conditions do not only create more voluntary early retirement, but also more involuntary early retirements because firms become interested in reducing their workforce using early retirement programs.

We can find quite a number of studies examining how health affects retirement behavior, but only few have analysis concerning the impact of retirement on subsequent health outcomes, and very few use the subjective well-being approach. A study by Dave, Rashad and Spasojevic (2007) is an exception. Panel data methodology is used and empirics are based on seven longitudinal waves of the Health and Retirement Study, 1992-2005. Results show that adverse health effects are mitigated if the individual is married and has social support, continues to engage in physical activity post-retirement, or continues to work part-time upon retirement. Some evidence also suggests that the adverse effects of retirement on health may be larger in the case of involuntary retirement. Retiring at a later age may lessen or postpone poor health outcomes for older adults, raise well-being.

EFFECTS OF HEALTH

In contrast with Easterlin (2009) the analysis of the Gallup World Poll by Deaton (2008) confirms a number of earlier findings of the “happiness school”, but provides some new and very different results: 1/ conditional on the level of national per capita income, the effects of economic growth on life satisfaction are negative, not positive; 2/ neither life satisfaction nor health satisfaction responds strongly to objective measures of health, for that, neither provides

a reliable indicator of population well-being over all domains, or even over health. (In the next eight paragraphs we introduce Deaton's (2008) conclusions in details.)

As Deaton (2008) shows life satisfaction is higher in countries with higher GDP per head. The slope is steepest among the poorest countries, where income gains are associated with the largest increases in life satisfaction, but it remains positive and substantial even among the rich countries. According to Deaton (2008) it is not true that there is some critical level of GDP per capita above which income has no further effect on life satisfaction. Using the logarithm of per capita income, the relationship between per capita income and life satisfaction is close to linear. Comparing data from the WVS with those from the Gallup World Poll they are quite similar, but there are also important differences between them, for example, WVS include very few of the poorest countries. Furthermore, a substantial number of the poorest countries in the WVS are in EE, including former part of the Soviet Union. People in those countries are exceptionally dissatisfied with their lives, and much more so in the earlier WVS than in the 2006 World Poll. The poor countries in the WVS are therefore a mixture of unusually dissatisfied people from Eastern Europe and the former Soviet Union and unusually satisfied (literate and urban) people from a small group of the poorer countries.

Very useful finding of Deaton (2008) is that the introduction of the life expectancy variables in the regressions of average life satisfaction of GDP has only a small effect on the estimated effects of income, and life expectancy itself does not show up significantly in any of the regressions, though the increase in life expectancy from 1990 to 2005 has a significant positive effect on average life satisfaction. Using infant and child mortality measures instead of, and addition to, life expectancy in the life satisfaction regressions these are much better measures of people well-being. But the other calculations – largely because of the strong interrelations between the three measures – generate no new results. (In the highest and poorest mortality countries, amongst which the variation in life expectancy is the largest, life expectancy is often imputed using measures of infant and child mortality.)

The decline of life satisfaction with age is largest among the middle-income countries and among the countries of Eastern Europe and the former Soviet Union, where there is an almost uniform pattern of life satisfaction declining with age, quite sharply. In Russia, for example, the average life satisfaction score for the 15-19 year olds is 5.95, while the score for those aged 65 and over is 4.28. In Hungary, the corresponding figures are higher, 6.88 and 4.77.

Data of Gallup World Poll figure in Deaton (2008) also shows that people are more likely to be satisfied with their health in high income countries, and that they become less satisfied with their health as they age. In health satisfaction, as in life satisfaction, the countries of Eastern Europe and the former Soviet Union report extraordinary low levels, these countries represent the half of the 20 lowest score countries in the world in health satisfaction. Surprisingly, the declines in life expectancy in the countries of the former Soviet Union have had a much larger

effect on reported life satisfaction than the much larger declines in life expectancy in the African countries affected by HIV/AIDS. Health satisfaction declines with age, but satisfaction falls relatively slowly in the rich countries. In the eastern European and former Soviet countries health satisfaction falls very rapidly with age, and very large fractions of the elderly report themselves as dissatisfied with their health.

