

Does Happiness Pay?
An Exploration Based on Panel Data from Russia

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Abstract

This paper explores differences in the determinants of long term happiness levels versus those of short term fluctuations. It also departs from the usual analysis of the effects of income on happiness, and explores the effects of happiness on future income. We find, based on panel data for 6500 respondents in Russia for 1995-2000, that static variables such as gender, stable marital status, and education levels, are more likely to have effects on normal happiness levels, while changes in socioeconomic or marital status (particularly divorce) are more likely to cause fluctuations in happiness levels. We also find both happiness and positive expectations for the future in the initial period are positively correlated with higher levels of income in future periods. People with negative perceptions of their own past progress and/or with higher fear of unemployment, meanwhile, increase their incomes less, on average, over the period. The psychology literature attributes stability in happiness levels over time to positive cognitive bias, such as self esteem, control, and optimism. The same factors may be at play here, and enhance individuals' performance in the labor market.

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The study of happiness, or subjective well-being, and its implications for economic behavior is a fairly new area for economists, although psychologists have been studying it for years. The findings of this research highlight the non-income determinants of economic behavior. For example, cross country studies of happiness consistently demonstrate that after certain minimum levels of per capita income, average happiness levels do not increase as countries grow wealthier.¹ Within societies, most studies find that wealthier individuals are on average happier than poor ones, but after a minimum level of income, more money does not make people much happier.² Because income plays such an important role in standard definitions and measures of well being, these findings have theoretical, empirical, and policy implications.

Some of the earliest economists – such as Jeremy Bentham – were concerned with the pursuit of individual happiness. As the field became more rigorous and quantitative, however, much narrower definitions of individual welfare, or utility, became the norm, even though economics was still concerned with public welfare in the broader sense. In addition, economists have traditionally shied away from the use of survey data because of justifiable concerns that answers to surveys of individual preferences – and reported well being – are subject to bias from factors such as respondents' mood at the time of the survey and minor changes in the phrasing of survey questions, which can produce large skews in results.³ Thus traditional economic analysis focuses on actual behavior, such as revealed preferences in consumption, savings, and labor market participation, under the assumption that individuals rationally process all the information at their disposal to maximize their utility.⁴ More recently, behavioral economics has begun to have influence at the margin, as an increasing number of economists supplement the methods and research questions more common to economists with those more common to psychologists.

In this same vein, the research on subjective well being relies heavily but not exclusively on surveys, and combines methods from both professions. Typically, the questions are very simple ones about how happy or satisfied respondents are with their lives, with responses ranging from

¹ Easterlin (1974).

² See, among others, Blanchflower and Oswald (1999); Diener (1984); Frey and Stutzer (2002); and Graham and Pettinato (2002). A contrasting view, in a study by psychologist Bob Cummins, starts from the assumption that subjective well being is held within a narrow range determined by personality, and that then is influenced by a number of environmental factors, including income. This study finds that there are significantly different levels of subjective well being for people who are rich, those who are of average Western incomes, and those who are poor. They also note that the effects of income are indirect, i.e. in terms of the other resources that income allows people to purchase, ranging from better health to nicer environments. See Cummins (2000), "Personal Income and Subjective Well Being: A Review", *Journal of Happiness Studies*, Vol.1, pp.133-158.

³ For a critique of the use of survey data, see Bertrand and Mullainathan (2001).

⁴ Assumptions about how much information individuals have and how they process it have become much more sophisticated over time, including the concept of bounded rationality. With bounded rationality, individuals are assumed to have access to local or limited information, and to make decisions according to simple heuristic rules rather than complex optimization calculations. See Conlisk (1996) and Simon (1978).

not very or not at all to very or fully satisfied.⁵ While there are justified criticisms of how accurate such questions are in assessing life satisfaction at the individual level, there is remarkable consistency in the patterns generated by the answers to these questions aggregated across populations and over time. In addition, a number of psychologists have been able to “validate” the use of these questions through other measures, for example by showing that individuals who answer happiness questions positively also demonstrate other measures of positive affect, such as smiling more frequently.⁶

Some of the most recent work on subjective well being has resulted in a new collaboration between economists and psychologists, and contributes to our understanding of seemingly non-rational economic behavior. Examples of such behavior are the remarkable contrast between predicted and experienced utility, such as individuals valuing economic losses disproportionately more than gains; conspicuous consumption to demonstrate wealth at the margin; and/or the contrast between observed time preferences and the standard economic analyses of discounting.⁷ Better understanding of such behavior helps explain unusual patterns in consumption and savings; in voting; in the structure of redistributive policies; in attitudes about insecurity and social insurance; and in support for market policies and democracy, among others.

An important unanswered question in much of this research is the direction of causality. In other words, it is difficult to establish cause and effect with many of the variables that are at play, and in many cases they may interact. For example, are married people happier, or are happier people more likely to get married? Are wealthier people happier, or are happier people more likely to be successful and earn more income over time? Similar questions can be posed in a number of areas, including the positive relationship between health and happiness, between happiness and support for market policies and democracy, and happiness and tolerance for inequality. A better understanding of the direction of causality question will help determine the extent to which the findings from this research should be incorporated into policy analysis.

One of the primary difficulties in establishing this direction of causality is the lack of adequate data. Most of the happiness research is based on cross-section data, while to answer these questions, we need panel data – i.e. data that follows the same people over time. Such data is particularly rare for developing countries. A few isolated studies by psychologists in the United States and Australia shed some light, and establish that happier people earn more income in later periods than do their less happy cohorts.⁸ Yet for the most part, research on subjective well being has not addressed these questions due to the lack of over time data on the same individuals.

⁵ Most surveys use a four point scale, although more recently psychologists have begun to advocate the use of either seven or ten point scales as more accurate.

⁶ See, for example, Diener and Biswas-Diener (1999). More recently, Danny Kahneman, Director of the Center for the Study of Well Being at Princeton University, has been conducting studies to determine differences in the determinants of positive affect from those of life satisfaction. He presented preliminary findings at a Center on Social and Economic Dynamics seminar at Brookings, February 2002. [Kahneman et al (2002)] Psychologists tend to make a distinction between happiness and life satisfaction, while economists tend to use the terms satisfaction and happiness interchangeably (as we do in this paper). The correlation between responses to life satisfaction and happiness questions, meanwhile, tends to be on the order of .95.

⁷ Kahneman and Tversky (2000); Thaler (2000).

⁸ These effects seem to be more important for those at the higher end of the income ladder. Diener and Biswas-Diener (1999).

In this paper, we take advantage of a large panel for Russia, the Russia Longitudinal Monitoring Survey (RLMS), which covers 6500 individuals from 1995-2000, and for which we have answers to happiness questions at two points in time – 1995 and 2000.⁹ There is a standard happiness question in the RLMS, which asks “to what extent are you satisfied with your life at the present time”, with possible answers being “not at all satisfied”, “less than satisfied”, “both yes and no”, “rather satisfied”, and “fully satisfied”.¹⁰

Having observations on the same individuals for two points in time allows us to examine a number of questions in which the direction of causality is not clear from cross section data. A related objective of our analysis is to distinguish between the determinants of normal happiness levels, which are fairly consistent for most individuals over time, and the determinants of transitory changes in subjective well being.

For the purposes of this paper, we use the term normal happiness levels to imply an individual’s usual happiness level over the course of the lifetime, analogous to economists’ use of the term “permanent income”. The term transitory happiness implies short-term changes and trends in happiness levels, analogous to the term transitory income. As some of the psychology literature shows, short term changes in income or occupational status can have significant transitory effects on individuals’ perceived well being, but little or no effects over the long term.

Psychologists find that there is a remarkable degree of consistency over time in people’s level of wellbeing over time. One explanation for this is a process psychologists refer to as homeostasis, in which “normal” happiness levels are not only under the influence of experience, but also controlled by positive cognitive bias pertaining to the self, such as self esteem, a sense of being in control, and optimism.¹¹

Another explanation, which has been written about extensively in the sociological and economics literature, is adaptation and rising expectations. As individuals – and those in their reference group - earn more income, their expectations also rise or adapt to higher levels of income.¹² Thus higher levels of income are needed to achieve the same levels of well being.¹³ Adaptations can also adjust downwards. A good example is in the case of health and aging. Several studies show that individuals adapt to changes in health status – such as the onset of a serious disease - by changing their reference point for “good” health, and, after a temporary drop,

⁹ The RLMS is a nationally representative panel study for Russia, carried out in collaboration with the University of North Carolina at Chapel Hill, and with funding from U.S. AID among others. More information on the survey can be found at www.cpc.unc.edu/projects/rlms/. Critics of the survey question its degree of representativeness. Accepting that some of these criticisms may have validity, we believe it is a fairly unique and extremely valuable data set.

¹⁰ Two possible problems with the question, however, which need to be taken into account, is that the question allows respondents to have a neutral option, which skews responses to the middle of the distribution, and the ordering of the question in the survey. Rather than asking the happiness question first in the survey, before respondents are given a chance to evaluate other aspects of their life, the RLMS happiness question is in the middle of the survey, after a series of questions about occupational and income status, which might skew the responses negatively.

¹¹ See, for example, Cummins and Nistico (forthcoming).

¹² This literature is summarized in Graham and Pettinato (2002).

¹³ This has also been referred to as the “hedonic treadmill”.

continue to evaluate their well being at the same or similar levels as before.¹⁴ In the same way, as people age, their concepts of youth and middle age seem to adapt upwards.

Our analysis is a first attempt to examine these questions in detail with this kind of data, and thus is far from definitive. Another caveat is that our data are from a country that has experienced dramatic policy change in recent years and has unusually low mean happiness scores when compared to other countries with the same level of GDP per capita. [See Figure 1] Still, the relatively large sample size and the intuitive nature of many of the results make us cautiously optimistic about their broader applicability.

Happiness Levels and Happiness Changes

Our point of departure is that there is a difference between the variables that affect “normal” happiness levels and those that cause changes in happiness, although some variables may have effects on both. One would assume that static or exogenous variables such as gender and race affect happiness levels but not changes in happiness, while other possibly endogenous variables which are more likely to change, such as income, health status, and marital status, are more likely to affect short term changes in happiness. In addition, there may also be life cycle effects, which cut across both sets of variables and vary according to gender, for example. Finally, when there are differences in the effects of static variables on levels versus on changes, they are likely to be driven by noise or specification error.

In order to conduct the latter analysis we constructed a HAPPYCHANGE variable.¹⁵ If a person answered lower on the happiness scale in 2000 than in 1995, their change in happiness would be negative; higher and it would be positive. Thirty-seven percent of our respondents had no change in happiness, while 28% had lower levels of happiness and 35% had higher levels.

