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# Happiness in transition countries
# Le bonheur dans les pays en transition

## (Un)Happiness in Transition
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(Un)Happiness in Transition

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**Abstract**

Despite strong growth performance in transition economies in the last decade, residents of transition countries report abnormally low levels of life satisfaction. Using data from the World Values Survey and other sources, we study various explanations of this phenomenon. First, we document that the disparity in life satisfaction between residents of transition and non-transition countries is much larger among the elderly. Second, we find that deterioration in public goods provision, an increase in macroeconomic volatility, and a mismatch of human capital of residents educated before transition which disproportionately affected the aged population explain a great deal of the difference in life satisfaction between transition countries and other countries with similar income and other macroeconomic conditions. The rest of the gap is explained by the difference in the quality of the samples. As in other countries, life satisfaction in transition countries is strongly related to income; but, due to a higher non-response of high-income individuals in transition countries, the survey-data estimates of the recent increase in life satisfaction, driven by 10-year sustained economic growth in transition region, are biased downwards. The evidence suggests that if the region keeps growing at current rates, life satisfaction in transition countries will catch up with the "normal" level in the near future.

The transition from plan to market in post-communist countries is an economic transformation of remarkable scale. Starting around 1990s, countries of the former Soviet Union and of Central and Eastern Europe have removed central planning, liberalized prices and foreign trade, and introduced modern institutions of taxation, banking, customs, and independent central banking. In this time, the typical transition country privatized the majority of its industrial enterprises, overcome the initial output fall at the start of the transition, and embarked on a path of strong and sustained growth. Considering the challenge of large-scale institutional transformation, sustained economic growth since the mid or late 1990s in these countries suggests that economic transition has largely been a success. As shown in Figure 1, in Russia and other countries, formerly members of the Soviet Union, GDP has been growing at 7% per annum on average since 1999. The economies in the Central and Eastern Europe have been growing at 4% per year since the late 1990s; on average, per capita GDP in these countries exceeds pre-transition levels by 40%.

The economic benefits of transition can also be measured in other ways. Table 1 shows per capita household consumption expenditures and other consumption indicators for selected years from 1985 to 2004 in transition countries and, for comparison, in the US and in the middle-income countries which, on average, lag behind transition countries in terms of GDP per capita.[1] Household consumption per capita fell for transition economies by more than 10 percent between 1990 and 1995 and then started to grow in the mid-1990s, reaching pre-transition levels by 2000. By 2004, per capita consumption in transition economies was 34 percent above pre-transition levels. Despite the initial fall, the overall increase in consumption in 15 years of transition is not vastly different from the average consumption growth in middle-income countries that did not experienced a transition shock and started from a lower level. Per capita household consumption in middle-income countries grew by 44 percent from 1990 to 2004.

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[1] The World Bank classifies countries as middle-income if their 2007 Gross National Income per capita ranges from $936 to $11,455. There are 95 middle income countries including 20 transition countries. Three transition countries are classified as low-income countries, and five are high-income countries.

The improvements in household consumption are even more evident in the data series for consumption of specific goods. For example, growth in residential housing per capita in the former Soviet Union region is uniformly positive across countries and stages of transition with the exception of the war-affected Tajikistan (there are no comparable data for this indicator for all transition countries). On average, housing per capita in the countries making up the Commonwealth of Independent states has grown from 172 square feet per capita in 1991 to 215 in 2006 (this is still much lower than the US figure, namely, 752 square feet per person, but already comparable to the Western Europe's range of 300-400 square feet per person).

During the transition, the number of cars per capita doubled from 110 per thousand people in 1990 to 223 per thousand people by 2006. By comparison, in middle-income countries as a whole, car ownership increased by only 46 percent over the same period. The numbers of telephone lines and personal computers also exhibited fast growth in transition economies during this time: from 125 telephone lines in 1990 to 264 by 2004, and from four computers per thousand people in 1990 to 110 by 2004. The rate of growth in these indicators for transition countries is similar or slower than that in middle-income countries, although middle-income countries as a group were starting at lower levels, so large percentage gains could come more easily.

The increase in real incomes and consumption should be viewed as a lower bound for the improvement in the quality of life of transition country residents: this measurement does not take into account the time and effort no longer wasted waiting in lines for rationed good, nor does it take into account the improvement in personal and political freedoms. Thus the benefits of transition should be greater than Table 1 suggests. However, many residents of transition economies believe that transition hasn't brought any gains at all. In a recent large-scale survey of 28,000 individuals in 28 transition countries carried out by the World Bank and the European Bank for Reconstruction and Development (EBRD, 2007), 49 percent of respondents disagreed with and only 35 percent agreed with the statement that the economic situation in their country today is better than it was around 1989.[2] Similarly, 44 percent disagreed with the statement that

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[2] According to the Pew Research Center's Social and Demographic Trends survey (2008), in the recent decades, about 50% Americans agreed that they were better off now than five years ago and 15-25% said that they were worse off (year 2008 was an exception when only 41% felt better off and 31% felt worse off).

political situation in their country is better now than before transition had started, compared to 35 percent who agreed with this statement. These percentages vary across countries, but in many countries the vast majority of respondents expressed strong dissatisfaction with transition. For example, 75 percent of Hungarians, 70 percent of Ukrainians, 70 percent of Kyrgyz, 63 percent of Bulgarians, and 61 percent of Moldovans disagree that the economic situation in their country today is better than around 1989.[3] Dissatisfaction with transition translates into low scores of what is, perhaps, the ultimate survey-based measure of utility – self-reported life satisfaction. In this paper, we survey the available evidence and analyze new data sources to document this widespread unhappiness in transition countries, and to consider the factors that might explain this phenomenon.

**Are People in Transition Countries Unhappy?**

The most comprehensive source of data on the life satisfaction around the world is World Values Survey, which asks representative samples of individuals in up to 84 countries about their attitudes and values. Among other questions, the World Value Survey questionnaire asks: "All things considered, how satisfied are you with your life as a whole these days?" Respondents can choose an answer from a scale of 1 ("Dissatisfied") to 10 ("Satisfied"). According to these data, self-reported life satisfaction has fallen during transition and is below the levels of life satisfaction in other countries with similar per capita income.

The slope of the best-fit lines in Figure 2 illustrate the correlation between per capita GDP by country and the average country response to the World Values Survey question on life satisfaction in waves 3 and 4 of the Survey which took place in 1994-1999 and 1999-2003, respectively. The figure shows that transition economies are consistently below the best-fit line in both periods. A more complex calculation, which controls for the usual determinates of life satisfaction (see, for instance, Frey and Stutzer, 2002, Blanchflower and Oswald, 2004, Layard, 2005) does not alter this basic qualitative pattern. Table 2 presents detailed regression results at the level of individuals, which show that after adjusting for a variety of country-level and

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[3]    Interestingly, in two countries that are among the least reformed in Europe – Belarus and Albania – the population is very positive about the recent history: 70 percent of Albanians and 68 percent of Belorussians agree that their respective countries are better off today than in 1989, compared to 17 percent of Albanians and 13.5 percent of Belorussians who disagree with this statement.

individual level variables, transition countries' residents express significantly lower degrees of life satisfaction.[4] In each regression, the dependent variable is a measure of life satisfaction, measured for each individual respondent on a scale from 1-10, in the World Values Survey. All regressions in the table include standard controls: both country-level (inflation, inequality, unemployment, the level of democracy and media freedom) and individual-level (age, both linear and quadratic terms, gender, employment, marital status, and education level). The lists of countries included in the regressions vary according to data availability.

The key finding in Columns 1 and 2 of Table 2 is that life satisfaction in transition countries is 1.40 points below the predicted level in the wave 3 of the World Value Survey and 1.13 points below its predicted level in wave 4 of the survey (as shown by the coefficients on the dummy variable for whether the respondent comes from a transition economy). The difference in life satisfaction between transition and non-transition countries—which we will refer to as 'happiness gap'—is statistically significant at the 1 percent level and large in magnitude since life satisfaction is measured on a scale from 1 to 10, and a standard deviation of life satisfaction around the world is only about 2.5 points. To illustrate the size of the gap, consider the US where the difference between the 25th and 75th percentiles is only 2 points in every wave of the World Values Survey.

In Columns 3 and 4 of Table 2, we report regression results on all the waves of the World Values Survey pooled together, controlling for dummies for each wave of the survey. Coefficients on the interaction terms between transition country dummies and wave dummies estimate the average difference in life satisfaction between transition and non-transition countries for the respective wave of the World Values survey. They are negative and statistically significant.

Overall, the average difference between life satisfaction of residents in transition and non-transition countries is robust and large: about one half of standard deviation in life satisfaction. Deaton (2008) reports similar findings using the World Gallup Poll data for 2006.

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[4]    The detailed description of all variables, their sources, and specifications mentioned in this paper are available in the technical (not-for-publication) appendix, which is available both as part of the on-line version of this paper at http://www.e-jep.org and also at http://www.cefir.ru/ezhuravskaya/research/Appendix_happiness.pdf. In this paper, we follow the happiness literature's tradition of assuming away the issue of reverse causality that may arise due to the effect of life satisfaction on income, employment, educational attainment, and health outcomes. While these effects may well be important in reality, they are usually neglected due to the data limitations. See Deaton (2007) for a discussion of some of these issues.