In Deaton (2008), similarly to life satisfaction, recent economic growth is negatively associated with health satisfaction conditional on the level of GDP per capita, and the countries of Eastern Europe and the former Soviet Union provide much of this result. Disturbingly, neither the level of life expectancy, nor its increase from 1990 to 2005 has any effect on health satisfaction. Poor health satisfaction in the transition countries can not be attributed entirely to the objective decrease in life expectancy – in contrast to Africa – so the changes in life expectancy have different effects in the different areas of the world.

One variable in Deaton (2008) which correlated with average health satisfaction is what people think of their health care system. The average level of confidence in the health care system for each country has a positive and statistically significant coefficient. The degree of confidence in the health care system varies widely from country to country, and although it is correlated with income, the correlation is weak. Almost all inhabitants of high income countries are well-satisfied with their health care systems, only the United States is an exception.

Adding health satisfaction as another explanatory variable to the regressions of average life satisfaction, the health satisfaction variable has a large and statistically significant coefficient. With this variable, the coefficients on life expectancy, the change in life expectancy and the rate of economic growth lose their significance, they are less useful for identifying the relationship between satisfaction and the objective circumstances of life.

Summing up, *life expectancy is the best single indicator of population health, but conditional on income, longer life expectancy has no apparent effect on life satisfaction. However, it is changes in life expectancy that seem to have an effect, no matter whether life expectancy is high or low. Even satisfaction with health is not related to life expectancy.* In Deaton's (2008) point of view despite of positive relationship between life satisfaction and national income, and despite of the plausibility of dissatisfaction with life and health in Eastern Europe, neither life satisfaction nor health satisfaction can be taken as reliable indicators of the objective well-being of the population.

In an earlier part of the literature, the relationship between the health status and the employment/unemployment status is investigated in two directions: how does the health status influence the ability of being employed, and how employment statuses influence the health status of the participants of the labor market.

The negative health selection hypothesis proposes that poor health poses an unemployment risk. Arrow (1996) tested this hypothesis on data from the German Socio-Economic Panel (1984-1990). According to his model, both gender- and nationality-specific negative selection effects were found. In the event of a long or chronic illness female workers are at a higher risk of unemployment than male workers. An important result is that, irrespective of gender and nationality, there is a strong evidence for lagged state dependence on previous spells of unemployment, i.e. individuals who previously experienced unemployment are more at risk of renewed unemployment than those without such spells. These findings confirm that there is an accumulation of risks for those who are socially vulnerable in the labor market.

Böckerman and Ilmakunnas (2007) in a panel analysis using ECHP data for Finland showed that the health status of those that end up being unemployed is lower than that of the continually employed, that is persons having poor health are selected for the pool of unemployed.

For the Netherlands van de Mheen et al. (1999) showed that health problems experienced in 1991 were significantly associated with a higher risk of mobility out of employment and a lower probability of mobility into employment in 1995.

As we have already seen subjective reports of health do have important effects on retirement, and these effects are stronger than those of the financial variables (McGarry (2002)). Early retirement can be a reaction to a health shock or pending job loss, and individuals were found less satisfied with their life in the year of early retirement than in the years before and after retirement. The effect of early retirement on well-being appears to be negative and short-lived, rather than positive and long (Börsch-Supan and Jürges (2006)).

As far as the opposite direction of causality between health and employment is concerned, Rodriguez (1994) analyzed the health consequences of unemployment in Spain. It was concluded that ill health was not caused by unemployment per se, but could be better explained by a combination of individual and socio-economic stressors. Furthermore, for more than purely economic reasons, the availability of unemployment subsidies appeared to be the most important factor ameliorating the health consequences of unemployment.

The already mentioned Böckerman and Ilmakunnas paper presents that short-term unemployment has no effect on the health status. However, using long-term unemployment as the measure of unemployment experience the negative effect on health can be shown.

Rodriguez (2002) analyzed panel data from Germany for 1991-1993. In this investigation, in the framework of logistic regression models, perceived health status was used as the dependent variable. It was found that full-time employed people with fixed term contracts were more likely to report poor health than those who had permanent work contracts.

In the later and newest part of the literature empirical micro-economic and psychology studies consistently show a strong relationship between SWB and both physical and psychological health. The effect sizes of the different health variables are suggesting that the causality is most likely to be from the health condition to SWB. “Happiness does not cure illness, however, it does protect against becoming ill” (Veenhoven (2008)).