We first examined the effects of the usual socio-demographic determinants of happiness, such as age, gender, and marriage, on happiness levels. In Russia in 2000, as in many other countries, there was a quadratic relationship between age and happiness, a U-shaped curve with the lowest point on the curve being 49.5 years of age (this is slightly older than the turning point for most OECD countries and the United States, which is typically in the early forties). Men were happier than women in Russia, both in 1995 and in 2000. [Table 1]

Higher levels of education are correlated with higher levels of happiness in Russia, as they are in most countries.¹⁶ We constructed a change in education variable (the respondent’s level of education in 2000 minus that in 1995), and found that increasing one’s education level had no significant effects on happiness levels in 2000. Change in education levels had a significant positive effect on HAPPYCHANGE, though, supporting our intuition that changes in status tend to have greater effects on short term fluctuations in well being than on more permanent levels. [Table 2]

¹⁴ Groot (2000).

¹⁵ This is the individual’s response in 2000 minus his/her response in 1995.

¹⁶ This is certainly true for the developed economies. For Latin America, income effects over-ride those of education, but when we leave income out of the regression, Graham and Pettinato (2002) find that education is positively and significantly correlated with happiness levels.

We also looked at the effects of race. In most countries, racial minorities are less happy than other groups: in the U.S., blacks are, on average, less happy than other groups, and in Latin America, those who identify first as a minority rather than as the nationality of their country are less happy than other groups.¹⁷ In Russia, however, those that identify as being a minority rather than being Russian (16% are in the former group, 84% identify as Russian) are, on average, happier than Russians. There are many plausible reasons for this, including the dramatic changes in Russia's status as a superpower and its effects on national morale, as well as longer term cultural traits.¹⁸ [Table 1]

Similarly, in a related but separate question, those that identify themselves as Islam - 8% of the sample - were, on average, happier than others in 2000, although the coefficient was just short of significant at the 5% level. More generally, having faith or a religious affiliation is positively associated with happiness in most countries.¹⁹ In contrast and rather surprisingly, identifying oneself as Islam was negative and significant on HAPPYCHANGE. [Table 3] The war in Chechnya, which started at about the time the first survey was conducted, has changed the image of Muslims in Russia, and a number of surveys find that the majority of Russians support the efforts of their military against a mainly Islamic population.²⁰ One could posit – tentatively - that respondents who are Muslim have, on average, higher happiness levels than Russians, but have experienced a transitory (hopefully) decline in happiness due to the change in the status of Muslims related to the war.

Some of the most interesting findings related to changes in socio-demographic status and in levels of happiness come from our analysis of marital status. As expected, married people are, on average, happier than non-married people in Russia in 2000.²¹ We created a dummy variable for those that stayed married during the 1995-2000 period – 2935 respondents or 45% of the sample – and found that staying married had no significant effects on HAPPYCHANGE.²² [Table 4] This is intuitive: fairly constant socio-demographic variables such as gender, race, and stable marital status, which are correlated with happiness levels, should not affect transitory changes in happiness, and any such effects are as likely due to measurement error as anything else.

In contrast, divorce is a change in marital status variable that has notable effects on happiness. We created a dummy variable for those people who became divorced during the period – 529 respondents, or 8% of the sample. Becoming divorced had negative and significant effects on both happiness levels in 2000 and changes in happiness levels from 1995 to 2000. We also

¹⁷ On the U.S., see Blanchflower and Oswald, among others; for Latin America, see Graham (2002).

¹⁸ Rather surprisingly, the effects run in the other direction on HAPPYCHANGE, although they are not significant.

¹⁹ For empirical evidence on this for Latin America and the U.S., see Graham (2002).

²⁰ See Gerber and Mendelson (2002).

²¹ One interesting finding is that in 1995, married people were not significantly happier than others, a finding that supports our intuition that overall happiness levels increased from 1995 to 2000. [For happiness in 1995, see Graham and Pettinato (2002)] This is supported by the fact that 35% of the sample had positive changes in happiness levels, while 28% had decreases, plus the general improvements on the economic and governance fronts in Russia during the period.

²² When we use happiness levels in 2000 as the dependent variable, the coefficient on staying married is positive but just short of significant. The difference in results with our MARRIED variable are that those people that got married during the period are separated out.

looked at the effects of getting married during the period; 226 respondents or 3% of the sample got married. While the direction on the coefficient was positive, it was (rather surprisingly) insignificant for both happiness levels and for changes in happiness. [Table 4]

In a related exercise, we examined the combined effects of gender and marriage, by creating dummy variables for eight possible categories: got married, male; got married, female; stay married, male; stay married, female; divorce, male; divorce, female; stay single, male; and stay single, female. When we compare all the categories to females that stay single, we find that males who stay married are the only group that are significantly happier than others, as measured by happiness levels in 2000. [Table 4A]

Being retired has a significant and negative effect on both happiness levels and on changes in happiness, supporting the commonly held views about the sorry state of pensioners in Russia. [Table 1] Becoming retired – which 544 respondents did during the period - has no effect on either happiness or change in happiness, however, implying that retirement has compounding effects.[Table 5] This contrasts with research on retirement behavior in the U.S. which finds, among other things, that people tend to be more negative about retirement in the period that they anticipate retirement and then more content after they have retired (in the U.S., in contrast to Russia, retirees are on average happier than others).²³ It is possible that there is something different about recent retirees in Russia – perhaps they are better prepared for retirement under market conditions and have saved more than the older cohorts did. To account for this, we included a dummy variable for recent retirees in the standard regression on happiness levels. There was a positive sign on the coefficient, in contrast to the negative on being retired in general, but it is statistically insignificant.²⁴

The same relationship holds for being unemployed and becoming employed or unemployed. Being unemployed has negative effects on both happiness levels and HAPPYCHANGE. [Table 1]. Becoming either employed or unemployed has no effect on happiness levels. Yet rather surprisingly, becoming employed had negative effects on change in happiness for 1995-2000! [Table 5]. Twenty percent of the sample – 1335 respondents – became employed during the period, while only 7% - 447 respondents – became unemployed.

There are several plausible explanations for the negative effects of becoming employed. One is that at least some of these respondents were previously students, and student life is probably more enjoyable than working life, particularly in a first job. This effect would be even stronger if students were forced to drop out of school to join the labor force, certainly a plausible scenario in the volatile transition economy context. Secondly, some of the respondents, probably obtained less than optimal jobs, with little job security, and with few guarantees of being paid fully or on time – a common problem in Russia. In addition, when unemployed, the respondents' reference group was others who were unemployed, and thus had fairly similar status. With employment, the reference group becomes others who are employed and most likely have better jobs. Thus

²³ Lowenstein, Prelec, and Weber in Aaron ed. (1999).

²⁴ Recent retirees are those that retired between 1995 and 2000. Regression results are available from the authors.

there could also be a negative wellbeing effect from the higher standards set by their new peers (a keeping up with the Jones effect).²⁵

One drawback of the HAPPYCHANGE variable is that it only captures symmetric changes, regardless of the starting point (and thus assumes an equal value for those that stay happy or stay unhappy), and it does not weight changes differently (in other words, going from very unhappy to being neutral is attributed the same importance as going from neutral to very happy). To explore any effects this might have on our results, we constructed an alternative happy-change variable, which was weighted to take into account the final year score, and thus giving additional weight to higher levels of happiness. This was constructed as: $H00[1+(H00-H95)]$. Our results using this variable did not differ in a significant manner from those using HAPPYCHANGE.²⁶ The weighted variable might have some advantages in that it is ordinal, but that also assumes, rather arbitrarily, that moving from being very unhappy to neutral is less important than moving from being somewhat happy to very happy. This is an assumption which certainly could be challenged, and will have to be the subject of another paper.

Health, Smoking and Drinking, and Happiness

Health is one of the most important variables affecting subjective well being. Not surprisingly we find that health – as measured by a neutral index based on a number of questions about days missed due to illness, hospitalization, etc. – is positively and significantly correlated with happiness. The three questions which made up the index were: In the last 30 days did you miss any work or study days due to illness? Have you been in the hospital in the last 3 months? Have you in the last 30 days had any health problems? [Table 1]

We constructed a change in health status variable, which was based on the difference between scores on the health index in 2000 compared to 1995. We find that changes in health status are insignificant on both happiness and HAPPYCHANGE.²⁷ Our intuition here is that objective changes in health status as measured by our index (as opposed to perceived ones) are more difficult for individuals to evaluate and compare over time – except at the extreme – and thus do not have direct effects on perceived well being.

In contrast, our subjective measure of health status, in which respondents were asked to rank their own health status (from very bad to excellent), was significantly and positively correlated with both happiness levels and changes in happiness.[Table 6] We constructed a change in subjective health evaluation variable, comparing evaluations in 2000 with 1995, and found that changes in subjective health status also had significant effects on both happiness and changes in

²⁵ This is in keeping with Merton's findings on reference groups in his study of Stouffer's *American Soldier*. He found that infantry-men, who were rarely promoted, were much more satisfied with their status than were air force men, for whom promotion was the norm. See Merton (1957).

²⁶ Results available from the authors. The only significant difference was in the effects of age, which are significant and positive on the new happychange. The difference is probably due to differences in the construction of the variables: in the old variable, there is no fixed point for age (it shifts) while in the new one, the year 2000 acts as an anchor. We thank Stefano Pettinato for suggesting the weighted variable.

²⁷ Changes in health status were just short of significant at the 5% level on happiness, and completely insignificant on HAPPYCHANGE. Results are available from the authors.

happiness. The strong correlation of perceptions variables with happiness (discussed below), seems to hold above and beyond the usual distinction between static and change variables.

Finally, having a positive health evaluation in 1995 was positively correlated with happiness levels in 2000 but *negatively* correlated with change in happiness over the period.[Table 6] In other words, having a positive health evaluation is related to being happier, on average, but a high level in the first period reflects high expectations which may not be met in the second period. A simple mechanical explanation is that if the level is high in period one, there is no where for it to go but down, even if its lower point in the second period is still above average.

We examined the effects of smoking and drinking. We find that smoking in the year 2000 has a negative and significant correlation with happiness levels.[Table 7] In contrast, quitting smoking – which 257 respondents or 3% of the sample did between 1995 and 2000 – was positively correlated with changes in happiness during the period (but had no effects on happiness levels).²⁸ [Table 7A] DRINK, a variable that indexes the amount of drinks per week a person consumed in the year 2000 has no correlation with happiness. [Table 7] Yet DRINKLESS, a variable that captures decreases in the amount of drinking from 1995 to 2000 was positively correlated with happiness levels in 2000 (and no effects on changes in happiness). Drinking more, in contrast, had no effects on either levels or changes in happiness.[Table 7A] It may be that decreasing one's amount of drinking is a less abrupt and easily perceived change than is, for example, quitting smoking (and/or that those who were previously drinking heavily were not in a good position to accurately assess their well being!).

How Income Affects Happiness and How Happiness Affects Income

The research on subjective well being has called into question the assumption that utility can be measured by income alone. Thus the relationship between income and happiness is particularly important. Equally important is the classic direction of causality question: while we know that, on average wealthier people are happier, the reverse may also be true: that happier people, on average, earn more income. We attempt to shed some light on these questions in this section.