*The "Happiness Gap" Increases with Age*

The size of the gap in life satisfaction between residents of transition countries and non-transition countries increases sharply with age, as illustrated in Figure 3, which shows the non-parametric relationship between life satisfaction and age for transition countries and for non-transition countries that have a level of per capita GDP comparable to transition countries. The shape of the relationship between age and life satisfaction is strikingly different for transition and non-transition countries. In transition countries happiness decreases monotonically with age, whereas in other countries the relationship between age and life satisfaction is U-shaped. Deaton (2008) provides similar graphs for individual countries based on World Gallup Data for 2006. If one controls for individual determinants of life satisfaction, such as employment status and education, life satisfaction in transition countries also becomes U-shaped, but the minimum point of happiness is achieved in transition countries on average at a substantially older age than in non-transition countries: 60 vs. 40 years old (see Frey and Stutzer. 2002, Blanchflower and Oswald 2004, on relationship of happiness and age, and Graham et al. 2004, Sanfey and Teksoz 2007, on application to transition countries). The relationship between age and life satisfaction estimated on the full sample of the World Values Survey is as follows:

$$LS = -\underset{(.007)}{.056}\,Age + \underset{(.00008)}{.00065}\,Age^2 - \underset{(.010)}{.035}\,Age \times TC + \underset{(.00011)}{.00019}\,Age^2 \times TC + \beta'X + \varepsilon$$

where *LS* stands for the respondent's life satisfaction, *Age* is the respondent's age in years, *TC* is a dummy that equals one if the respondent resides in a transition country, and *X* denotes all standard control variables (as in Table 2). The coefficients on the interaction terms of age and age-squared with the transition country dummy estimate the difference between the effects of age in transition and non-transition countries. The coefficient on the interaction between the transition country dummy and the linear age term is large, negative and significant, whereas the coefficient on the interaction of transition country with the quadratic term is very small in magnitude (even though the quadratic term is positive, the gap between people in transition countries and non-transition countries increases with age for all ages below ninety two years old). This evidence supports the conclusion that happiness gap in transition economies increases with age.

*Has Economic Growth Improved Happiness in Transition Economies?*

Regressions presented in Columns 3-6 of Table 2 examine the relationship between life satisfaction and income in transition countries. Country-level income is measured by the log of

per capita GDP and the respondent's household income is measured in three different ways: by the *relative* income of the respondent's household (in columns 1-4)[5], by the log of *absolute* nominal income of respondent's household (in column 5), and by the log of *absolute* nominal income of respondent's household per household member (in column 6). Country GDP per capita and household relative and absolute income significantly increase life satisfaction both in transition and non-transition countries, as one would expect based on the earlier survey by Frey and Stutzer (2002), the articles by Deaton (2008) and Stevenson and Wolfers (2008). Regressions presented in Columns 3-6 also include interaction terms between the transition country dummy and these measures of country-level and household-level income. The coefficients on these interaction terms show that the sensitivity of life satisfaction to a country's wealth and household relative and absolute income is significantly larger in transition countries than in non-transition countries. (In these interaction terms, we subtract sample mean from the income variables, and as a result, the coefficient on the transition country dummy estimates the full difference in life satisfaction between transition and non-transition countries evaluated at the mean of the respective income variable).

Column 4 shows that, on average, a move up by one step on a ten-step relative income ladder in nontransition countries increases life satisfaction by 0.13 points (as shown by the coefficient on the relative household income) and by an additional .07 in transition countries (as seen by the coefficient on transition country dummy in interaction with relative household income, which is significant at the 1 percent level) for a total of 0.20 points. This result is robust to including the full set of country dummies to the list of covariates.

Columns 5 and 6 show the effect of the *absolute* income level on life satisfaction. Since the income measures are nominal, to have comparability across countries we control for the full set of country dummies and limit the sample to wave 4 of the survey. The results are similar to the results for relative income. A 10 percent increase in the total absolute household income increases life satisfaction in non-transition countries by 0.041 points and in transition economies by 0.067 points (=0.041+0.026). A 10 percent increase in the absolute household income *per*

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[5] The *relative* income of the respondent's household is the answer to the following question: "*On this card is a scale of incomes on which 1 indicates the "lowest income decile" and 10 the "highest income decile" in your country. We would like to know in what group your household is. Please, specify the appropriate number, counting all sources of income.*" It is discrete and ranges from 1 to 10.

*household member* increases life satisfaction in non-transition countries by 0.023 points and in transition economies by 0.044 points (=0.023+0.021).[6]

The fact that in transition economies life satisfaction is even more sensitive to changes in income than in other countries implies that, once the growth restarts, people in transition countries should start to feel better about their lives.[7] Do we see in the data an increase of life satisfaction in transition countries following growth? We do – once we look carefully.

For example, columns 3 and 4 of Table 2 show that people in transition economies express lower life satisfaction than would be predicted by their individual characteristics and the characteristics of their countries in all three waves of the data used. However, the size of the gap between the actual and predicted life satisfaction varies across waves: the gap increases from wave 2 of the survey to wave 3, and then diminishes by wave 4. The change between the second and the third waves of the survey represents the situation in the midst of the initial output decline (1994-1999). Wave 4 took place during the recovery and growth – between 1999 and 2003, albeit mostly in the early years of this period. This was when many transition countries just started their recovery, yet this initial increase in income was enough to boost life satisfaction. The two panels of the Figure 2 illustrate this point as well: transition countries get closer to the best-fit line in wave 4 compared to wave 3 of the World Values Survey.

Has happiness in transition countries been improving since the fourth wave of the World Value Survey circa 2003? Until another round of the World Values Survey is published, we need to draw on other data sources to find out what has been happening.

In 2006, the European Bank for Reconstruction and Development and the World Bank conducted a survey of representative samples of individuals in 28 post-communist countries

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[6] The decrease in the number of observations in column 6 of Table 2 is due to the fact that data on the number of household members necessary to calculate household income per household member are missing for a large number of countries in the World Values Survey.

[7] There is a controversy over the extent to which life satisfaction scores rise with income. Frey and Stutzer (2002) use World Values Survey data to argue that at high levels of per capita income, that is, starting at about $10 000 per capita, marginal utility of income diminishes. The fact that GDP growth does not result in increased happiness in rich countries, especially in the US is usually referred to as 'the Easterlin Paradox' – due to Easterlin (1974) and Easterlin (1975). Jointly with the fact that even in the rich countries (US included) the rich are significantly happier than the poor, the Easterlin Paradox is usually interpreted as the evidence for the importance of the *relative* rather than absolute income for happiness (see a survey of this literature in Clarke et al., 2008). However, Deaton (2007) shows a universal positive effect of income on life satisfaction in the World Gallup Poll data and discusses how these results can be reconciled with the earlier findings. Stevenson and Wolfers (2008) use a few recent datasets including the World Gallup Poll, the Pew Global Attitudes Survey, and the World Values survey and obtain similar results. They conclude that (i) there is no diminishing marginal effect of income on happiness and (ii) Easterlin Paradox is not consistent with recent data even for rich countries, except, may be, for the US.

entitled "The Life in Transition Survey." This survey included a question about life satisfaction. Unfortunately, the question about life satisfaction in this survey differs in wording and scale from the question in the World Values Survey, so that one should be extremely cautious about comparing answers.[8] But with no better data at hand across a range of transition countries, we transform the scale of the Life in Transition Survey question to 1 to 10 (as in the World Value Survey) and treat the answers as if they were to the same question.

This exercise suggests that individual country experiences vary greatly. In 11 out of 23 transition countries (Albania, Armenia, Belarus, Estonia, Latvia, Lithuania, Moldova, Russia, Slovakia, Slovenia, and Ukraine), life satisfaction continues to grow after the fourth wave of the World Value Survey. In these countries, life satisfaction generally follows the U-shaped pattern of per capita GDP over time: decline in the early 1990s and growth starting in the late 1990s. Six countries (Bulgaria, Croatia, Czech Republics, Kyrgyzstan, Poland and Romania) had no significant change in life satisfaction despite the recent growth. Six countries (Azerbaijan, Bosnia and Herzegovina, Georgia, Hungary, Macedonia, and Serbia and Montenegro) actually experienced a fall in life satisfaction during the whole observation period – which is different for different countries – despite the growth of per capita GDP. Five of these six, however, were involved in major civil conflicts. Only Hungary experienced a large and continuous fall in life satisfaction despite a successful economic transition and peace. However, the Life in Transition Survey in Hungary took place during the street riots following the announcement of the so-called "fiscal consolidation package" – a policy aimed at combating fiscal deficit which involved a significant cut in real wages for public-sector employees and which resulted in an actual decline in the average real wage (discussed in IMF, 2007). Overall, the comparison of World Values Survey and Life in Transition Survey yields mixed results, but in a majority of countries, we find growth in life satisfaction since the end of the 1990s. In this journal, Deaton (2008) compares the results of the World Gallup Poll conducted in 2006 with the results of the last wave of the World Values Survey and also finds that in 2006 people in transition countries are happier than in earlier surveys.

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[8] The Life in Transition Survey questionnaire asks the following question: "Do you agree with the following statement: All things considered, I am satisfied with my life as a whole now." Respondents can choose their answer from the scale from 1 ("Strongly disagree") to 5 ("Strongly agree").