Using data from the German Socio-Economic Panel (GSEP) Frijters, Haisken-DeNew and Shields (2005) tested whether more satisfied people live longer. Their results clearly confirm the existence of the same domain variables – income/consumption, labor market status, age – of health and SWB as important factors in determining longevity. Individuals with a high level of life satisfaction live significantly longer, but this effect is completely due to the fact that less satisfied individuals are typically less healthy. Self-assessed health status has significant explanatory power in predicting future mortality, and self-assessed health is a useful measure of morbidity.

Findings of newest empirical micro-studies show that factors associated with well-being and ill-being are distinct. (See Lee and Oguzoglu (2007)). Without making the implicit assumption that well-being and ill-being are opposite ends of the same continuum, but assuming that measures of positive and negative well-being exist it is possible to empirically test the differences and asymmetries in how the same factors have effect on well-being and ill-being.

One approach is to perform two separate analyses for health and SWB with the same set of domains. (See later Headey and Wooden (2004).) An alternative approach can be to adopt a multi-index ordered probit panel data model. A third approach (see Lee and Oguzoglu (2007) again) can be the joint modeling of positive and negative well-being in a two equation dynamic panel data model for analyzing the differences and the similarities in characteristics affecting well-being and ill-being. (The idea that well-being and ill-being are distinct dimensions and not bi-polar opposites is very well-known in the psychology literature.)

Measures of mental health are also distinct from measures of happiness. Individuals who are older, female, widowed, and report poor physical health are more likely to report worse mental health outcomes. Individuals living with others with poor mental health are also significantly more likely to report worse mental health themselves. Researchers using the British Health and Lifestyle Survey also found support for a certain degree of independence between well-being and ill-being, since important determinants of well-being are found to have small influence on negative well-being, and vice versa.

Identifying the determinants of mortality and the ultimate determinants of health (see Cutler, Deaton and Lleras-Muney (2006)) shows that health is a consequence but not an automatic consequence of rising income. Improvements in health and income are both the

consequence of new ideas and technology. Similarly, happiness researches suggest that SWB is not an automatic consequence of rising income or good health, but happiness may improve conditions of being employed and does protect against becoming ill, and that is why employed/working/active and healthy people can be more satisfied than the average.

Using the above mentioned third approach Wang-Sheng Lee and Umut Oguzoglu (2007) use the first five waves of the HILDA (Household, Income and Labor Dynamics in Australia) Survey. Although HILDA is basically a longitudinal survey focusing on work, income and family issues, it may be useable for examining the correlates of well-being and ill-being because of questions asked in the General Health Survey. The variables include a standard set of demographic characteristics, such as employment status, well-being, lagged well-being, ill-being and lagged ill-being, and also personality variables that measure emotional stability of individuals. Using a linear probability model with fixed effects, the descriptive analysis was suggestive of a complex inter-relationship between past and current levels of well-being and ill-being. The study specifies a dynamic bivariate panel data model which allowed for own lagged and cross-lagged effects, and unobserved heterogeneity. It was found that both lagged well-being and lagged ill-being were statistically significant in predicting their own respective current levels. The finding that the effect of lagged ill-being on current ill-being is larger than the effect of lagged well-being on current well-being is well-known from the psychological literature. The cross effects of lagged well-being on current ill-being, and lagged ill-being on current well-being were also considerable. Summing up, the results from the bivariate random effect model suggest that while past ill-being has a significant effect on current well-being, the reverse relationship, that is, effect of past well-being on current ill-being does not exist. (The asymmetric cross lag effects reinforce that depression is a more chronic state than happiness.) The results of the paper suggest that well-being and ill-being are really distinct dimensions, and that the unobservable variables that effect well-being and ill-being are the real correlates.

A relatively large body of literature examines the effect of health on life satisfaction of the oldest old. Analyzing the different effects of perceived and objective health status, Gwozdz and Sousa-Poza (2009) found that life satisfaction among the oldest old is significantly affected by perceived health status, and life satisfaction among them do not generally depend on their objective health status. Findings show a U-shaped relationship between age and life satisfaction for individuals aged between 16 and approximately 65 years. However, from this age life satisfaction declines rapidly, and the lowest absolute levels of life satisfaction are recorded for the oldest old. In their case the rapid decline in life satisfaction is primarily attributable to low levels of perceived health. Using data from the GSOP (German Socio-Economic Panel) and the Survey on Health, Aging and Retirement in Europe (SHARE) they found distinctly lower levels of life satisfaction among cohorts born around the 1960s, which suggests that – in Germany – the U-shaped relationship of age and life satisfaction may be