We measured the relationship between income and happiness with both linear and logarithmic specifications of income. For our basic measure we used equivalence household income – which we have for each of the two periods, 1995 and 2000. This is real household income in 1992 rubles divided by the square root of the number of people in the household.²⁹ We then constructed a log-household equivalence income measure, which entailed adding a 1 to each of the 54 observations that reported zero household income in order to take a log. We also created a dummy for households that reported zero income, in order to control for any effects that were specific to those households and/or that result from our arbitrary specification of their income

²⁸ With some specifications this effect was significant at the 5% level, and with others it was just shy of significance at the 5% level.

²⁹ While there are a number of other household equivalence scales, this is the most commonly used at the international level. For detail, see Figini (1998).

level (adding 1) in order to log it.³⁰ Econometric results aside, it is quite plausible that the zero income respondents are earning substantial income on the black market, which they are reluctant to report, but still has effects on their well being.

When we examine the effects of equivalence income in 2000 on both happiness levels and changes in happiness, we get, not surprisingly, positive and significant effects on both. We also get positive and significant effects on both dependent variables for log equivalence income. We repeated many of our regressions without including the zero income respondents, and in that case find, as expected, that logged equivalence income (without the zero income respondents) is positive and significant on happiness levels and change. [Table 8]

We also tested the effects of initial period income (1995), controlling for initial period happiness levels, on happiness in the second period. We found that income was indeed positively and significantly correlated with happiness, in addition to the positive and significant effects of initial period happiness. Thus income clearly does matter to happiness, even for happy people. [Table 8A]

We broke this down by income levels, using dummies for income quintiles (equivalence income) as the independent income variables and controlling for initial period happiness. We found again that income matters for happiness, but in this case only at the highest levels. When we compared all other income groups to the highest income quintile, we found that for these groups initial period income was negatively and significantly correlated with second period happiness. When we compared all other groups to the poorest groups, income was positively and significantly correlated with happiness only for those in the top two quintiles. [Table 8B] Thus initial period income seems to matter for happiness only for those at the top of the distribution. This is reminiscent of the “greed” effect that Frey and Stutzer find for Switzerland, where additional income increases happiness only for the very wealthy.³¹ An alternative explanation is that initial period income needs to be enough above a minimum level to have effects on happiness above and beyond those of initial period happiness.

We also tried to capture the effects of changes in income. When we use percentage change in equivalence income (1995 to 2000), we get insignificant results on both levels and changes in happiness. In contrast, when we use the percentage change in log income, we get no effect on happiness levels, but a significant and positive effect on HAPPYCHANGE. [Table 9]

This is in keeping with the normal difference in the effects of change and status variables. In addition, the difference in the effects on log and non-logged income suggest that changes in income have greater effects on well being for those with lower levels of income, a result that supports earlier and similar findings by Graham and Pettinato for Peru as well as Russia.³² Not surprisingly, changes in income status have more impact on those who have less of it.

³⁰ We also substituted this specification with a Box-Cox income variable transformation, but found that it did not have a (statistically significant) better fit than did the zero-plus-one logarithmic specification with zero income dummies.

³¹ Frey and Stutzer (2000).

³² For detail, plus an explanation of how the logarithmic specification reflects the greater significance of percentage change for those with less income, see Box 3.1 in Chapter 3 of Graham and Pettinato (2002).

We also tried to answer the question whether happier people earn more income than less happy people. We used several measures of income as the dependent variable, and in separate regressions used both happiness levels in period one (1995) and HAPPYCHANGE as independent variables, controlling for income levels in period one. When we use equivalence income in 2000 as the dependent variable and 1995 equivalence or log equivalence income as the initial period independent variable, we find that both happiness levels in the first period and HAPPYCHANGE have a positive and significant correlation with income in the second period. [Table 10]

When we include the zero income respondents (1995 equivalence income plus one - logged) in the independent variable specification, adding a dummy variable for those respondents that had zero income in 1995, we find that both initial happiness levels and income are positive and significant on equivalence income in the latter period, similar to the log-linear specification which drops the zero income respondents.

With a log-log specification, including the zero income respondents in the specification of the dependent variable, we again find that happiness levels in 1995 are positively and significantly associated with higher levels of income in 2000 (equivalence log income). However, rather surprisingly we find that log 1995 equivalence income (both with and without the zero respondents included in the specification of the independent variable) is insignificant. In other words, with a logarithmic specification of second period income – with zero respondents included, the effects of happiness on future income are significant, while the effects of initial period income are not. [Table 10A]

Given the very strong and consistent effects of initial period earnings on future earnings in most studies, this suggests that they may be driven by the arbitrary specification of the zero income respondents in order to log the dependent variable.³³ While it is tempting to drop the zero income respondents altogether, they are an important part of the Russian landscape, on which both black market income and non-income or barter transactions play a much more important role than they do in more “normal” market economies.³⁴

When we use log equivalence income in 2000 (dropping the zero income respondents) as the dependent variable and both specifications of log equivalence income in 1995 (with and without zero respondents) as independent variables (in separate regressions), the effects of income are so strong that they render happiness levels in 1995 insignificant.[Table 10B] This is a result which is more in keeping with the usual strong effects of initial income on future income.

This log-log specification is the only specification where happiness levels in the initial period do not have significant effects on income in the second period. If HAPPYCHANGE is used

³³ We also repeated the same regression, dropping happiness as an independent variable, and still got insignificant results on log income and on the log of equivalence income (plus 1 on the zeros and with zero dummies), again suggesting that they skew the results. When we use log equivalence income as the independent variable, we also get insignificant results. Yet when we use log equivalence income without the zero income respondents as the dependent variable, we get the standard results of positive and significant effects of initial period income, whether or not we include the zero respondents in the independent income variable. Thus, as above, the zero respondents skew the results when they are included in the dependent variable specification. Results are available from the authors.

³⁴ For a description of Russia’s “virtual economy”, see Gaddy and Ickes (forthcoming).

instead of happiness on the right hand side with the log-log specification, its positive effects still hold.[Table 10B].

Some of the findings in the literature on happiness suggest that the relative importance of income as both a motivating force for behavior and in determining well being is greater at very low levels of income, where basic needs are not yet met, while at higher levels of income, other variables have more importance.³⁵

In contrast, our own findings of the effects of income on happiness in Russia suggest that the effects of income are greatest at the highest income levels. To explore this further, we regressed second period income (equivalence income) on initial period income and initial period happiness, using dummy variables for income quintiles. We found that happiness mattered to second period income across the board (in other words happiness was positively and significantly correlated with second period income regardless of how we specified the distribution of income). Yet initial income was important to second period income only for those in the higher income quintiles, as in the case of the effects of initial period income on second period happiness.

When we compared all income groups to the wealthiest quintile, we found that initial period income was negatively correlated with second period income, while happiness was still positively correlated. When we compared all income groups to those in the poorest quintile, we found that income was only positive and significant for those in the fourth and fifth quintiles. This suggests that initial period income provides advantages in earning more income in the future for only for those that are above some minimum level of income, while happiness seems to matter across the board, at least for our population sample. [Table 10C]

In sum, we found that with all but one specification, initial happiness levels were positively and significantly correlated with future earnings.³⁶ This analysis supports the evidence from the psychology literature that happier people earn more income or, more broadly speaking, perform better economically. While we do not yet have the evidence, it is certainly plausible that the same positive cognitive biases that affect normal happiness levels – such as self esteem, control, and optimism – may also have positive effects on people’s performance in the labor market. An additional finding is that the effects of initial period happiness on future income and on future happiness seem to be more consistent across all income groups than are the effects of initial period income on either future income and future happiness. The effects of initial period income seem more important for those at higher levels of income.

Perceptions, Expectations, and Changes in Happiness

Aspirations and expectations also affect both subjective well being and actual economic behavior. A wide body of political economy literature, for example, documents the effects of individuals’ perceived prospects of upward mobility on their savings and investment behavior,

³⁵ The studies by psychologists that find that happiness has positive effects on future income also find that these effects are stronger at the higher end of the income scale. See Diener and Biswas-Diener (1999).

³⁶ An alternative exploration would be to use a Kernel estimation of income. Unfortunately, we do not have a statistical package in house that is able to do so.

on their voting behavior and views about redistribution, and on their attitudes about market policies.³⁷ Psychologists, meanwhile, have explored the links between aspirations and well being fairly extensively, and find that aspirations temper the effects of other variables, such as increases in incomes, on well being.³⁸

More recent work by Graham and Pettinato shows that happiness is correlated with more positive perceptions about a whole set of economic and political variables.³⁹ These include perceived prospects of upward mobility, perceived past progress, satisfaction with current financial situation, satisfaction with democracy, support for free market policies, support for redistribution (it is negatively correlated with happiness in both Latin America and the United States); and position on a notional societal economic ladder – the Economic Ladder Question (ELQ). Controlling for income, they find that happier people tend to place themselves higher on the notional ladder.

While these findings are interesting, two questions remain. The first is the usual problem of direction of causality. It is quite plausible that happier people perceive all sorts of things more positively than less happy people, and therefore they will be more satisfied with whatever policy regime they live in, as well as with the existing distribution of resources, no matter how equal or unequal. Alternatively, it may well be that many of these variables - such as having high expectations for future progress and/or positive assessments of one's past progress; living in a democracy and with free markets; and believing that one is relatively high on a notional economic ladder – have positive effects on happiness. Causality may run in both directions.

The second unanswered question is the effects of these perceptions on future economic and political behavior. In other words, even if we establish that happiness and positive perceptions about individual economic situations and about desirable policy regimes are positively correlated, does it matter for policy? If we can establish that happier people who have higher expectations for the future also work harder, save more, and invest more in their children, and vote for markets and democracy, then certainly it does matter. Similarly, if we find that frustrated or less happy respondents, who assess their situations and future prospects negatively (even if they are relatively well off), spend conspicuously to keep up with the Jones rather than saving, and vote for anti-market policies, then that is of concern for policy.⁴⁰

While we cannot fully answer these questions, our analysis sheds additional light on them. We first compared the effects of perceptions on changes in happiness to their known positive correlation with happiness levels. All of our perceptions variables: perceived past mobility, prospects of upward mobility, ELQ, and pro-democracy (preferring democracy to pre-perestroika times) were positively correlated with BOTH happiness levels and with changes in happiness.

³⁷ See, among others, Benabou and Ok (1998); Piketty (1995); and Graham and Pettinato (2002).

³⁸ Cummins and Nistico (forthcoming).

³⁹ Graham and Pettinato (2002).

⁴⁰ Graham and Pettinato (2002, 2002b) find a marked and disturbing negative skew in the perceptions of middle income upwardly mobile respondents in both Peru and Russia. Even though these respondents had fared better economically than most of their cohorts, the majority of them assessed their past progress as negative or very negative. They also tended to be more negative in their scores on all of the other perceptions variables, including in their support for markets and democracy. They call these frustrated upwardly mobile respondents the “frustrated achievers”.

One other perceptions variable, fear of unemployment, was, not surprisingly, negatively correlated with both happiness levels and changes in happiness. [See Tables 11 and 11A]. Both signs of the coefficients and the statistical significance were stronger for happiness levels than for change.