*Differences in data quality across countries and surveys complicate comparisons*

To some extent, patterns observed in the data, i.e., the size of the happiness gap between transition and non-transition countries and the closing of this gap from the early to the mid 2000s, should only be viewed as suggestive. First, as Deaton (2005) points out, the non-response rate in household and individual surveys can severely undermine the representativeness of the samples. Our examination of the data from the World Value Survey suggests that samples in transition countries are substantially more biased in favor of including more of those with low incomes. The ratio of average per capita income from respondents to the World Values Survey to the country's per capita Gross National Income (from the World Development Indicators of the World Bank) is about 0.85 in non-transition countries and only about 0.40 in transition countries. A simple calculation shows that if the sample quality in transition countries improved to the average level for non-transition countries, life satisfaction in the transition countries would increase by 0.33 points. Therefore, even though the gap between transition and non-transition countries decreases by roughly one-third once we take into account the quality of the sample, it remains rather large: above one point in wave 3 and above half a point in wave 4 of the World values Survey.

Second, with regard to the comparison between the results of World Values Survey and the Life in Transition Survey, as we already discussed, the wording of the life satisfaction questions and the scaling of answers in the World Values Survey and in the Life in Transition Survey are not the same.

Third, similar examination of the quality of the samples in the Life in Transition Survey shows that the samples in this survey are less biased towards the poor compared to samples of the transition countries in the World Values Survey. We calculate that this effect implies that the estimate of the growth of life satisfaction between 1999-2003 (from World Values Survey) and 2006 (from the Life in Transition Survey) may actually be overstated by 0.24 percentage points. After adjusting for this difference in sample quality, life satisfaction should still increase substantially between 2003 and 2006 for many countries as the estimated difference between the last wave of the World Values Survey and the Life in Transition survey is much larger in magnitude for Albania, Belarus, Estonia, Latvia, Lithuania, Moldova, Russia, and Ukraine.

With concerns about the data quality duly noted, the overall results suggest that (i) there is a sizable gap in happiness between growth in life satisfaction in transition countries and (ii) it was closing from the end of the 1990s and early 2000s up to the mid-2000s.

*Evidence from Longitudinal Data on Life Satisfaction for Russia*

Another approach to examining the connection from economic patterns of transition economies to life satisfaction is to look at the longitudinal datasets that exist for a limited number of transition countries. For example, Russian Longitudinal Monitoring Survey provides comparable data both for a repeated cross-section and for a panel of individuals for 11 rounds between 1994 and 2006. These data provide a unique opportunity to measure the effect of GDP growth on happiness as the panel nature of this dataset–unlike most surveys used in the happiness research–allow controlling for individual fixed effects. In other words, we can check how economic conditions affect life satisfaction of the very same individuals.

Figure 4 presents the pattern of life satisfaction for an average Russian individual unexplained by his or her socio-demographic and economic characteristics (these are the estimates of time dummies from panel regressions with individual fixed effects and all the usual individual determinants of life satisfaction discussed with regard to Table 2). It is evident that life satisfaction roughly follows the pattern of Russia's GDP per capita, even though we control for household income. Therefore, 'Easterlin Paradox' does not apply to Russia: unlike the evidence on the US and other OECD countries (Easterlin 1974, 1995), growth in the average income does increase the average happiness.

The same pattern emerges when we look at the repeated cross sections of representative samples of Russian individuals. These findings are consistent with our results from the comparison of World Values Survey and the Life in Transition Survey. The effects of individual characteristics on life satisfaction are also consistent across surveys.

It is worth noting, however, that the sample in the Russian Longitudinal Monitoring Survey is also biased towards the poor, although much less so than in the samples in the Life in Transition Survey or the World Values Survey. (The ratio of household consumption in Russian Longitudinal Monitoring Survey sample to the analogous indicator from the national accounts is 0.85). In addition, the sample is biased towards people whose incomes grow more slowly compared to the national average from national accounts. Thus, growth in life satisfaction in Russia in the last few years is in all likelihood faster than estimated with data from the Russian Longitudinal Monitoring Survey.

To sum up, people in transition countries appear to have significantly lower life satisfaction compared to their counterparts in other countries with similar per capita incomes,

unemployment, inequality, and inflation. This gap in life satisfaction is particularly large among the elderly. The gap reached its maximum in the middle of the 1990s and, most probably, has been closing since then. Some of this gap can be explained by differences in the survey samples in transition and non-transition countries, but a rather large gap remains. In the next section of this paper, we examine various theories which can potentially explain this gap.

**Why are People in Transition Countries so Unhappy?**

Why does transition undermine life satisfaction and why are the elderly more adversely affected by transition? We consider a number of possible explanations which follow from the happiness literature as well as actual testimonies of transition country residents collected during focus-group interviews conducted in nine Russian cities by the Institute for Comparative Social Research in Moscow (CESSI) and EBRD in the spring of 2007 (CESSI, 2007). In these focus-group interviews, respondents attributed their unhappiness to factors that can be classified into five broad categories: (i) a substantial increase in inequality and perceived unfairness of the new socio-economic order; (ii) a decrease in quality and quantity of public goods provision; (iii) a sharp increase of volatility and uncertainty of earnings; (iv) an increase in aspiration levels due to better information about the quality of life in high-income countries, and (v) an unforeseen depreciation of human capital accumulated before transition as different skills are relevant in command and market systems.

*Unfairness and inequality*

> *"In this country, we don't have a situation where everybody can have what they need. One person lives in luxury and another has to save a long, long time just for one apartment… Not even an apartment. Some people do not have anything to eat." (Source: CESSI 2007)* [9]

Several respondents in the focus-group interviews complained about increased inequality during transition (CESSI, 2007). Theoretically, the effect of inequality on life satisfaction is ambiguous. On the one hand, people may feel dissatisfied with the sharp increase in inequality

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[9]    Henceforth, as epigraphs to various sections of the paper, we use the direct quotes from interviews of Russian people reported in CESSI (2007).

during transition because they perceive it as unfair (Milanovic, 1998).[10] On the other hand, greater inequality may show that opportunities are opening up as a result of market-oriented reforms, which may be considered a positive factor. For example, Senik (2004) uses panel data on Russia to confirm the validity of the "tunnel effect" introduced in Hirschman and Rotchild (1973): high earnings of others may provide information on opportunities and therefore increase happiness. Bénabou and Tirole (2006) build a model with multiple equilibria where the effect of inequality may be different in different equilibria; their theory is consistent with evidence. Alesina et al. (2004) show that inequality has a large negative and statistically significant effect on happiness in Europe, but not in the United States. Grosfeld and Senik (2008) document a shift between two equilibria in transitional Poland: inequality was perceived by Polish citizens as a positive signal of increased opportunities in the beginning of transition, whereas a significant public aversion to inequality emerged in the second half of the 1990s.

The standard measure of income inequality is the Gini coefficient, which reflects dispersion of income in the economy, so that a score of 0 represents perfect equality and a score of 1 represents a situation where one individual receives all the income in the economy and everybody else get nothing. Since the Gini coefficient is a standard determinant of life satisfaction in the happiness literature, we include the average Gini coefficient from the World Development Indicators database for all available years in the 2000s in all regressions among other standard controls (see all regressions in Table 2 and Column 1 of Table 3).[11] If we excluded Gini from the list of controls, the gap in happiness between transition and non-transition countries would have increased by about 0.2 points in all waves (unreported). In the

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[10] Fehr and Schmidt (2002) provide extensive evidence that most individuals (including those in transition countries) attach a non-trivial value to fairness. Using the Life in Transition Survey data, Denisova et al. (2007) show that in many transition countries the public is in favor of altering the results of privatization, and that these sentiments are driven by the sense of unfairness of extremely unequal privatization outcomes rather than the belief in superiority of public ownership.

[11] A better measure of inequality would have varied over time in addition to varying across countries. Unfortunately, there are no good data on changes in the Gini coefficient for a large set of countries (Barro, 2000), and therefore, we have to rely on cross-sectional variation.

whole World Values Survey sample, the Gini coefficient has a positive (albeit not always significant) effect on life satisfaction (consistent with the "tunnel effect") as shown in Column 1 of Table 3. In transition countries, in contrast, the effect of Gini is negative. Column 2 of Table 3 reports regression results with an interaction term between Gini coefficient and transition country dummy, which estimates the difference in the effects of Gini in transition and non-transition countries. While in non-transition countries, the effect of inequality on happiness is positive (0.02); in transition countries it is negative (0.02-0.07=-0.05) albeit also not quite statistically significant; at the same time, the difference in the effect for transition and non-transition countries is statistically significant. Alternative measures of Gini based on household survey data constructed by Milanovic and Ersado (2008) (available only for transition countries) also yield a negative, but statistically significant, effect of inequality on happiness in transition countries. Since Gini reduces the gap between life satisfaction in transition and non-transition countries and it increases dissatisfaction in transition; we can conclude that inequality does, indeed, contribute to low levels of life satisfaction in transition countries. In the rest of the paper, we focus on factors which can explain the gap in happiness between transition and non-transition economies after one takes into account inequality and other standard determinants of life satisfaction.

*Deterioration of Public Goods*

> *"If I plan to have a child then I will need to send him or her to kindergarten, but they are all so expensive now. Kindergartens used to be free but now almost none of them are..." (Source: CESSI 2007)*

In a command economy, most public goods were provided without charge at time of use. Since transition has sharply reduced the amount of resources in the hands of governments, public goods both deteriorated and began to charge users directly. This problem is most salient in health outcomes. Even though infant and child mortality has been falling uniformly across transition countries, this has not been the case for adult mortality and life expectancy. Several transition

countries--most importantly, Russia--have experienced a sharp decline in life expectancy. According to the World Development Indicators, average life expectancy in transition countries fell from 69.6 years in 1990 to 67.7 in 1995 and then increased to 68.5 years in 2005—which was still below the 1985 level of 68.9 years (see Brainerd and Cutler, 2005 for possible explanations of the decline of life expectancy). Similarly, tuberculosis, a preventable disease which almost disappeared in high-income countries, grew sharply in the early transition and reached a peak in 2000.