driven by a cohort effect. Observing much lower levels of life satisfaction among individuals born between 1930 and 1960 could explain why Germany deviates in this regard from the norm of the countries. However, controlling for unobserved individual heterogeneity, life satisfaction remains remarkably constant across the lifespan, even among the oldest old. Explaining this phenomenon we would think that older individuals adapt to worsening conditions. (Oswald and Powdthavee (2008) present evidence that individuals adapt somewhat to disability status, finding that the length of time an individual experienced the disability reduces the negative impact of the disability.) Older individuals may be comparing themselves primarily with individuals in their own age cohort who are worse off. Happy people may live longer, than the oldest old may – *per se* – be happier.

Analyzing the effect of wealth and income on subjective well-being and ill-being – as was mentioned before – the approach of Headey and Wooden (2004) is a possible one: to perform two separate analyses with the same set of variables. In their study only wealth appears to matter for mental health. The relationship with income was not statistically significant even at the 10 per cent level. It suggests that mental health outcomes may be associated more with variations in economic circumstances in the longer term than the more short term effects associated with income variability. Changes and improvements in economic circumstances – higher income and wealth – would improve one's mental health and reduce one's perceived financial stress. The gain in mental health would be wholly due to wealth, and the decline in financial stress would be mainly due to wealth and income. Wealth is probably more important because it provides economic security for people.

An interesting and important study by Finkelstein, Luttmer and Notowidigdo (2008) estimates how the marginal utility of consumption varies with health, that is, how the shape of the utility function varies with health. They develop a simple model first in which the impact of health on the marginal utility of consumption can be estimated from data on consumption (permanent income), health, and utility proxies. They found robust evidence that marginal utility of consumption (permanent income) declines as health deteriorates. (According to them the marginal utility of consumption could decline with deteriorating health, as many consumption goods are complements to good health. However, the marginal utility of consumption could also increase with deteriorating health, as other consumption goods are substitutes for good health.) They adopt an approach in which they compare how the difference in individual utility between good and poor health states varies with consumption. If the difference in utility of consumption of good health and poor health state increases with consumption, they infer that marginal utility of consumption declines as health deteriorates (negative state dependence). If the difference in utility of good health and poor health state declines with consumption they conclude that marginal utility of consumption increases as health deteriorates (positive state dependence). Their baseline utility proxy is a measure of

SWB. Empirically: if sickness causes a larger decline in utility for individuals with higher consumption than for individuals with lower consumption, it means that the utility curve for good health must be steeper than the one for poor health, which means that marginal utility of consumption falls in poor health. Conversely, if the drop in utility is smaller at higher levels of consumption than at lower one, the marginal utility of consumption increases in poor health. The study uses the Health and Retirement Study, a panel of elderly, which contains data of permanent income, as a proxy for consumption, and they implement their approach using seven waves of panel data on older individuals. They find robust evidence of negative state dependence, that is, the health deterioration is associated with a statistically significant decline in the marginal utility of consumption (permanent income).

The fact that disability leads to loss in well-being is well known in the literature (see Ferrer-i-Carbonell and Van Praag (2002), Oswald and Powdthavee (2007), Braakmann (2009)). Changes in a partner's disability status also can be plausibly assumed to be exogenous in individual life satisfaction regressions. The findings suggest that the well-being of women and to some extent men is harmed by the suffering of their partner. Men and women react very differently to adverse health shocks that hit their respective partners, despite similar reactions to adverse shocks to their own health. Women are harmed much more by their partner's disability, while showing similar reactions to individual disability.

People with chronic illness and a physical disability show lower employment figures, and they rate their well-being lower than people without health problems. (See Oswald and Powdthavee (2007) again.) Other studies suggest that work participation and subjective well-being vary in populations of people with chronic physical disabilities. The study of Van Campen and Cardol (2009) evaluated the relationship between work and life satisfaction for three populations: people with a chronic illness and physical disability, people with a chronic illness but without physical disability, and the general population. They analyzed how many people realize a "satisfying participation" in work in the three populations. The percentage of satisfied people among people with physical disabilities is lower compared to the two other groups. This finding is in line with the literature. However, the results also show that the relationship between happiness and work is different for people with a chronic illness and a physical disability, compared to the other two populations. Their life satisfaction ratings are lower, and the gap in life satisfaction between the workers and non-workers is larger. The reasons why the relationship between life satisfaction and work in the population of people with physical disabilities is different can be the followings: 1/ there are not so many workers who are satisfied with their life, 2/ a large number of satisfied people do not work. The share of satisfied people with work is lower, and the share of satisfied people without work is higher among people with physical disabilities, we can find a large group, (forty per cent) of satisfied but non-working people with physical disabilities. These results have important policy

relevance: the importance of work for the well-being of persons with physical disabilities is very questionable. Getting a job does not improve the well-being of the chronically ill and disabled, having a job can even cause so much trouble that a person may choose not to work and seek other ways of participation in the society.