We then examined the effects of changes in perceptions (from 1995 to 2000) and find that positive changes in POUM and ELQ – having higher expectations and ladder rankings in 2000 – were positively and significantly correlated with both happiness levels and changes in happiness. Having higher fear of unemployment, meanwhile, was negatively correlated, as one would expect. [See Table 12] Thus while there are the expected differences between the effects of most static and change variables on happiness levels and changes, this is not the case of perceptions variables, and the perceptions effect seems to dominate.

Some of the most interesting findings come from looking at the effects of initial perceptions in the first period on changes in happiness. For both POUM and ELQ, having a high score in 1995 was *positively* correlated with happiness levels in 2000, but *negatively* correlated with changes in happiness. [See Table 13] In other words, happy people in general have higher expectations (or people with high expectations are happier), but these expectations can also result in transitory declines in happiness if they are not met in future periods. In contrast, having a high fear of unemployment in 1995 was negatively correlated with happiness levels in 2000 but positively correlated with changes in happiness over the period. Here, the same intuition holds but in the reverse direction. Having negative expectation or fears about the future, which presumably do not materialize fully, seem to have positive effects on transitory happiness. The psychology literature suggests that in the longer term most people adapt and return to their previous levels of well being.

These findings suggest that while positive expectations are good for happiness levels, they can also result in short-term decreases in happiness when they are not met. This intuition is in keeping with many theories about frustrated expectations which lead to social unrest, such as Hirschman's tunnel hypothesis and Ted Gurr's work on rising expectations.⁴¹ It is also in keeping with the frustrations that Graham and Pettinato find in Peru and Russia: a significant percent of upwardly mobile respondents in their surveys assess their past progress negatively – a group they call the “frustrated achievers”. They posit that the frustrations of the achievers may well be as much about frustrated expectations as about actual economic conditions.⁴²

What are the implications of perceptions for economic behavior and outcomes? We examined the effects of perceptions scores in the first period on income in the second period. In separate regressions, we find that having a positive POUM and ELQ in the initial period has significant and positive effects on income in the second period, controlling for initial income and happiness

⁴¹ Gurr, in an oft-cited study based on evidence from experimental psychologists, case studies of rebellions, and a large data base on conflict related deaths from 114 countries, cites relative deprivation as “the basic, instigating condition for participants in collective violence.” See Gurr (1970). Hirschman, in a well known article on inequality in the development process, compares inequality to a traffic jam in a tunnel. When one lane moves ahead, at first it provides those in other lanes with hope and expectations about where they may be going in the future. Yet if the other lanes remain stalled, then eventually people in those lanes get frustrated and resort to radical behavior, such as jumping the median strip. See Hirschman (1973).

⁴² Graham and Pettinato (2002b, forthcoming).

levels. [See Table 14] As in the case of the effects of happiness on income, we find that the effects of initial income are also significant when we use both the linear and log-linear specifications of equivalence income. When we use log equivalence income with the zero respondents included as the dependent variable, we find that income in the initial period income does not have significant effects, although the perceptions variables still do.⁴³ In this latter case, as in the case of income and happiness, it is again likely that the results are driven by the arbitrary specification on the “zero” income respondents.

We also broke these results down by education level, in order to capture the extent to which expectations align with education and skills levels. We find that the only breakdown of education levels that produces significant results is that between completed high school and completed university education (the majority of Russians complete at least a high school education). When we regress equivalence income in 2000 on initial period income, initial period happiness, and initial period expectations (POUM), and include dummies for completing high school and for completing university education (in separate regressions), we again find that income, happiness, and expectations are significantly and positively correlated with second period income, while those that complete high school alone are likely to have lower second period income. In contrast, and not surprisingly, completing university education seems to have significant and positive effects on second period income (or at least a correlation with it), along with happiness and expectations. [Table 14B]

Our findings on fear of unemployment, our negative perceptions variable, run in the same direction and support this intuition. We find a negative and significant correlation between fear of unemployment in the initial period and income in the second period, with both the linear and log-linear specifications of equivalence income.⁴⁴ [Table 14]

We also looked at the effects of PPM – or perceived past mobility (which we only have for 1998 and not for 1995 – and for 4932 rather than 6500 respondents). The results run in the expected direction: income in the latter period is higher for those respondents who evaluate their past mobility in a positive manner in earlier periods, controlling for income in the first period (in this case income in 1998). The results are significant for the linear specification of income, and just short of significant at the 5% level for both logarithmic specifications of income (with and without zero respondents). [Table 15] This suggests that negative perceptions on past economic performance, such as those of our upwardly mobile frustrated achievers, are not good for future earnings.

Perceptions – both positive and negative – seem to have effects on future economic behavior and outcomes (although at this point we do not know if the outcomes are due to greater effort or to exogenous variables such as luck, given that we control for initial income, education, and age). While wealthier people and those with positive expectations are happier, we also find that being happier and having higher expectations affects future economic performance. Yet high expectations can lead to short-term decreases in happiness, while low expectations or fears about

⁴³ Results available from the authors.

⁴⁴ As in the case of happiness, the log-log specification (with and without zero income dummies included) renders the perception variable insignificant.

the future can lead to increases in happiness levels, presumably when the worst case scenarios do not materialize.

Conclusions

This paper had two objectives. The first was to explore the difference, if any, between the determinants of longer term levels of happiness and those of short term fluctuations in well being. Studies by psychologists find that most individuals have fairly stable levels of happiness or subjective well being, but that those levels are subject to short term fluctuations. We find clear differences between the determinants of happiness levels at a given point in time – normal happiness - and those of fluctuations in those levels. We find that the latter determinants tend to be changes in socio-economic status or fluctuations in income. Our findings support the idea that there are different elements of well being, some of which are more permanent and possibly more behaviorally driven, and others which are shorter term and much more vulnerable to day to day events, such as changes in employment and marital status, and fluctuations in income.

Our second and more important objective was to contribute to the difficult question of causality. In other words, while we know that more income (up to a certain level) and stable marital status and more education make people happier, does happiness matter to future outcomes. Does happiness pay? Do higher levels of well being have implications for future economic and political behavior? Related to this, do positive expectations and perceptions also have an effect on future economic behavior?

We find that both happiness levels and positive expectations in the initial period are at the least correlated with higher levels of income in future periods, controlling for income, education, and other socio-demographic variables. Thus people with higher levels of happiness – and with more positive expectations for their own upward mobility – are more likely to increase their own income in the future. Along the same vein, people with more negative perceptions – or their own past progress - and those that have higher fears of being unemployed in the future – increase their incomes less, on average, in future periods. The psychology literature attributes stability in long term or normal happiness levels to positive cognitive bias, such as self esteem, control, and optimism. The strong correlation between happiness and our perceptions variables suggest that these same factors may be at play and that, in turn, they affect peoples' performance in their earnings activities. Meanwhile, the effects of initial period income on both future happiness and future income are less consistent than those of initial period happiness: initial income only seems to matter to those at higher levels of the income distribution.

An additional finding, which pertains to perceptions variables, is that high expectations in one period also lead to transitory decreases in well being in the next. Controlling for initial income levels, we found that our respondents with high expectations for future mobility, and with high rankings on a notional economic ladder, the ELQ, on average had downward changes in happiness in the five year period. A caveat is that these findings are from a country with a tremendous amount of policy change. Still, they suggest that high aspirations, if not realized, can cause downward fluctuations in well being, which we assume are short term, as the same respondents have, on average, higher happiness levels, and in general high expectations are positively correlated with higher levels of well being. These findings are in keeping with much

of the research on subjective well being, which finds that aspirations temper the positive effects of income gains. In the same vein, low aspirations can increase the effects of income gains on transitory happiness, while in the long term it is likely that people adapt to their “normal” happiness levels.

In conclusion, our findings about the effects of well being on future economic performance – in particular that both happiness and high expectations seem to have positive effects on income in future periods and not only the other way around - suggest that better understanding of subjective well being can contribute to policy questions, such as about differences in individuals’ labor market behavior. The results are tempered, however, by the fairly unique nature of the country and the time period from which they come, as well as our limited first hand knowledge of Russia. An important next stage is to test the broader relevance of these results against those from similar data from other countries. At the least we hope that our results will spur interest in the more extensive research and data collection that is necessary to that stage.⁴⁵

⁴⁵ One author, Graham, is currently in the process of compiling such data with a research team in Peru.

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Happiness and Income Per Capita, 1990s

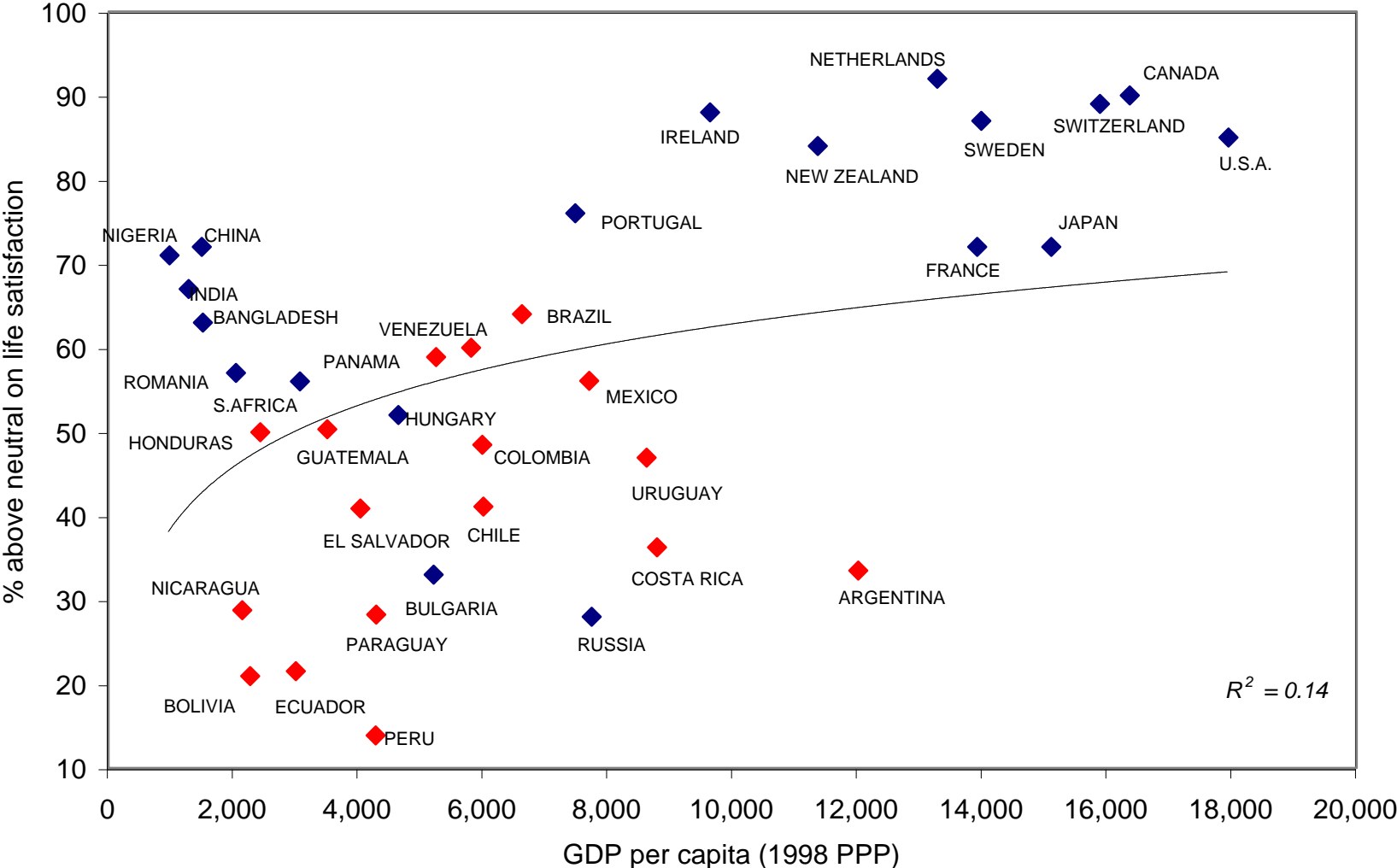


Table 1: Basic Variables

Independent Variables	Happy	
	Coef.	z
age	-0.087	-10.090
age squared	0.001	9.620
male	0.179	3.710
married	0.146	2.670
log equiv inc 00 plus 1	0.409	13.550
zero income 00 dummy	3.346	9.490
education level	0.032	2.250
minority	0.185	2.960
student	0.087	0.810
retired	-0.381	-4.390
housewife	0.079	0.660
unemployed	-0.728	-8.410
selfemployed	0.538	2.750
health index	0.418	4.050