A stark decline in the quantity or quality of public good provision may have been responsible for the increased unhappiness. The World Values Survey asked questions about respondents' confidence in their country's education system, police, social security system, health care system, and justice system. The responses of transition country residents to these questions imply that confidence in public goods fell sharply during transition. Yet, declined confidence in public goods may be a mere consequence of general dissatisfaction because people's feelings about their own life influence their perceptions of the world around them. In order to test whether public goods help to explain the difference in life satisfaction between transition and non-transition countries, we use *objective* country-level indicators of public good provision from the World Development Indicators. Table 3 reports regression results with life satisfaction as dependent variable and all standard determinants of life satisfaction as regressors (just as in Table 2) and with additional explanatory variables that can potentially explain the difference in life satisfaction between transition and non-transition countries. Column 1 presents the benchmark regression without any additional regressors and the subsequent columns add various covariates. In the regression of Column 3, we add regressors which reflect the following *outcomes* of public goods provision: infant mortality, the share of children immunized against diphtheria, pertussis (or whooping cough), and tetanus (DPT), and pollution, measured by per capita $CO_2$ emissions. Infant mortality and pollution have a negative and significant effect on happiness, while the effect of immunization has a positive linear and negative quadratic term, so the effect of immunization has a positive significant effect on happiness when overall immunization levels are low, reflecting the external effects of immunization. Our main interest, however, is in comparing the size and significance of transition country dummies in each wave of the World Values Survey between the baseline regression where public goods are not included (Column 1) and the regressions with public goods (Column 3). The inclusion of these controls for public goods provision decreases the magnitude of the difference in life satisfaction between

transition and non-transition countries, but does not eliminate it: it remains statistically significant. Taking public goods provision into account reduces the size of the gap between life satisfaction in transition and non-transition countries from 1.57 to 1.25 points in wave 3 and from 0.89 to 0.70 in wave 4 of the World Values Survey. Overall, it appears that deterioration in public goods explains a significant part of the difference in life satisfaction between transition and non-transition countries.[12]

*Income volatility and increased uncertainty*

> *"Instability is inherent in our life. It seems that everything is developing rather quickly now – if you want to find a job, you will find it, it is not a huge problem here. But even if you have a job, you don't feel secure or confident about the future. Even though business is developing very fast, it could come to an end very quickly. Regardless of how good a job you have and how good things are for you now, there is a feeling that anything could happen at any time. You cannot be confident that things will be good forever." (Source: CESSI 2007)*

People in transition may also have less life satisfaction because of an increase in economic uncertainty. In column 4 of Table 3, we test whether uncertainty can explain some of the difference between life satisfaction in transition and non-transition countries by adding a country-level measure of income volatility to our baseline regressions. In particular, as a measure of income volatility, we use the standard deviation of the logarithm of real per capita GDP growth after 1988. We find that income volatility has a large negative coefficient (albeit not statistically significant) and that once we add this variable as a covariate to the regression, the gap in life satisfaction between transition and non-transition countries falls substantially. The magnitude of the coefficient on transition country dummy in wave 3 is reduced to 1.26 and in wave 4 to 0.66 (statistically insignificant). Moreover, once we take into account both the variation in public goods and in income volatility (Column 5 of Table 3), the coefficients on transition country dummies fall even further: in Wave 3, the gap in happiness between transition

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[12]     The results are robust to adding deaths from tuberculosis (regressions are available upon request). We do not include life expectancy in the regressions, as it is endogenous to life satisfaction: happier people live longer. Also, we do not include the indicators that measure the quantity of public goods provided such as the number of hospital beds and physicians per 1000 people, because those do not capture the change in the quality of public goods and transition countries tend to have significantly higher values of these variables as a legacy from the communist times. Moreover, it is the quality rather than quantity of education and healthcare, as well as the lack of access to those, about which the residents of transition countries usually complain (EBRD 2007, and CESSI 2007).

and non-transition countries is only 0.80 and in Wave 4, it is only 0.36 (and not statistically significant). In other words, public goods and income volatility jointly explain about one half of the 'abnormally' low life satisfaction in transition.

*Change in aspiration levels*

> *"I am sure that we will not live like normal people, our lifetime will not be enough to see the change for the better. Throughout my life I worked as an engineer, lived in a good one-bedroom apartment, and was satisfied with my life. But when my brother-in-law went to Israel and told us how he lived there, then we realized that life could be different. He has two cars and a house! In our country, only a director of a plant could live like that, certainly not an engineer. Only then I realized how badly we live." (Source: CESSI 2007)*

One possible reason why life satisfaction may have dropped in transition countries is because it changed the aspiration levels of these countries' residents. Frey and Stutzer (2002) discuss the aspiration level theory and its implications for the effect of *relative* income on happiness. According to this explanation, higher life satisfaction before transition may have resulted in part from an unawareness of the consumption standards in high-income countries. As transition resulted in more openness, media freedom and travel, transition-country residents realized how far their economies lagged behind, and this had a negative effect on happiness.

Testing this hypothesis is difficult, but one implication is that the negative shock on happiness should be lower in transition countries that were closer to Western Europe and more open during the pre-transition times. In contrast to the "iron curtain" surrounding such countries as the Soviet Union and Czechoslovakia, in some countries of Central and Eastern Europe many residents could travel to neighboring countries and watch western television at home even before transition—for example, there was a substantial exchange of information between Hungary and Austria as well as the Slovenian part of Yugoslavia and Italy. Contrary to the prediction of the change-in-aspiration-levels explanation, there is no significant difference between formerly more open and less open transition countries. No such pattern is apparent in Figure 2, nor have we

uncovered such a pattern in more formal regression analysis (unreported). In fact, changed aspirations may have contributed to dissatisfaction both in the former Soviet Union and in Hungary, but with different mechanisms at play. Soviet people are dissatisfied because in transition they learned how far their living standard is from the developed world; Hungarians are disappointed with the results of transition because at the beginning of transition they hoped that their living standard would catch up fast with the developed world which they were familiar with even before transition.

*Effects of public goods, uncertainty, and inequality for young and old*

In Figure 3, we documented a large difference in the size of the happiness gap between transition and non-transition countries for different age groups. Therefore, to explain the puzzle of abnormally low life satisfaction in transition, it is important to know how deterioration of public goods, growth of uncertainty and inequality affected the gap in life satisfaction for different age cohorts. In Column 6 and 7 of Table 3 we compare the gap in life satisfaction between transition and non-transition countries for two groups of respondents: "the young" (i.e., respondents, who were born in 1971 or later, and thus, did not reach 18 years of age before 1989) and "the old" (i.e., born before 1971). Column 5 presents estimates of the happiness gap for the two groups of respondents without taking uncertainty and public goods into account, whereas regression in Column 6 controls for the outcomes of public goods provision and income volatility. In columns 6 and 7, coefficients on the transition country dummies for each wave of the survey (the first three rows) estimate the happiness gap for "the young," while the coefficients on the interaction of transition country dummies for each wave of the survey with the dummy indicating whether the respondent was born before 1971 estimate the difference in happiness between "the old" and "the young." Column 6 confirms that the happiness gap is much larger for the old than for the young. For the young the difference in happiness between transition and non-transition countries in wave 3 is only 1.01 (compared to 1.01+0.68=1.69 for the old); and in the wave 4, the difference is only 0.46 and is not significant (compared to 0.46+0.55=1.01 for the old), Furthermore, when we add proxies for public goods and income volatility (in Column 6), the difference in life satisfaction between the young residents in transition and non-transition

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countries disappears altogether in all waves. For the older generations, the difference between those in transition and nontransition countries shrinks but remains large (particularly in wave 3) and statistically significant; it is equal to -0.91 (=-0.23-0.68) in wave 3 and -0.48 (=0.09-0.57) in wave 4.

Younger people in transition could be less affected by income volatility, inequality, and worse public goods for at least two reasons: first, young people, in contrast to older people, in transition countries did not live in a paternalistic command economy; and second, in all countries, the young are less dependent on such public goods as healthcare and social security. We include interactions of age, transition country dummies and measures of public good outcomes, income volatility, and inequality as additional regressors to our baseline specification. The results are reported in Columns 1-3 of Table 4 (all regressions include the standard list of controls as in Tables 2 and 3). The coefficients in the first four rows indicate whether age affects the relationship between public goods, uncertainty, and inequality on the one hand, and life satisfaction on the other, in non-transition countries, whereas the coefficients in the next four rows indicate whether this relationship is different for transition countries. We find that in non-transition countries, age does not affect the link between life satisfaction and public goods, volatility, and inequality. In contrast, in transition countries, age aggravates the negative effect of public goods under-provision and increased volatility on life satisfaction. Thus, it is true that older people in transition countries are especially unhappy about bad public goods and income volatility.[13] This result is consistent with the earlier findings by Alesina and Fuchs-Schundeln (2007) who show that the preferences to redistribution of older East Germans converge slower to the level of West Germans than the preferences to redistribution of young East Germans. The plot of the movie "Good Bye Lenin" which Alesina and Fuchs-Schundeln use for the title of their paper is based on the idea that accepting transition is extremely hard for the older generation.