WHAT DID WE LEARN DIRECTLY FROM THE LITERATURE? – DATA AND METHODOLOGY

The Hungarian EU-SILC Surveys are undertaken by the Hungarian Central Statistical Office (HCSO). It is a household based, 4 year-long rotation panel started in 2004 and containing information – among others – on household income, personal labor market activity and health. One fourth of the households in the survey sample rotate annually, thus theoretically one fourth of households spend 4 years in the survey. In this research we plan to use the first three waves of the EU-SILC panel (2004-2006), which will contain about 2000 households with about 5000 persons. In earlier research efforts we were in the position to attach two subjective questions to the 2005, and a supplementary survey with nine subjective questions to the 2006 standard yearly interviews of the EU-SILC.

The main advantages of this household panel compared to the dataset applied in our previous studies are that it contains: detailed personal health information for every year, including self-rated health status; monthly activity reports; information about the parents' highest education; subjective well-being questions for two years (not only for the end-year).

The subjective satisfaction approach utilizes useful econometric tools (ordered logit and probit models) as well as clear concepts for measuring people's preferences and for testing government policy concerning the highest – or at least, higher – utility level achievable.

On personal level, we plan to use two general satisfaction models: the first uses only 'objective' variables as explanatory variables, while in the second model 'objective' variables are supplemented with 'subjective' variables. We intend to test both fixed and random effect models. By using lagged variables we will analyze the interconnections between changes in health and activity statuses.

Several micro-studies draw attention to the methodological problems of link between SWB and health. Using only cross-sectional data, unrepresentative datasets, and unreliable statistical methods reporting simple correlation coefficients are the main sources of error. As we know from the literature regression analyses on cross-sectional data cannot show the direction of causality because of omitted and unobservable personal characteristics. The unreliable statistical methods are not able to describe the complex and correct interaction of the main domain variables. Using panel data to test for causality between SWB and main

domain variables – through using individual fixed effects – makes the controlling for unobservable individual characteristics possible. Applying suitable statistical methods makes the structuring of domain variable “hierarchy” reliable. Moreover, analyzing only specific populations (sub-groups) it is often impossible to generalize results to the whole population.

Examining the relationship between health deterioration and labor market instability, and the effects of these dynamically changing variables on SWB is quite difficult. Because of a strong relationship of both health and employment with age, and because of their likely correlation, it seems plausible that we assume endogeneity of health and employment (see Haan and Myck (2009) again), and first we model the two processes together: first we analyze changes in health and in labor market status depending on age. The relationship between age and the dependent variables will show the changes in proportion of those who are in poor health state, and non-employment status. (Using the example of Haan and Myck (2009) in this study health status seems to level out at the age of about 55, and non-employment grows significantly in the late 50s.)

While some of these changes are probably related to factors other than health and employment (e.g. income and wealth circumstances, age of partner, changes of children’s family life) we can establish that those in poor health will probably still much more likely to be non-employed compared to those in good health, and among healthy individuals only a small fraction of the increase in non-employment will be due to pension receipt. The proportion of non-employed individuals probably grows among those in good health state who are not receiving pensions.

To analyze the inter-temporal effects of poor health on non-employment we may estimate a joint discrete inter-temporal model of health and employment states in a bivariate dynamic random effects model (see the example of Haan and Myck (2009) again). The findings of analysis of this random effect model of our basic variables (health, non-employment, income, age) could help us to identify and distinguish between the populations of the two health states: poor health state and good health state. As a study of Finkelstein, Luttmer and Notowidigdo (2008) did, now we can also estimate how the shape of the utility of consumption (permanent income) varies with health states. We can adopt the same approach in which we compare how the difference in individual utility between good and poor health states varies with consumption (permanent income). The utility proxy would be the measure of SWB, that is, our life satisfaction variable.