Note: All regressions with happiness as the dependent variable are ordered logits. Regressions with income as the dependent are standard OLS regressions. Equivalence income is the real household income in 1992 Rubles divided by the square root of the number of people in the household ($\text{income}/(\text{people}^{.5})$). Here we have dropped the very small number of observations (16) with negative reported income and changed those reported as zero to a 1 in order to use the log. To be sure this estimation did not change the results, this method was compared to the linear estimation of income and an estimation using a Box-Cox transformation, a specification that estimates a curve somewhere between the linear and log specifications. Neither was statistically better than the log. We posit that the positive sign on the zero income dummy is the result of many of the zero income respondents (55 in total) making their living in the black market or virtual economy.

Table 2: Change in Education Levels

Independent Variables	Happy		Happychange	
	Coef.	z	Coef.	z
age	-0.079	-7.870	-0.012	-1.210
age squared	0.001	7.600	0.000	1.390
male	0.140	2.530	-0.010	-0.180
married	0.125	2.080	0.017	0.280
log equiv inc 00 plus 1	0.418	12.230	0.130	4.020
zero income 00 dummy	3.402	8.670	0.890	2.310
change in education level	0.014	0.650	0.056	2.630
minority	0.196	2.820	-0.105	-1.500
student	-0.052	-0.270	-0.368	-1.830
retired	-0.377	-4.090	-0.237	-2.600
housewife	0.088	0.630	-0.274	-1.960
unemployed	-0.701	-7.220	-0.394	-4.160
selfemployed	0.607	2.870	0.016	0.080
health index	0.476	3.910	-0.104	-0.870

Table 3: Islam

Independent Variables	Happy		Happychange	
	Coef.	z	Coef.	z
age	-0.086	-10.010	-0.014	-1.410
age squared	0.001	9.560	0.000	1.450
male	0.179	3.710	-0.015	-0.280
married	0.145	2.660	0.018	0.310
log equiv inc 00 plus 1	0.409	13.570	0.136	4.220
zero income 00 dummy	3.348	9.490	0.915	2.380
education level	0.032	2.220	-0.008	-0.500
islam	0.171	1.910	-0.291	-2.850
student	0.088	0.820	-0.322	-1.600
retired	-0.380	-4.390	-0.220	-2.410
housewife	0.083	0.690	-0.257	-1.840
unemployed	-0.726	-8.370	-0.370	-3.900
selfemployed	0.553	2.830	0.021	0.100
health index	0.414	4.010	-0.068	-0.560

Table 4: Marriage, Divorce and Being Single

Independent Variables	Happy		Happychange	
	Coef.	z	Coef.	z
age	-0.084	-9.460	-0.009	-0.820
age squared	0.001	9.130	0.000	0.930
male	0.183	3.810	-0.011	-0.210
gotmarried	0.051	0.400	0.038	0.260
staymarried	0.091	1.560	-0.060	-0.900
divorce	-0.187	-2.030	-0.228	-2.400
log equiv inc 00 plus 1	0.410	13.630	0.134	4.140
zero income 00 dummy	3.353	9.520	0.907	2.360
education level	0.033	2.310	-0.007	-0.440
minority	0.183	2.930	-0.103	-1.470
student	0.060	0.560	-0.328	-1.620
retired	-0.381	-4.390	-0.225	-2.470
housewife	0.097	0.810	-0.275	-1.970
unemployed	-0.727	-8.400	-0.385	-4.070
selfemployed	0.549	2.800	0.030	0.140
health index	0.408	3.950	-0.091	-0.760

Table 4A: Marriage, Divorce and Being Single by Gender

Independent Variables	Happy		Happychange	
	Coef.	z	Coef.	z
age	-0.084	-9.480	-0.009	-0.820
age squared	0.001	9.010	0.000	0.930
got married, female	0.040	0.230	*	*
got married, male	0.170	0.890	0.067	0.250
stayed married, female	0.070	0.810	-0.086	-0.460
stayed married, male	0.251	2.860	-0.051	-0.270
divorced, female	-0.132	-1.090	-0.165	-0.810
divorced, male	-0.197	-1.190	-0.396	-1.700
stayed single, male	0.055	0.680	-0.006	-0.030
log equiv inc 00 plus 1	0.414	13.730	0.134	4.150
zero income 00 dummy	3.363	9.540	0.908	2.360
education level	0.031	2.190	-0.006	-0.430
minority	0.181	2.900	-0.106	-1.510
student	0.050	0.460	-0.326	-1.610
retired	-0.376	-4.330	-0.224	-2.450
housewife	0.067	0.550	-0.254	-1.820
unemployed	-0.711	-8.220	-0.384	-4.060
selfemployed	0.552	2.810	0.023	0.110
health index	0.414	4.010	-0.096	-0.800

*Note: In the happychange regression, gotmarriedfemale is dropped due to collinearity with the dummy for zero equivalence income.

Table 5: Occupational Variables

Independent Variables	Happy		Happychange	
	Coef.	z	Coef.	z
age	-0.092	-12.580	-0.002	-0.190
age squared	0.001	10.980	0.000	0.140
male	0.151	3.210	-0.006	-0.110
married	0.183	3.420	0.035	0.600
log equiv inc 00 plus 1	0.445	14.800	0.145	4.530
zero income 00 dummy	3.559	10.130	1.012	2.630
education level	0.037	2.610	-0.005	-0.310
minority	0.158	2.540	-0.114	-1.640
retired from 95-00	0.124	1.430	0.175	1.890
became employed from 95-00	-0.040	-0.630	-0.335	-4.290
became unemployed from 95-00	-0.099	-1.100	0.062	0.660
health index	0.393	3.840	-0.068	-0.570

Table 6: Health Evaluation

Independent Variables	Happy						Happychange					
	Coef.	z	Coef.	z	Coef.	z	Coef.	z	Coef.	z	Coef.	z
age	-0.081	-9.460	-0.087	-9.290	-0.085	-9.030	-0.010	-1.010	-0.013	-1.260	-0.015	-1.520
age squared	0.001	9.620	0.001	8.710	0.001	8.740	0.000	1.290	0.000	1.350	0.000	1.410
male	0.114	2.340	0.154	2.990	0.105	2.030	-0.052	-0.940	-0.004	-0.080	0.009	0.160
married	0.183	3.340	0.159	2.690	0.158	2.690	0.017	0.290	0.018	0.310	0.017	0.290
log equiv inc 00 plus 1	0.398	13.210	0.392	12.320	0.394	12.380	0.129	3.990	0.127	3.940	0.131	4.070
zero income 00 dummy	3.194	9.100	3.204	8.600	3.278	8.790	0.841	2.190	0.805	2.100	0.874	2.270
education level	0.025	1.760	0.025	1.650	0.022	1.430	-0.012	-0.770	-0.008	-0.510	-0.004	-0.270
minority	0.111	1.770	0.182	2.760	0.187	2.840	-0.140	-2.010	-0.131	-1.870	-0.093	-1.340
student	0.055	0.510	0.056	0.480	0.096	0.820	-0.318	-1.580	-0.341	-1.690	-0.339	-1.690
retired	-0.268	-3.090	-0.381	-4.160	-0.361	-3.940	-0.175	-1.920	-0.212	-2.340	-0.263	-2.900
housewife	0.025	0.210	0.066	0.490	0.098	0.730	-0.312	-2.240	-0.326	-2.330	-0.291	-2.090
unemployed	-0.761	-8.770	-0.684	-7.280	-0.685	-7.300	-0.404	-4.270	-0.431	-4.520	-0.417	-4.400
selfemployed	0.521	2.670	0.586	2.780	0.610	2.900	-0.002	-0.010	-0.003	-0.020	0.015	0.070
health evaluation	0.461	12.810	-	-	-	-	0.166	4.210	-	-	-	-
change in health evaluation	-	-	0.159	5.050	-	-	-	-	0.222	6.670	-	-
health evaluation 1995	-	-	-	-	0.212	5.690	-	-	-	-	-0.139	-3.600

Table 7: Smoking & Drinking

Independent Variables	Happy			
	Coef.	z	Coef.	z
age	-0.086	-9.990	-0.116	-8.490
age squared	0.001	9.400	0.001	7.720
male	0.251	4.510	0.124	1.740
married	0.139	2.530	0.143	1.890
log equiv inc 00 plus 1	0.406	13.460	0.423	9.930
zero income 00 dummy	3.330	9.450	4.048	8.210
education level	0.030	2.120	0.021	0.930
minority	0.176	2.820	0.267	2.940
student	0.039	0.350	-0.106	-0.630
retired	-0.384	-4.420	-0.272	-2.140
housewife	0.072	0.600	0.112	0.580
unemployed	-0.713	-8.230	-0.763	-6.690
selfemployed	0.546	2.790	0.488	2.020
health index	0.413	4.000	0.464	3.130
smoking	-0.157	-2.600	-	-
drinking	-	-	0.000	-0.010