*The Age Effect and Human Capital Depreciation*

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[13] The magnitude of the triple interaction of age, transition country dummy, and public goods is rather small, however. For example, a 10% change in income mortality affects the abnormal unhappiness of a 60-year old resident of transition country (relative to his/her counterpart in a non-transition country) by only 0.06 points less than for a 20 year old.

*"People who found a good place for themselves in life are very satisfied. But we are not. Just because we missed the last train." (Source: CESSI 2007)*

As we have shown, public goods and volatility explain all of the difference between unhappiness in transition and non-transition countries for the young, but not for older generations. In this section, we consider another potential explanation of the difference in life satisfaction which applies specifically to the old. It is related to the effect of transition on human capital and, therefore, the expected lifetime earnings of those who started their professional careers before transition. Much of the value of the human capital stock accumulated during the command economy could have been wiped out by transition, because it was comprised of skills specific to the planned economy and irrelevant for the market economy. Therefore transition delivered an unexpected negative shock to the present value of lifetime earnings should have negatively affected life satisfaction. We cannot test for this theory directly because specific skills are unobserved. Neither occupation nor education level capture the relative value of skills in the command economy and in the newly created market economy.

Yet this theory does generate a testable prediction. If the human capital hypothesis holds true, then those educated under the last years of the old regime should feel substantially less happy than those who were educated just after the start of the new regime. For example, students of the history of the communist party, if they had known the transition was coming, should have switched to studying foreign languages or computer science. In Columns 4 and 5 we directly test this prediction. Using the sample of transition countries in the wave 4 of the World values Survey, we regress individual life satisfaction on a variable which measures whether the reform had begun by the time the respondent completed his or her education. We control for the age of the respondent, the current state of reform, and all the other standard individual and country-level controls. To proxy for the reform progress on a year-to-year basis, we construct an index based on the European Bank for Reconstruction and Development (EBRD) Transition Indicators (<http://www.ebrd.com/country/sector/econo/stats/timeth.htm>), an index based on an average of country scores on privatization, enterprise restructuring, price liberalization, trade liberalization, financial liberalization, and infrastructure reform for each year. We construct a continuous measure of the extent of reform which varies from 0 to 3 (used in Column 4) and a dummy, which switches from zero to one in the year when liberalization starts in a country (Column 5). The differential timing of reforms across countries and differences in the time of study across individuals of the same age allow us to single out the

human capital effect even controlling for age and educational attainment. As Columns 4 and 5 of Table 4 illustrate, the human capital depreciation theory is consistent with the data. The presence and the extent of reform in the year when respondent completed education has a positive significant effect on life satisfaction controlling for age and educational attainment. We find that life satisfaction is 0.2 higher for people who were still in school when liberalization started. This effect is robust to using the Life in Transition Survey data instead the World Values Survey.

An alternative interpretation of the results is as follows. A person who graduated just before transition had secured a nice job is unhappy after the transition as this job is likely to be discontinued or paid less. A person who graduates right after the transition makes an informed career choice and, therefore, is happier. This explanation is very similar to the human capital depreciation story above and we do not have data to distinguish between the two.[14]

*What Factors Explain the Unhappiness in Transition*

> *"My parents got their apartment from the state. They had a guaranteed salary that was in line with prices in the shops. They had a guaranteed pension. They knew they would get free medical care, they studied for free and their jobs were guaranteed. So they had no need to worry about anything… I do not have any of these hopes." (Source: CESSI 2007)*

We have presented evidence consistent with the hypotheses that depreciation of human capital, deterioration of public goods, and income volatility play a role in explaining lower life satisfaction in transition. Once we control for age, public goods, and income volatility at the same time (Column 5 in Table 3), the value of the coefficient on wave 4 of the transition country

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[14]     Our analysis is based on the assumption that the graduation year is exogenous. Suppose, in contrast, that individuals can choose to drop out of school or stay in school longer. This could bias our results both ways. First, one would expect a behavioral response to difference in quality of education. Suppose that students in the same cohort privately observe idiosyncratic shocks to quality of their education. Those who expect that their education would be useless under a market economy have incentive to quit earlier in order to increase their happiness; while those whose education is useful would stay longer to increase their happiness. The observed gap in happiness between these two groups of people can increase or decrease depending on the relative size of the behavioral response of the two groups. If most of the action is among those with "useless" education, the resulting bias would be towards zero. Second, major socioeconomic transformation may have affected the unhappy individuals' willingness to stay in school. If unhappy people have a harder time staying in school in times of major change in the economy, our results would be biased upwards. Which of the two effects dominates is not clear.

dummy drops to 0.36 – and is no longer statistically significant. We strongly suspect that if we had more direct and precise measures of the change in quality of public goods and the depreciation of human capital over time, the coefficient on the transition economies would fall still closer to zero. Moreover, our analysis of the sample selection effect (that the surveys in the transition economies are biased toward greater sampling of the poor and those whose incomes are not rising) implies that this coefficient is biased upward by about 0.33.

Thus, the seeming puzzle of abnormally low life satisfaction in transition countries largely disappears once we control for income, age, public goods, inequality, income volatility and account for the sample bias effect.

*Robustness checks*

To make sure that our results are not driven by the particularly large measurement error of GDP in transition countries or by unmeasured changes in the unofficial economy in transition countries, we verified that the results are also robust to using various alternative data sources. Some of these have been mentioned in the preceding discussion. We also used alternative measures of economic well-being such as per capita GDP from the Penn World Tables; per capita GDP and consumption in constant U.S. dollars (without a purchasing power parity adjustment), energy use, and automobiles per capita. These results are presented in a technical appendix, available at <http://www.cefir.ru/ezhuravskaya/research/Appendix_happiness.pdf>.

The analysis above is based on the answers to the "life satisfaction" question. We have also repeated the whole exercise for World Values Survey "happiness" question as well ("Taking all things together, would you say you are: Very happy, Quite happy, Not very happy, Not at all happy?"). The happiness and life satisfaction variables are highly correlated. The results for happiness are similar to those for life satisfaction. That is, there appears at first to be a substantial difference between transition and non-transition countries in happiness, but once we control for age, public goods, income volatility, and our other control variables, along with the selection bias between transition and non-transition countries, the remaining gap in happiness is virtually trivial.

**Conclusion**

The transition from communism to a more market-oriented economy did make people unhappy. But when we take a closer look, the unhappiness in transition countries is positively associated with income, very much like in other countries. Once we account for depreciation of human capital stock accumulated under central planning, deteriorating public goods, and rising income inequality, along with other individual and country-level controls, the difference in life satisfaction between transition and non-transition countries essentially disappears.

Our results imply that life satisfaction in transition countries will continue to rise. The first reason for this is the continued growth of income and the subsequent eventual improvement in public goods provision. The second reason is a gradual reduction in the number of people brought up under the command economy who are suffering because of a depreciation of human capital and unmatched expectations of high public good provision.

This increase in life satisfaction may have already happened even thought it has not been observed in the World Values Survey data yet. The latest available rounds of the World Values Survey were conducted in 1999-2003, either before or shortly after the resumption of growth in most transition countries. In more recent data–such as Life in Transition Survey or Russian Longitudinal Monitoring Survey–levels of happiness are rising, following the growth in per capita GDP. Both income levels and income growth rates of survey respondents are below per capita GDP levels and growth rates in these countries (because of problems with sample construction), and so the improvement of the survey-based estimates of life satisfaction takes longer than economic recovery.

Acknowledgements

### References

Alesina, Alberto, Rafael Di Tella and Robert MacCulloch. 2004. "Inequality and Happiness: Are Europeans and Americans Different?" *Journal of Public Economics.* 88, pp. 2009– 2042.

Alesina, Alberto,  and Nicola Fuchs-Schuendeln. 2007. "Good Bye Lenin (or not?) - The Effect of Communism on People's Preferences," *American Economic Review.* 97, pp. 1507-1528.

Barro, Robert J. 2000. "Inequality and Growth in a Panel of Countries." *Journal of Economic Growth*. 5:1, pp. 5-32.

Bénabou, Roland and Jean Tirole. 2006. "Belief in a Just World and Redistributive Politics." Quarterly Journal of Economics*.* 121:2, pp. 699-746.

Bertrand, Marianne and Sendhil Mullainathan. 2001. "Do People Mean What They Say? Implications for Subjective Survey Data." *American Economic Review* Papers and Proceedings. 91:2,  pp. 67-72.

Blanchflower, David and Andrew J. Oswald. 2004. "Well-Being Over Time in Britain and the USA." *Journal of Public Economics*. 88:7–8, pp. 1359–386.

Brainerd, Elizabeth and David M. Cutler. 2005. "Autopsy on an Empire: Understanding Mortality in Russia and the Former Soviet Union," *Journal of Economic Perspectives* 19(1), pp. 107-130.

CESSI. 2007. "Russian Attitudes and Aspirations: The Results of Focus Groups in Nine Russian Cities."  CESSI Report, spring, http://www.ebrd.com/pubs/econo/asp.pdf

Clark, Andrew, Paul Frijters, and Michael Shields. 2008. "Relative Income, Happiness, and Utility: An Explanation for the Easterlin Paradox and Other Puzzles" Journal of Economic Literature 2008, 46:1, 95–144

Deaton, Angus. 2005. "Measuring Poverty in a Growing World (or Measuring Growth in a Poor World)." *Review of Economics and Statistics*. 87:1, pp. 1-19.