To examine the interaction of changes in happiness and changes in income, health, and non-employment we may also use a panel vector auto-regressions model. (See the example of Binder and Coad (2008).) The two stages of the research might be: 1/ finding the main determinants of SWB, and deal with a complex interplay of causal relationships, 2/ analysis of the dynamic interplay of these factors. The analysis would combine two elements – time lags

and panel data techniques – using vector auto-regressions. We may consider variables such as SWB, income, health, and non-employment, all to be interdependent and mutually endogenous. While we are guided by findings of the above mentioned studies in selecting the main determinants of happiness, the techniques we are planning to use do not force us to assume specific causal relationships among these variables. We may analyze how changes in these variables are associated with changes in the other variables. Change in SWB would be assumed to be the outcome of the changes in other variables, that is, in the case of our data we can not analyze when change in SWB is also a determinant of the changes of other variables.

According to Binder and Coad's (2008) opinion it is not realistic to view one or more variables as the exogenous stimulus and the other as the only outcome (SWB in our case). While happiness is the outcome for some variables, it may also be a determinant of other variables. An appropriate statistical technique for such a system would be a reduced-form vector auto-regression – offered by Binder and Coad (2008). The happiness literature – as we have seen above – puts up SWB as the dependent variable, and usually explains SWB in terms of changes of other variables. It is really true that this approach neglects that SWB is itself an important determinant of how healthy we are, how successful we are at work, and even how large our income is, and all these variables are inter-related and mutually determined.

In spite of the above mentioned problem our regression equation would contain SWB variable as the dependent variable of income, health, and employment status and their lagged variables, and age would be a control variable supposedly exogenous. Our measure of income – in accordance with recent consensus in the literature – would be the logarithm of the income measure. For measuring an individual's health we may choose to use the subjective assessment of health which seems to predict objective health quite well. For employment dummy, we may choose to code 'being non-employed', 'being unemployed', and all other conditions such as 'being unemployed' separately. As control variables we need to use gender and age as a selection of the most important individual factors influencing our analysis.

The main findings of Binder and Coad (2008) are also very instructive for us. They state that their findings are very similar between the different estimators (OLS versus ordered probit). They observe negative auto-correlation for all variables, what can be interpreted as evidence for adaptation effects. The negative auto-correlation for employment status variables is quite self-evident. The negative temporal association between increases in income and changes in SWB has also been well-known. The temporal structure shows that positive changes in one of all life domains – except health – in a previous period are associated with decreasing happiness in the present period. Recent increases in happiness either are positively associated with subsequent increases in (log) income, health and employment status.

SUMMARY

In this literature review we try to be acquainted with and analyse the dynamic effect of income, health state (ill-being) and labour market status (non-employment) on SWB. Studies collected together have numbers of evidence suggesting that money (own and others') really does matter, and subjective health state (ill-being) and non-employment status are strongly and negatively associated with SWB.

The happiness literature – as we have seen above – regards SWB as the dependent variable, and usually explains SWB in terms of changes of other variables (ill-being, non-employment and income). It is really true that this approach neglects that SWB and changes in SWB are themselves important determinants of our health state, our achieved labor market position, and even how large our income, consumption and wealth are, and all these variables are interrelated and mutually determined.

Not having a job when you want to work and you are able to work is a major source of low well-being. Not having a job, but being informally employed also may lower or higher the levels of life satisfaction compared to most other labor market states, but both cases are strongly depending on the health state of the individuals. These findings are relevant to the psychological findings that lack of employment has an effect on physical and mental health, and that bad health leads to lower employment. Individuals who have low SWB may be more likely to become unemployed, they are less productive and have poorer health, or are more likely to choose to become unemployed.

Individuals with a high level of life satisfaction live significantly longer, but this effect is due to the fact that less satisfied individuals are typically less healthy. Self-assessed health status has significant explanatory power in predicting future mortality, and self-assessed health is a useful measure of morbidity.

Findings of newest empirical micro-studies show that factors associated with well-being and ill-being are distinct. Measures of mental health are also distinct from measures of happiness. Health is a consequence but not automatic consequence of rising income. Similarly, research findings suggest that SWB is not an automatic consequence of rising income or good health, but happiness may improve conditions of being employed and does protect against becoming ill, and that is why employed/working/active and healthy people can be more satisfied than the average.

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