Table 7A: Changes in Smoking & Drinking

Independent Variables	Happy				Happychange			
	Coef.	z	Coef.	z	Coef.	z	Coef.	z
age	-0.087	-10.020	-0.089	-10.300	-0.013	-1.260	-0.013	-1.250
age squared	0.001	9.580	0.001	9.820	0.000	1.360	0.000	1.310
male	0.172	3.510	0.163	3.320	-0.028	-0.510	0.000	-0.010
married	0.147	2.680	0.144	2.640	0.019	0.320	0.016	0.270
log equiv inc 00 plus 1	0.409	13.550	0.406	13.450	0.133	4.130	0.135	4.180
zero income 00 dummy	3.326	9.410	3.317	9.410	0.865	2.250	0.911	2.360
education level	0.032	2.240	0.031	2.200	-0.008	-0.500	-0.007	-0.450
minority	0.185	2.970	0.185	2.970	-0.096	-1.380	-0.100	-1.440
student	0.094	0.870	0.095	0.890	-0.328	-1.630	-0.340	-1.680
retired	-0.380	-4.390	-0.375	-4.320	-0.226	-2.480	-0.233	-2.550
housewife	0.080	0.660	0.087	0.720	-0.285	-2.040	-0.282	-2.020
unemployed	-0.730	-8.430	-0.721	-8.330	-0.390	-4.110	-0.394	-4.150
selfemployed	0.541	2.760	0.535	2.730	0.018	0.090	0.015	0.070
health index	0.419	4.060	0.415	4.020	-0.081	-0.680	-0.079	-0.660
started smoking	0.063	0.700	-	-	0.057	0.530	-	-
quit smoking	0.118	1.000	-	-	0.234	1.910	-	-
drank more	-	-	0.076	0.970	-	-	-0.108	-1.360
drank less	-	-	0.197	2.450	-	-	-0.048	-0.580

Table 8: Measures of Income

Independent Variables	Happy						Happychange					
	Coef.	z	Coef.	z	Coef.	z	Coef.	z	Coef.	z	Coef.	z
age	-0.087	-10.090	-0.090	-10.450	-0.096	-11.120	-0.014	-1.350	-0.015	-1.450	-0.017	-1.660
age squared	0.001	9.620	0.001	10.020	0.001	10.150	0.000	1.410	0.000	1.530	0.000	1.460
male	0.179	3.710	0.191	3.970	0.208	4.290	-0.016	-0.290	-0.012	-0.220	0.003	0.060
married	0.146	2.670	0.196	3.600	0.332	5.930	0.017	0.280	0.037	0.640	0.108	1.780
log equiv inc 00 plus 1	0.409	13.550	-	-	-	-	0.133	4.130	-	-	-	-
eq_income_00	-	-	0.000	8.360	-	-	-	-	0.000	2.660	-	-
log equiv inc 00	-	-	-	-	0.185	8.000	-	-	-	-	0.097	3.850
zero income 00 dummy	3.346	9.490	0.370	1.400	*	*	0.896	2.330	-0.088	-0.300	*	*
education level	0.032	2.250	0.042	2.970	0.038	2.660	-0.007	-0.490	-0.004	-0.260	-0.008	-0.560
minority	0.185	2.960	0.181	2.900	0.265	4.230	-0.097	-1.390	-0.092	-1.320	-0.052	-0.740
student	0.087	0.810	0.083	0.780	0.076	0.710	-0.330	-1.640	-0.327	-1.620	-0.334	-1.640
retired	-0.381	-4.390	-0.412	-4.760	-0.473	-5.460	-0.225	-2.470	-0.242	-2.650	-0.262	-2.880
housewife	0.079	0.660	0.013	0.100	0.066	0.550	-0.278	-1.990	-0.312	-2.240	-0.260	-1.850
unemployed	-0.728	-8.410	-0.817	-9.550	-0.802	-9.240	-0.387	-4.090	-0.430	-4.600	-0.413	-4.350
selfemployed	0.538	2.750	0.526	2.710	0.599	3.040	0.015	0.070	0.044	0.210	0.074	0.350
health index	0.418	4.050	0.436	4.250	0.475	4.590	-0.081	-0.680	-0.078	-0.650	-0.073	-0.610

*Note: When the log of equivalence income is taken the dummy for zero income is not included because anyone that had zero equivalence income is left out of the analysis.

Table 8A: Effects of First Period Income on Second Period Happiness

Independent Variables	Happy					
	Coef.	z	Coef.	z	Coef.	z
age	-0.07	-7.33	-0.08	-7.34	-0.08	-7.41
age squared	0.00	7.22	0.00	6.97	0.00	7.02
male	0.11	2.04	0.13	2.40	0.13	2.38
married	0.16	2.73	0.24	3.92	0.24	3.89
eq_income_95	0.91	3.17	-	-	-	-
log equiv inc 95	-	-	0.14	5.71	-	-
log equiv inc 95 plus 1	-	-			0.14	5.78
zero income 95 dummy	0.00	4.85	*	*	1.46	4.73
education level	0.04	2.58	0.04	2.51	0.04	2.49
minority	0.17	2.41	0.19	2.73	0.19	2.72
student	-0.18	-0.91	-0.16	-0.82	-0.17	-0.87
retired	-0.42	-4.57	-0.46	-4.90	-0.47	-5.08
housewife	-0.13	-0.93	-0.13	-0.91	-0.12	-0.85
unemployed	-0.80	-8.31	-0.79	-8.16	-0.80	-8.22
selfemployed	0.50	2.42	0.55	2.63	0.55	2.62
health index	0.41	3.38	0.45	3.68	0.43	3.51
happy 95	0.39	14.80	0.40	15.14	0.40	15.19

*Note: When the log of equivalence income is taken the dummy for zero income is not included because anyone that had zero equivalence income is left out of the analysis.

Table 8B: Effects of First Period Income Quintiles on Second Period Happiness

Independent Variables	Happy			
	Coef.	z	Coef.	z
age	-0.077	-7.550	-0.077	-7.550
age squared	0.001	7.400	0.001	7.400
male	0.118	2.120	0.118	2.120
married	0.145	2.420	0.145	2.420
education level	0.037	2.350	0.037	2.350
minority	0.177	2.550	0.177	2.550
student	-0.221	-1.130	-0.221	-1.130
retired	-0.406	-4.380	-0.406	-4.380
housewife	-0.117	-0.850	-0.117	-0.850
unemployed	-0.794	-8.180	-0.794	-8.180
selfemployed	0.558	2.660	0.558	2.660
helath index	0.404	3.310	0.404	3.310
happy 95	0.373	14.110	0.373	14.110
Equivalence Income 1995 Quintile 1	-0.546	-6.440	-	-
Equivalence Income 1995 Quintile 2	-0.461	-5.430	0.086	1.020
Equivalence Income 1995 Quintile 3	-0.394	-4.810	0.153	1.840
Equivalence Income 1995 Quintile 4	-0.308	-3.810	0.238	2.860
Equivalence Income 1995 Quintile 5	-	-	0.546	6.440

Equation 1: Wealthiest quintile left out

Equation 2: Poorest quintile left out

Table 9: Percentage Change in Log Income

Independent Variables	Happy				Happychange			
	Coef.	z	Coef.	z	Coef.	z	Coef.	z
age	-0.090	-10.400	-0.091	-10.520	-0.017	-1.720	-0.015	-1.450
age squared	0.001	9.990	0.001	10.120	0.000	1.780	0.000	1.570
male	0.188	3.870	0.187	3.870	-0.001	-0.010	-0.008	-0.150
married	0.232	4.220	0.232	4.270	0.062	1.060	0.049	0.840
percent change in log eq inc 95-00	0.035	0.330	-	-	0.457	3.850	-	-
percent change in eq inc 95-00	-	-	-0.002	-0.730	-	-	0.001	0.350
education level	0.047	3.270	0.051	3.570	-0.006	-0.400	-0.002	-0.110
minority	0.206	3.290	0.217	3.490	-0.073	-1.040	-0.078	-1.110
student	0.058	0.540	0.074	0.690	-0.324	-1.590	-0.318	-1.580
retired	-0.457	-5.270	-0.453	-5.240	-0.255	-2.790	-0.251	-2.760
housewife	-0.023	-0.190	-0.013	-0.110	-0.293	-2.080	-0.339	-2.430
unemployed	-0.862	-9.950	-0.842	-9.870	-0.446	-4.700	-0.444	-4.750
selfemployed	0.620	3.100	0.627	3.210	0.046	0.220	0.051	0.250
health index	0.466	4.480	0.479	4.640	-0.065	-0.540	-0.044	-0.360

Table 10: Income as Dependent Variable (Equivalence Income 2000)

Independent Variables	Equation 1		Equation 2		Equation 3		Equation 4		Equation 5		Equation 6	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
age	-8.394	-0.310	-9.695	-0.360	-10.136	-0.380	-16.443	-0.610	-19.230	-0.710	-19.551	-0.720
age squared	0.182	0.670	0.166	0.610	0.168	0.620	0.258	0.940	0.247	0.890	0.249	0.900
male	-7.504	-0.050	4.418	0.030	5.094	0.030	31.872	0.210	50.513	0.330	51.259	0.340
married	626.718	3.960	717.831	4.420	717.688	4.450	632.780	3.970	746.442	4.560	746.434	4.590
education level	127.307	3.100	130.635	3.140	130.662	3.160	137.508	3.310	142.451	3.380	142.393	3.400
minority	676.852	3.650	702.931	3.720	698.952	3.730	723.448	3.870	759.782	4.000	755.808	4.000
student	-145.146	-0.280	-141.567	-0.270	-149.751	-0.290	-77.518	-0.150	-71.615	-0.130	-78.631	-0.150
retired	-1133.899	-4.650	-1188.103	-4.820	-1191.807	-4.860	-1107.186	-4.500	-1168.376	-4.690	-1172.018	-4.730
housewife	-560.945	-1.500	-576.275	-1.520	-550.364	-1.470	-460.955	-1.220	-460.140	-1.210	-443.438	-1.170
unemployed	-895.490	-3.550	-883.904	-3.470	-884.969	-3.490	-863.225	-3.400	-851.400	-3.310	-853.467	-3.330
selfemployed	703.182	1.290	813.585	1.480	787.938	1.450	801.744	1.440	942.397	1.680	911.080	1.630
health index	578.420	1.780	585.583	1.780	567.614	1.740	696.991	2.130	715.953	2.160	701.917	2.130
happy 95	269.827	4.030	303.632	4.500	300.403	4.480	-	-	-	-	-	-
happychange	-	-	-	-	-	-	182.215	3.390	173.234	3.180	173.530	3.210
zero income 95 dummy	135.399	0.170	*	*	648.084	0.760	113.198	0.140	*	*	775.010	0.900
eq_income_95	0.070	5.520	-	-	-	-	0.077	6.150	-	-	-	-
log equiv inc 95	-	-	156.735	2.430	-	-	-	-	194.022	2.990	-	-
log equiv inc 95 plus 1	-	-	-	-	158.239	2.460	-	-	-	-	194.843	3.010
_cons	922.234	1.200	352.121	0.430	383.936	0.470	1427.559	1.880	793.863	0.960	814.739	1.000

Equation 1: Equivalence income in 1995 as independent variable and happy in 1995

Equation 2: Log equivalence income in 1995 as independent variable and happy in 1995

Equation 3: Log equivalence income in 1995 (with 1 added to the zeros) as independent variable and happy in 1995

Equation 4: Equivalence income in 1995 as independent variable and happychange

Equation 5: Log equivalence income in 1995 as independent variable and happychange