Deaton, Angus. 2008. "Income, Health, and Well-Being around the World: Evidence from the Gallup World Poll. " *Journal of Economic Perspectives*, 22:2, pp. 53–72*.*

Denisova, Irina, Markus Eller, Timothy Frye and Ekaterina Zhuravskaya. 2007. "Who Wants to Revise Privatization and Why: Evidence from 28 Post-communist Countries." *Mimeo*, CEFIR, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1008212.

Di Tella, Rafael and Robert MacCulloch. 2006. "Some Uses of Happiness Data in Economics." *Journal of Economic Perspectives*. 20:1, pp. 25–46.

Di Tella, Rafael, Robert MacCulloch and Andrew Oswald. 2001. "Preferences over Inflation and Unemployment: Evidence from Surveys of Happiness." *American Economic Review*. 91, pp. 335–41.

Easterlin, Richard A. 1974. "Does Economic Growth Improve the Human Lot? Some Empirical Evidence." In *Nations and Households in Economic Growth: Essays in Honor of Moses Abramovitz*, ed. R. David and M. Reder. New York: Academic Press, 89–125.

Easterlin, Richard A. 1995. "Will Raising the Incomes of All Increase the Happiness of All?" *Journal of Economic Behavior and Organization*, 27(1): 35–47.

EBRD 2007. "People in Transition." *Transition Report 2007*, London, European Bank of Reconstruction and Development.

Fehr, Ernst and Klaus Schmidt. 2002. "Theories of Fairness and Reciprocity - Evidence and Economic Applications." in M. Dewatripont, L. Hansen and St. Turnovsky (Eds.) *Advances in Economics and Econometrics - 8th World Congress, Econometric Society Monographs*. Cambridge, Cambridge University Press.

Frey, Bruno and Alois Stutzer. 2002. "What can Economists Learn from Happiness Research?" *Journal of Economic Literature.* 40, pp. 402-35.

Gilbert, Daniel. 2006. *Stumbling on Happiness*. New York: Knopf.

Graham, Carol, Andrew Eggers and Sandip Sukhtankar. 2004. "Does happiness pay? An exploration based on panel data from Russia." *Journal of Economic Behavior and Organization*. 55, pp. 319-342.

Grosfeld, Irena and Claudia Senik. 2008. "The Emerging Aversion to Inequality - Evidence from Long Subjective Data," PSE Working Papers No. 2008-19, PSE (Ecole normale supérieure).

Hirschman, Albert O. and Michael Rothschild. 1973. "The Changing Tolerance for Income Inequality in the Course of Economic Development." *Quarterly Journal of Economics*. 87:4, 544-566.

IMF. 2007. "Hungary: 2007 Article IV Consultation—Staff Report; and Public Information Notice on the Executive Board Discussion." IMF Country Report No. 07/250. July. At <http://www.imf.org/external/pubs/ft/scr/2007/cr07250.pdf>.

Kahneman, Daniel and Alan B. Krueger. 2006. "Developments in the Measurement of Subjective Well-Being." *Journal of Economic Perspectives*. 20:1, pp. 3–24.

Layard, Richard. 2005. *Happiness: Lessons from a New Science.* London: Penguin.

Milanovic, Branco. 1998. *Inequality and Poverty during the Transition From Market Economy*, World Bank: Washington DC.

Milanovic, Branco. 1999. "Explaining the increase in Inequality during Transition." *Economics of Transition.* 7:2, pp. 299-341.

Milanovic, Branco and Lire Ersado. 2008. "Reform and inequality during the transition: An analysis using panel household survey data, 1990-2005." *Mimeo,* World Bank, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1103182.

Pew Research Center. 2008. "Inside the Middle Class: Bad Times Hit the Good Life." A Social and Demographic Trends Report, April 4, 2008, http://pewresearch.org

Sanfey, Peter and Utku Teksoz. 2007. "Does Transition Make You Happy?" *Economics of Transition*. 15:4, pp. 707-731.

Senik, Claudia. 2004. "When Information Dominates Comparison. Learning from Russian Subjective Panel Data." *Journal of Public Economics*. 88:9-10, pp. 2099-2133.

Stevenson, Betsey, and Justin Wolfers. 2008. "Economic Growth and Subjective Well-Being: Reassessing the Easterlin Paradox," Brookings Papers on Economic Activity, 1, pp. 1-87.

# The dynamics of GDP per capita (PPP, 2000$)
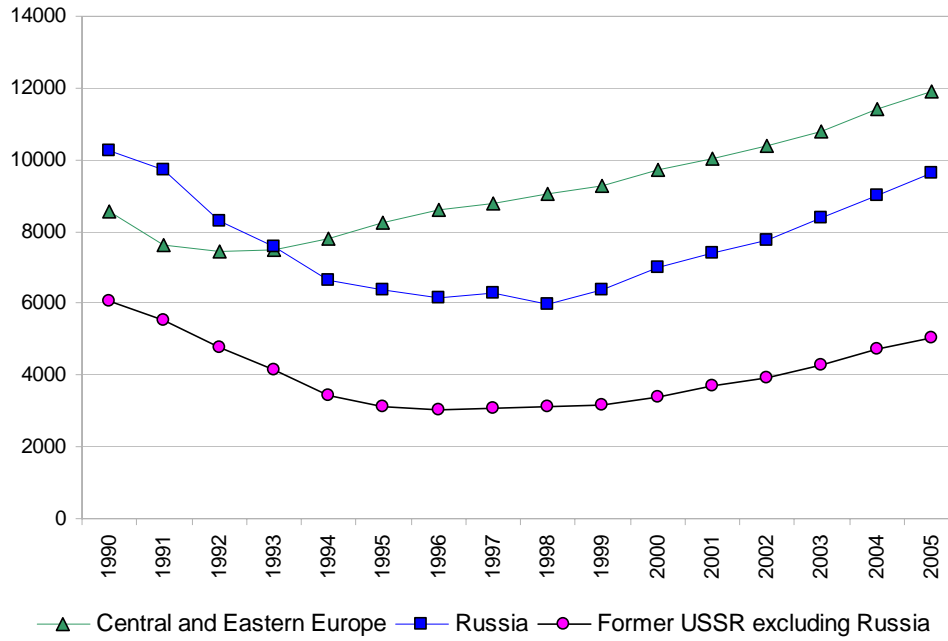


Figure 1. The dynamics of real GDP per capita in constant international 2000 US dollars adjusted for purchasing power parity (PPP). Source: World Development Indicators data base, World Bank.

## Wave 3 of the World Values Survey (1994-1999):



WVS wave 3, 51 countries total, 21 transition countries

## Wave 4 of the World Values Survey (1999-2003):



WVS wave 4, 66 countries total, 19 transition countries
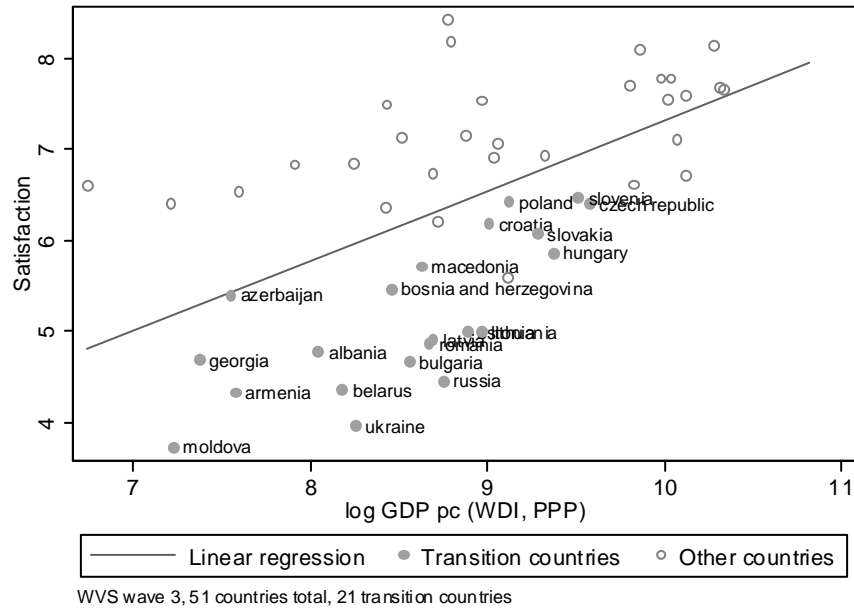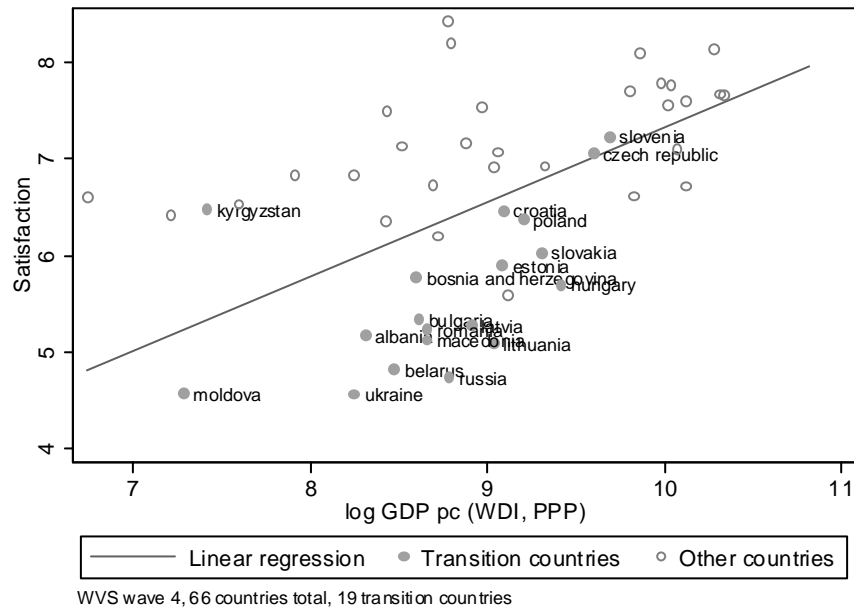
Figure 2. Life satisfaction and per capita GDP.
Vertical axis: average country-level value of live satisfaction on a scale from 1 to 10 (source: World Values Survey). Horizontal axis: natural logarithm of per capita GDP in purchasing power parity-adjusted $ (source: World Development Indicators). Set of countries: all included in the surveys; only transition countries marked with names.

## Relationship between life satisfaction and age
### Locally weighted regression
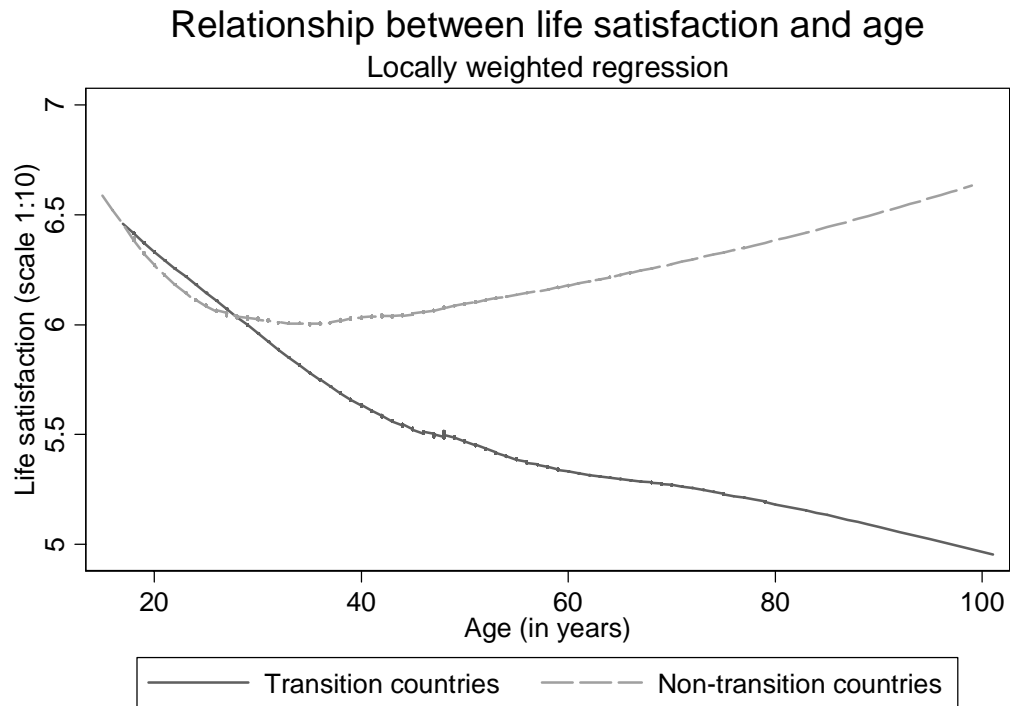


Figure 3. Age and life satisfaction in transition countries and non-transition countries with per capita income comparable to transition countries. The lines depict the results of the non-parametric locally weighted regressions (*lowess* smoother) with bandwidth = 0.8.
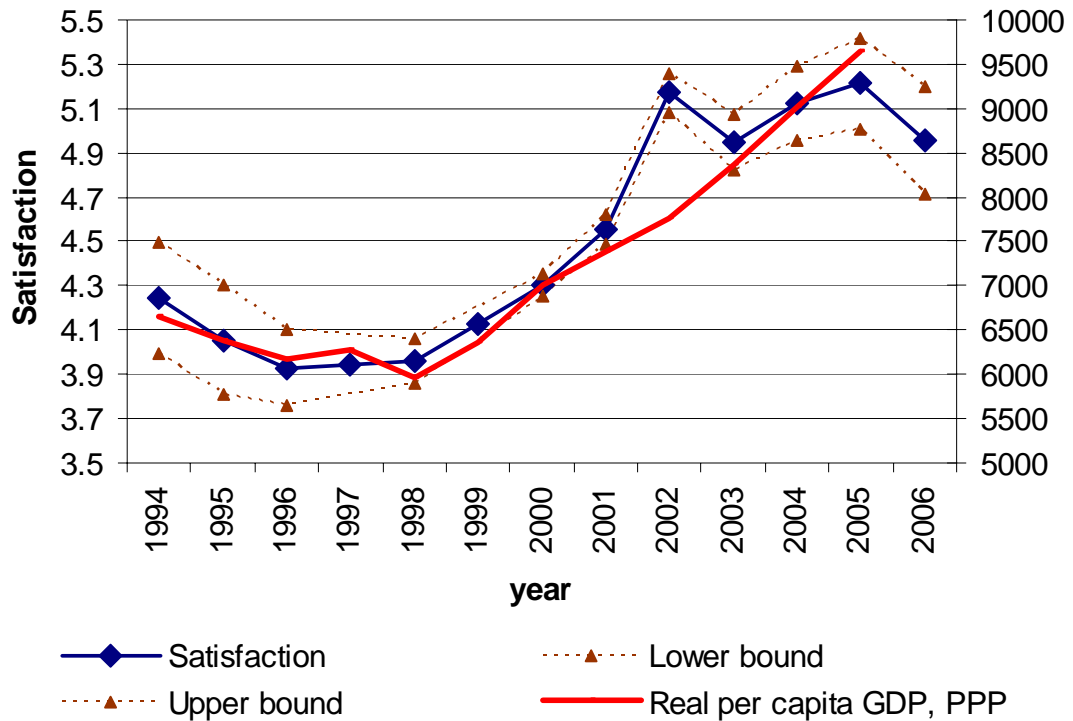
Figure 4. Dynamics of life satisfaction and per capita GDP in Russia.

Left scale: Life satisfaction for an average individual from the panel regressions with person fixed effects and other usual controls (with 95% confidence interval). In 1997 and 1999, there were no Russian Longitudinal Monitoring Survey surveys; we use linear interpolation. Right scale: Real per capita GDP in purchasing power parity-adjusted 2000 US dollars. Source: For satisfaction, the Russian Longitudinal Monitoring Survey. For GDP per capita, the World Development Indicators data base. (According to the Penn World Tables, in 2004, the purchasing power parity-adjusted GDP per capita in Russia reached $11,794.)

Table 1. Selected indicators of consumption (cross-country average)

| | 1985 | 1990 | 1995 | 2000 | 2004 |
|---|---|---|---|---|---|
| **HH consumption expenditure per capita (constant 2000 US$)** | | | | | |
| Transition countries | - | 1154 | 1009 | 1155 | 1543 |
| Middle income countries | 774 | 813 | 925 | 1044 | 1174 |
| USA | 17081 | 19110 | 20405 | 23880 | 25841 |
| **Housing (square feet per person)** | | | | | |
| CIS | - | 172 | - | 183 | 215* |
| USA | - | - | 694 | 720 | <u>752</u> |
| **Cars (per 1,000 people)** | | | | | |
| Transition countries | - | 110 | 134 | 187 | 223** |
| Middle income countries | - | 37 | 50 | 69 | 54** |
| USA | - | 758 | 756 | 785 | - |
| **Telephone mainlines (per 1,000 people)** | | | | | |
| Transition countries | 94 | 125 | 159 | 216 | 264 |
| Middle income countries | 29 | 40 | 68 | 127 | 195 |
| USA | 487 | 545 | 600 | 682 | 606 |
| **Personal computers (per 1,000 people)** | | | | | |
| Transition countries | - | 4.1 | 19.2 | 57.3 | 109.8 |
| Middle income countries | - | 2.2 | 9.5 | 29.1 | 58.3 |
| USA | 106 | 217 | 324 | 570 | 762 |

The list of transition countries is as follows: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, FYR Macedonia, Moldova, Poland, Romania, Russia, Serbia and Montenegro, Slovak Republic, Slovenia, Tajikistan, Ukraine, and Uzbekistan (there are no reliable data on Turkmenistan). The last column of the table reports data for the last year available. No asterisk in the last column refers to data for 2004; * refers to data for 2006; ** - for 2003. "-" denotes missing data. CIS stands for the Commonwealth of Independent States, which consists of all countries of the former USSR except for Baltic states. The source of all variables with the exception of housing is the World Development Indicators data base. Housing data come from the CIS statistical abstracts and American Housing Survey, US Census Bureau (the housing data for the US refer to median rather than mean square footage per person). The middle income countries group is defined as in the World Development Indicators data base 2006; the classification criteria and the list of middle income countries are available at http://go.worldbank.org/K2CKM78CC0. Using population-weighted average instead of a simple cross-country average does not change the overall pattern found in the data.