Equation 6: Log equivalence income in 1995 (with 1 added to the zeros) as independent variable and happychange

Table 10A: Log Equivalence Income as Dependent Variable (Includes Zeros)*

Independent Variables	Equation 1		Equation 2		Equation 3		Equation 4	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
age	-0.006	-1.010	-0.006	-1.020	-0.008	-1.390	-0.008	-1.390
age squared	0.000	1.750	0.000	1.740	0.000	2.060	0.000	2.050
male	0.012	0.360	0.013	0.390	0.022	0.680	0.023	0.710
married	0.259	7.380	0.259	7.430	0.265	7.480	0.264	7.520
education level	0.047	5.270	0.047	5.300	0.051	5.580	0.051	5.610
minority	0.128	3.130	0.128	3.150	0.141	3.440	0.141	3.460
student	-0.136	-1.200	-0.139	-1.220	-0.125	-1.090	-0.127	-1.110
retired	-0.212	-3.980	-0.215	-4.050	-0.210	-3.900	-0.212	-3.960
housewife	-0.383	-4.680	-0.375	-4.610	-0.360	-4.350	-0.353	-4.300
unemployed	-0.538	-9.740	-0.538	-9.790	-0.531	-9.540	-0.531	-9.590
selfemployed	-0.333	-2.780	-0.334	-2.810	-0.334	-2.730	-0.335	-2.770
health index	0.061	0.850	0.058	0.820	0.089	1.250	0.088	1.230
happy 95	0.069	4.690	0.067	4.650	-	-	-	-
happychange	-	-	-	-	0.037	3.160	0.038	3.240
zero income 95 dummy	*	*	0.099	0.540	*	*	0.139	0.750
log equiv inc 95	-0.018	-1.290	-	-	-0.009	-0.650	-	-
log equiv inc 95 plus 1	-	-	-0.017	-1.220	-	-	-0.008	-0.600
_cons	7.207	40.390	7.210	40.640	7.301	41.030	7.300	41.260

Equation 1: Log equivalence income in 1995 as independent variable and happy in 1995

Equation 2: Log equivalence income in 1995 (with 1 added to the zeros) as independent variable and happy in 1995

Equation 3: Log equivalence income in 1995 as independent variable and happychange

Equation 4: Log equivalence income in 1995 (with 1 added to the zeros) as independent variable and happychange

* In this table the dependent variable is the log of equivalence income, plus one for zero respondents.

Table 10B: Log Equivalence Income as Dependent Variable (Dropping Zeros)

Independent Variables	Equation 1		Equation 2		Equation 3		Equation 4	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
age	0.029	6.030	0.029	6.000	0.029	6.040	0.029	5.990
age squared	0.000	-2.540	0.000	-2.500	0.000	-2.550	0.000	-2.490
male	-0.033	-1.250	-0.031	-1.170	-0.032	-1.220	-0.030	-1.140
married	-0.400	-13.910	-0.403	-14.040	-0.401	-13.940	-0.405	-14.080
education level	0.037	4.970	0.036	4.850	0.037	5.050	0.037	4.960
minority	-0.165	-4.930	-0.162	-4.850	-0.163	-4.860	-0.160	-4.780
student	0.234	2.490	0.233	2.470	0.237	2.510	0.235	2.490
retired	-0.014	-0.310	-0.015	-0.340	-0.003	-0.060	-0.004	-0.090
housewife	-0.364	-5.400	-0.356	-5.300	-0.352	-5.200	-0.345	-5.110
unemployed	-0.276	-6.080	-0.271	-5.970	-0.260	-5.710	-0.255	-5.600
selfemployed	0.053	0.530	0.040	0.400	0.034	0.340	0.021	0.200
health index	-0.153	-2.610	-0.144	-2.460	-0.158	-2.690	-0.148	-2.530
happy 95	-0.010	-0.840	-0.010	-0.850	-	-	-	-
happychange	-	-	-	-	0.045	4.630	0.044	4.540
zero income 95 dummy	*	*	3.020	20.020	*	*	3.021	19.820
log equiv inc 95	0.506	44.180	-	-	0.506	44.160	-	-
log equiv inc 95 plus 1	-	-	0.506	44.180	-	-	0.506	44.130
_cons	1.612	11.040	1.618	11.090	1.576	10.870	1.581	10.920

Equation 1: Log equivalence income in 1995, with zeros dropped, as independent variable and happy in 1995

Equation 2: Log equivalence income in 1995 (with 1 added to the zeros) as independent variable and happy in 1995

Equation 3: Log equivalence income with zeros dropped in 1995 as independent variable and happychange

Equation 4: Log equivalence income in 1995 (with 1 added to the zeros) as independent variable and happychange

Table 10C: Equivalence Income in 2000 as the Dependent Variable with Quintile Dummies for Income in 1995

Independent Variables	Equation 1		Equation 2	
	Coef.	t	Coef.	t
age	-16.801	-0.640	-16.801	-0.640
age squared	0.246	0.920	0.246	0.920
male	-16.068	-0.110	-16.068	-0.110
married	487.363	3.100	487.363	3.100
education level	101.597	2.490	101.597	2.490
minority	740.259	4.030	740.259	4.030
student	-345.398	-0.670	-345.398	-0.670
retired	-1015.237	-4.200	-1015.237	-4.200
housewife	-519.158	-1.400	-519.158	-1.400
unemployed	-818.297	-3.270	-818.297	-3.270
selfemployed	674.046	1.250	674.046	1.250
health index	516.407	1.600	516.407	1.600
happy 95	149.264	2.210	149.264	2.210
Equivalence Income 1995 Quintile 1	-2168.337	-9.670	-	-
Equivalence Income 1995 Quintile 2	-2236.844	-10.020	-68.508	-0.310
Equivalence Income 1995 Quintile 3	-1744.592	-8.040	423.745	1.940
Equivalence Income 1995 Quintile 4	-1286.215	-5.990	882.121	4.030
Equivalence Income 1995 Quintile 5	-	-	2168.337	9.670
_cons	3474.207	4.390	1305.871	1.700

Equation 1: Wealthiest quintile left out

Equation 2: Poorest quintile left out

Table 11: Perceptions Variables

Independent Variables	Happy						Happychange					
	Coef.	z	Coef.	z	Coef.	z	Coef.	z	Coef.	z	Coef.	z
age	-0.070	-7.060	-0.064	-7.200	-0.099	-5.300	-0.003	-0.280	-0.002	-0.150	-0.004	-0.190
age squared	0.001	7.270	0.001	7.160	0.001	4.500	0.000	0.550	0.000	0.420	0.000	-0.040
male	0.185	3.430	0.185	3.740	0.252	3.630	0.013	0.210	-0.014	-0.250	0.035	0.470
married	0.124	2.040	0.021	0.380	0.113	1.450	-0.017	-0.260	-0.036	-0.610	0.009	0.110
log equiv inc 00 plus 1	0.378	11.140	0.279	9.060	0.536	12.040	0.104	2.880	0.064	1.930	0.203	4.620
zero income 00 dummy	2.876	7.030	2.173	5.960	4.091	7.260	0.864	1.900	0.263	0.670	1.350	2.500
education level	0.033	2.060	0.004	0.310	0.014	0.460	-0.021	-1.270	-0.019	-1.270	-0.023	-0.730
minority	0.176	2.480	0.014	0.210	0.138	1.450	-0.119	-1.510	-0.159	-2.260	-0.025	-0.250
student	0.165	1.360	0.110	1.000	-0.598	-1.340	-0.306	-1.410	-0.306	-1.500	-1.011	-1.380
retired	-0.397	-4.130	-0.288	-3.220	*	*	-0.234	-2.340	-0.194	-2.100	*	*
housewife	0.068	0.510	0.065	0.530	0.298	1.200	-0.245	-1.570	-0.255	-1.800	-0.179	-0.620
unemployed	-0.794	-8.000	-0.618	-7.000	0.034	0.040	-0.394	-3.710	-0.332	-3.470	-0.248	-0.250
selfemployed	0.477	2.150	0.398	2.050	0.634	3.050	0.046	0.200	-0.075	-0.360	-0.026	-0.120
health index	0.383	3.320	0.299	2.840	0.159	1.110	-0.129	-0.960	-0.169	-1.400	-0.248	-1.630
poum	0.615	19.740	-	-	-	-	0.304	9.270	-	-	-	-
elq	-	-	0.496	28.800	-	-	-	-	0.215	11.880	-	-
fearpr	-	-	-	-	-0.160	-6.700	-	-	-	-	-0.063	-2.520

*Note: When the analysis is done using fear of unemployment, retired is dropped due to collinearity.

Table 11A: Perceptions Variables

Independent Variables	Happy				Happychange			
	Coef.	z	Coef.	z	Coef.	z	Coef.	z
age	-0.090	-10.160	-0.082	-8.480	-0.013	-1.230	-0.011	-1.000
age squared	0.001	9.770	0.001	8.770	0.000	1.260	0.000	1.440
male	0.180	3.660	0.166	3.180	-0.029	-0.520	-0.019	-0.320
married	0.146	2.640	0.187	3.150	0.011	0.190	-0.004	-0.060
log equiv inc 00 plus 1	0.385	12.530	0.358	10.630	0.115	3.510	0.104	2.900
zero income 00 dummy	3.314	9.290	2.817	7.330	0.843	2.180	0.682	1.610
education level	0.029	2.000	0.026	1.690	-0.011	-0.720	-0.011	-0.640
minority	0.175	2.740	0.156	2.270	-0.103	-1.450	-0.135	-1.760
student	0.054	0.490	0.076	0.640	-0.347	-1.660	-0.410	-1.880
retired	-0.396	-4.530	-0.435	-4.630	-0.228	-2.480	-0.267	-2.720
housewife	0.084	0.690	0.073	0.550	-0.326	-2.310	-0.301	-2.010
unemployed	-0.694	-7.880	-0.697	-7.470	-0.366	-3.820	-0.351	-3.460
selfemployed	0.453	2.300	0.144	0.620	-0.064	-0.300	-0.133	-0.540
health index	0.418	3.970	0.476	4.200	-0.065	-0.540	0.039	0.300
ppm	0.250	11.280	-	-	0.189	7.700	-	-
pro democracy	-	-	0.240	9.020	-	-	0.105	3.440

Table 12: Changes in Perceptions Variables

Independent Variables	Happy						Happychange					
	Coef.	z	Coef.	z	Coef.	z	Coef.	z	Coef.	z	Coef.	z
age	-0.088	-7.420	-0.080	-7.730	-0.160	-5.730	-0.019	-1.600	-0.010	-0.960	-0.046	-1.650
age squared	0.001	7.120	0.001	7.540	0.002	5.400	0.000	1.570	0.000	1.120	0.000	1.380
male	0.173	2.710	0.156	2.770	0.328	3.910	0.056	0.890	0.001	0.020	0.048	0.590
married	0.066	0.960	0.115	1.880	0.011	0.110	-0.050	-0.740	-0.016	-0.260	-0.055	-0.580
log equiv inc 00 plus 1	0.444	11.200	0.409	11.660	0.528	10.080	0.139	3.750	0.107	3.250	0.217	4.480
zero income 00 dummy	3.064	6.480	3.168	7.690	4.185	6.600	0.702	1.520	0.515	1.300	1.561	2.630
education level	0.039	2.140	0.039	2.390	0.056	1.550	-0.021	-1.170	0.003	0.160	0.004	0.100
minority	0.291	3.600	0.139	1.960	0.087	0.780	-0.063	-0.780	-0.145	-2.040	-0.015	-0.140
student	-0.085	-0.380	-0.110	-0.550	*	*	-0.307	-1.330	-0.407	-1.980	*	*
retired	-0.403	-3.840	-0.341	-3.610	*	*	-0.289	-2.780	-0.206	-2.220	*	*
housewife	0.008	0.050	0.179	1.260	0.273	0.780	-0.214	-1.340	-0.192	-1.340	-0.023	-0.070
unemployed	-0.729	-6.320	-0.698	-7.030	-0.057	-0.060	-0.449	-4.030	-0.375	-3.900	-0.407	-0.410
selfemployed	0.643	2.480	0.614	2.850	0.862	3.240	0.088	0.360	-0.030	-0.140	-0.187	-0.710
health index	0.612	4.350	0.496	4.010	0.104	0.610	-0.076	-0.550	-0.119	-0.980	-0.230	-1.380
change poum	0.128	5.250	-	-	-	-	0.372	15.130	-	-	-	-
change ELQ	-	-	0.182	12.440	-	-	-	-	0.281	18.890	-	-
change fear	-	-	-	-	-0.052	-2.260	-	-	-	-	-0.111	-4.890

*Note: When the analysis is done using fear of unemployment, retired and student are dropped due to collinearity.

Table 13: Initial Perceptions Variables

Independent Variables	Happy						Happychange					
	Equation 1		Equation 2		Equation 3		Equation 4		Equation 5		Equation 6	
	Coef.	z	Coef.	z	Coef.	z	Coef.	z	Coef.	z	Coef.	z
age	-0.067	-6.190	-0.077	-7.520	-0.141	-6.780	-0.028	-2.620	-0.024	-2.330	-0.047	-2.260
age squared	0.001	6.260	0.001	7.400	0.002	6.610	0.000	2.380	0.000	2.250	0.000	2.090
male	0.151	2.580	0.135	2.410	0.250	3.400	0.038	0.660	-0.005	-0.100	0.044	0.600
married	0.098	1.560	0.103	1.710	0.106	1.280	-0.028	-0.460	0.041	0.700	0.022	0.270
log equiv inc 00 plus 1	0.391	10.750	0.383	11.100	0.415	9.480	0.173	5.000	0.185	5.620	0.158	3.830
zero income 00 dummy	3.053	7.510	3.068	7.720	3.426	6.910	0.949	2.390	1.245	3.170	1.212	2.570
education level	0.035	2.120	0.025	1.570	0.065	2.330	-0.010	-0.620	0.013	0.840	0.024	0.890
minority	0.140	1.900	0.165	2.350	0.138	1.480	-0.079	-1.070	-0.072	-1.020	-0.022	-0.230
student	0.015	0.070	-0.084	-0.420	-0.389	-0.790	-0.273	-1.270	-0.431	-2.130	1.003	2.160
retired	-0.345	-3.570	-0.351	-3.750	-0.465	-3.570	-0.275	-2.880	-0.243	-2.640	-0.293	-2.320
housewife	0.015	0.100	0.100	0.710	0.380	1.870	-0.253	-1.740	-0.218	-1.540	-0.270	-1.350
unemployed	-0.765	-7.360	-0.694	-7.030	-0.772	-5.620	-0.453	-4.510	-0.449	-4.690	-0.561	-4.220
selfemployed	0.468	2.050	0.557	2.590	0.786	3.080	0.009	0.040	0.086	0.410	-0.077	-0.310
health index	0.549	4.300	0.457	3.720	0.298	1.970	0.030	0.240	-0.029	-0.240	-0.119	-0.800
poum 95	0.249	9.190	-	-	-	-	-0.315	-11.780	-	-	-	-
ELQ 95	-	-	0.167	9.300	-	-	-	-	-0.214	-11.930	-	-
fear 95	-	-	-	-	-0.067	-2.780	-	-	-	-	0.151	6.350

Equation 1: Happy in 2000 as dependent variable and POUM in 1995 as independent variable

Equation 2: Happy in 2000 as dependent and ELQ in 1995 as independent variable

Equation 3: Happy in 2000 as dependent and fear of unemployment in 1995 as independent variable

Equation 4: Happy change as dependent variable and POUM in 1995 as independent variable

Equation 5: Happy change as dependent and ELQ in 1995 as independent variable

Equation 6: Happy change as dependent and fear of unemployment in 1995 as independent variable

Table 14: Effects of Perceptions Variables in 1996 on Equivalence Income in 2000

Independent Variables	Equation 1		Equation 2		Equation 3		Equation 4		Equation 5		Equation 6	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
age	-10.767	-0.370	-11.435	-0.380	-2.042	-0.080	-2.378	-0.090	39.617	0.600	44.757	0.670
age squared	0.224	0.750	0.203	0.670	0.127	0.460	0.099	0.350	-0.099	-0.140	-0.209	-0.280
male	-18.886	-0.120	-6.292	-0.040	-15.071	-0.100	-3.005	-0.020	30.571	0.130	58.659	0.250
married	703.445	4.090	804.236	4.550	599.874	3.740	693.490	4.210	509.069	1.970	714.781	2.700
education level	140.335	3.090	144.136	3.140	114.487	2.710	115.723	2.710	132.408	1.510	144.349	1.630
minority	716.081	3.510	750.578	3.620	678.736	3.600	710.259	3.710	562.216	1.900	559.601	1.860
student	-39.264	-0.070	-24.441	-0.040	-103.665	-0.200	-83.076	-0.160	1076.798	0.720	1257.112	0.830
retired	-1123.323	-4.250	-1185.156	-4.440	-1132.034	-4.580	-1177.142	-4.710	-1277.191	-3.170	-1318.651	-3.240
housewife	-610.170	-1.500	-627.094	-1.530	-557.572	-1.470	-572.590	-1.490	-33.710	-0.050	-107.379	-0.170
unemployed	-866.828	-3.120	-846.345	-3.010	-837.924	-3.270	-811.016	-3.120	-1075.410	-2.590	-974.102	-2.320
selfemployed	885.703	1.450	955.212	1.540	686.365	1.240	783.132	1.400	834.518	1.070	1131.276	1.430
health index	648.156	1.830	668.989	1.870	511.925	1.550	521.658	1.560	716.913	1.490	704.642	1.450
happy 95	201.918	2.570	222.152	2.790	171.220	2.380	183.485	2.510	231.561	2.150	307.896	2.840
eq_income_95	0.067	4.980	-	-	0.064	5.000	-	-	0.160	6.280	-	-
log eq inc 95	-	-	175.535	2.480	-	-	170.910	2.610	-	-	333.363	2.960
poum 95	178.590	2.260	202.732	2.540	-	-	-	-	-	-	-	-
elq 95	-	-	-	-	212.271	4.160	242.594	4.720	-	-	-	-
fear 95	-	-	-	-	-	-	-	-	-145.507	-1.900	-150.340	-1.940
_cons	444.711	0.510	-294.507	-0.320	480.409	0.610	-243.000	-0.290	-474.545	-0.280	-1837.667	-1.010

Equation 1: Equivalence income in 1995 and POUM in 1995 as independent variables

Equation 2: Log equivalence income in 1995, with zeros dropped, and POUM in 1995 as independent variables

Equation 3: Equivalence income in 1995 and ELQ in 1995 as independent variables

Equation 4: Log equivalence income in 1995, with zeros dropped, and ELQ in 1995 as independent variables

Equation 5: Equivalence income in 1995 and fear of unemployment in 1995 as independent variables

Equation 6: Log equivalence income in 1995, with zeros dropped, and fear of unemployment in 1995 as independent variables

Table 14A: Effects of Secondary and Higher Education

Independent Variables	Equivalence Income 00			
	Coef.	t	Coef.	t
age	-10.114	-0.340	-10.540	-0.360
age squared	0.216	0.720	0.181	0.600
male	-16.509	-0.100	-0.388	0.000
married	701.379	4.070	681.553	3.970
edulev	127.625	2.170	87.586	1.880
minority	714.964	3.500	708.342	3.480
student	-28.623	-0.050	143.637	0.250
retired	-1114.411	-4.180	-1027.445	-3.880
housewife	-611.587	-1.510	-514.585	-1.270
unemployed	-865.859	-3.110	-769.138	-2.760
selfemployed	878.243	1.440	866.216	1.420
healthind	648.246	1.830	683.113	1.930
eq_income_95	0.067	4.970	0.065	4.820
happy 95	202.155	2.570	182.194	2.320
poum 95	178.566	2.260	174.568	2.210
hsdiploma	-78.560	-0.320	-	-
univdiploma	-	-	982.715	4.630
_cons	646.3182	0.6	841.6215	0.96

Table 15: The Effects of Perceived Past Mobility (in 1998) on Equivalence Income in 2000

Independent Variables	Equation 1		Equation 2		Equation 3	
	Coef.	t	Coef.	t	Coef.	t
age	12.873	0.460	9.489	0.340	9.044	0.320
age squared	0.003	0.010	0.021	0.070	0.025	0.090
male	-9.693	-0.060	-2.711	-0.020	-2.050	-0.010
married	574.028	3.330	586.505	3.340	573.234	3.310
education level	127.256	2.880	115.004	2.550	117.300	2.640
minority	787.165	3.940	860.891	4.230	823.574	4.100
student	122.003	0.310	107.465	0.270	79.713	0.200
retired	-929.717	-3.540	-958.425	-3.600	-954.831	-3.620
housewife	-334.683	-0.820	-187.659	-0.460	-209.500	-0.510
unemployed	-641.320	-2.350	-481.943	-1.730	-509.199	-1.850
selfemployed	585.168	0.950	914.071	1.470	915.942	1.480
health index	675.540	1.970	691.343	1.990	694.239	2.020
eq_income_98	0.349	12.350	-	-	-	-
log eq inc 98	-	-	973.420	11.200	-	-
log equiv inc 98 plus 1	-	-	-	-	973.654	11.260
zero income 98 dummy	-468.591	-0.730	*	*	5965.274	6.510
ppm 98	147.320	2.060	143.438	1.970	136.580	1.900
_cons	-208.652	-0.260	-6456.487	-6.330	-6438.228	-6.360

Equation 1: Equivalence income in 1998 and PPM in 1998 as independent variables

Equation 2: Log equivalence income in 1998, with zeros dropped, and PPM in 1998 as independent variables

Equation 3: Log equivalence income in 1998 (with one added to the zeros) and PPM in 1998 as independent variables

*Note: When the log of equivalence income is taken the dummy for zero income is not included because anyone that had zero equivalence income is left out of the analysis.