Table 2. Is life satisfaction lower in transition?

| | Dependent variable: life satisfaction (1-10) | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | | | | | Absolute HH income | Absolute HH income per member |
| Transition country dummy | -1.40*** [0.33] | -1.13*** [0.33] | | | | |
| Transition country dummy * wave 2 | | | -0.72*** [0.22] | -0.67*** [0.24] | | |
| Transition country dummy * wave 3 | | | -1.44*** [0.28] | -1.56*** [0.27] | | |
| Transition country dummy * wave 4 | | | -0.87*** [0.29] | -0.90*** [0.32] | | |
| Log GDP pc (PPP $) | 0.47*** [0.17] | 0.35 [0.24] | 0.42*** [0.12] | 0.44*** [0.12] | | |
| Relative HH income (1-10) | 0.14*** [0.02] | 0.20*** [0.02] | 0.14*** [0.02] | 0.13*** [0.02] | | |
| Log absolute HH income | | | | | 0.41*** [0.06] | 0.23*** [0.04] |
| Transition country dummy * (Log GDP pc - mean) | | | 0.38* [0.23] | | | |
| Transition country dummy * (Relative HH income - mean) | | | | 0.07** [0.03] | | |
| Transition country dummy * Log absolute HH income | | | | | 0.26*** [0.07] | 0.21*** [0.06] |
| Wave dummies | | | yes | yes | | |
| Country-level controls | yes | yes | yes | yes | | |
| Country dummies | | | | | yes | yes |
| Sample: Wave | 3 | 4 | all | all | 4 | 4 |
| Observations | 51 516 | 56 903 | 161 508 | 161 508 | 63 237 | 27 290 |
| R-squared | 0.25 | 0.18 | 0.19 | 0.19 | 0.23 | 0.28 |
| Countries | 39 | 44 | 55 | 55 | 53 | 26 |
| Transition countries | 14 | 16 | 17 | 17 | 16 | 11 |

Note: Individual-level controls are included in each regression, they are: age with a quadratic term, educational attainment, employment status, and marital status. Country-level controls are unemployment, inflation, Gini coefficient, media freedom, and democracy. "Log absolute HH income" refers to the log of the average nominal household income in column 5 and to the log of the average nominal household income per household member in column 6. SEs adjusted for clustering at country level are in brackets. Asterisks *, **, *** denote significance at 10, 5, and 1% level. The list of countries included into each regression is determined by data availability.

Table 3. Why is life satisfaction lower in transition?

| | Dependent variable: life satisfaction (1-10) | | | | | | |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Transition country dummy * wave 2 | -0.82*** | -1.05*** | -0.48* | -0.68*** | -0.26 | -0.31 | 0.27 |
| | [0.22] | [0.27] | [0.26] | [0.25] | [0.29] | [0.29] | [0.27] |
| Transition country dummy * wave 3 | -1.57*** | -1.51*** | -1.25*** | -1.26*** | -0.80** | -1.01*** | -0.23 |
| | [0.27] | [0.21] | [0.31] | [0.34] | [0.38] | [0.23] | [0.35] |
| Transition country dummy * wave 4 | -0.89*** | -0.95*** | -0.70** | -0.66 | -0.36 | -0.46 | 0.09 |
| | [0.31] | [0.25] | [0.32] | [0.39] | [0.37] | [0.28] | [0.34] |
| Transition country dummy * wave 2 * born before 1971 | | | | | | -0.55** | -0.56** |
| | | | | | | [0.22] | [0.21] |
| Transition country dummy * wave 3 * born before 1971 | | | | | | -0.68*** | -0.68*** |
| | | | | | | [0.10] | [0.09] |
| Transition country dummy * wave 4 * born before 1971 | | | | | | -0.55*** | -0.57*** |
| | | | | | | [0.12] | [0.10] |
| Infant mortality | | | -0.48** | | -0.58*** | | -0.58*** |
| | | | [0.19] | | [0.19] | | [0.19] |
| Immunization | | | 4.14* | | 5.14** | | 5.15** |
| | | | [2.39] | | [2.45] | | [2.46] |
| Immunization squared | | | -0.59* | | -0.73** | | -0.73** |
| | | | [0.33] | | [0.34] | | [0.35] |
| Emissions | | | -0.32*** | | -0.31*** | | -0.30*** |
| | | | [0.11] | | [0.11] | | [0.11] |
| Income volatility | | | | -4.84 | -7.15*** | | -7.43*** |
| | | | | [3.31] | [2.60] | | [2.56] |
| Inequality | 0.02 | 0.02* | 0.03*** | 0.02* | 0.04*** | 0.02 | 0.04*** |
| | [0.01] | [0.01] | [0.01] | [0.01] | [0.01] | [0.01] | [0.01] |
| Transition country dummy * (Inequality-mean) | | -0.07** | | | | | |
| | | [0.03] | | | | | |
| R-squared | 0.19 | 0.20 | 0.20 | 0.20 | 0.21 | 0.20 | 0.21 |

Note: All regressions have 155 555 observations from 54 countries, of which 16 are transition countries. The list of individual and country-level controls is the same as in columns 3 and 4 of Table 2. Namely, all regressions include wave dummies; the following country-level controls: Log per capita GDP, unemployment, inflation, Gini coefficient, media freedom, and democracy; and the following individual-level controls: age with a quadratic term, relative HH income, educational attainment, employment status, and marital status. "Immunization" stands for the ln percentage of children between 12 and 23 months old immunized against diphtheria, pertussis, and tetanus. "Infant mortality" stands for the ln infant mortality per 1000 infants. "Emissions" stand for ln $CO_2$ emissions in tons per capita. "Income volatility" is the standard deviation of per capita GDP growth of GDP in 1989-2004. "Inequality" is the country's Gini coefficient. SEs adjusted for clustering at country level are in brackets. Asterisks *, **, *** denote significance at 10, 5, and 1% level.

Table 4. Understanding the age effect

| | Dependent variable: life satisfaction (1-10) | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| | | | | Reform - continuous | Reform - dummy |
| Age * Infant mortality | 0.002 | | | | |
| | [0.002] | | | | |
| Age * Emissions | 0.005* | | | | |
| | [0.002] | | | | |
| Age * Income volatility | | -0.054 | | | |
| | | [0.082] | | | |
| Age * Inequality | | | 0.001 | | |
| | | | [0.001] | | |
| Transition country dummy * Age * Infant mortality | -0.015** | | | | |
| | [0.006] | | | | |
| Transition country dummy * Age * Emissions | -0.011* | | | | |
| | [0.006] | | | | |
| Transition country dummy * Age * Income volatility | | -0.218* | | | |
| | | [0.114] | | | |
| Transition country dummy * Age * Inequality | | | 0.001 | | |
| | | | [0.001] | | |
| Extent of reform in the year when respondent completed education | | | | 0.30** | 0.20* |
| | | | | [0.12] | [0.10] |
| Age | -0.064*** | -0.062*** | | -0.04* | -0.05** |
| | [0.006] | [0.006] | | [0.02] | [0.02] |
| Age * Age / 100 | 0.068*** | 0.069*** | | 0.06*** | 0.07*** |
| | [0.007] | [0.007] | | [0.01] | [0.01] |
| Reform in the current year | | | | 0.42* | 0.49* |
| | | | | [0.22] | [0.24] |
| Year when finished education | | | | 0.02 | 0.02 |
| | | | | [0.02] | [0.02] |
| Countries in the sample | all | all | all | TC | TC |
| Waves | all | all | all | 4 | 4 |
| Observations | 155 555 | 155 555 | 155 555 | 26 385 | 26 385 |
| R-squared | 0.22 | 0.20 | 0.21 | 0.15 | 0.15 |
| Countries | 54 | 54 | 54 | 16 | 16 |
| Transition countries | 16 | 16 | 16 | 16 | 16 |

Note: The list of individual and country-level controls is the same as in table 3 and columns 3 and 4 of Table 2. Namely, all regressions include wave dummies and the following country-level controls: Log per capita GDP, unemployment, inflation, Gini coefficient, media freedom, and democracy; and the following individual-level controls: relative HH income, educational attainment, employment status, and marital status. "Immunization" stands for the ln percentage of children between 12 and 23 months old immunized against diphtheria, pertussis, and tetanus. "Infant mortality" stands for the ln infant mortality per 1000 infants. "Emissions" stand for ln $CO_2$ emissions in tons per capita. "Income volatility" is the standard deviation of per capita GDP growth of GDP in 1989-2004. "Inequality" is the country's Gini coefficient. SEs adjusted for clustering at country level are in brackets. Asterisks *, **, *** denote significance at 10, 5, and 1% level.

# Are optimistic expectations keeping the Chinese happy?

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## Abstract

In this paper we study the effect of optimistic income expectations on life satisfaction amongst the Chinese population. Using a large scale household survey conducted in 2002 we find that the level of optimism about the future is particularly strong in the countryside and amongst rural-to-urban migrants. The importance of these expectations for life satisfaction is particularly pronounced in the urban areas, though also highly significant for the rural area. If expectations were to reverse from positive to negative, we calculate that this would have doubled the proportion of unhappy people and reduced proportion of very happy people by 48%. We perform several robustness checks to see if the results are driven by variations in precautionary savings or reverse causality.

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# 1　Introduction

Over the last 20 years, China has experienced significant economic and social changes. The degree, sheer size, and the speed of these changes are unprecedented in human history. Although the nation's economic changes are closely followed around the world, China's social changes are less apparent. These social changes have undoubtedly impacted upon individual day-to-day lives, including individual feelings and perceptions of the current and future states of the world. In turn, these same changes pose a significant impact on social and political stability.

Many authors have commented on the relationship between economic expectations, and social and political stability in China during periods of transition.[1] For example, in 1992, Richard Baum alleged that economic growth was the main reason behind the ability of the Chinese political system to avoid the collapse of communism experienced in the ex-Soviet regions. Similarly, Zeng (2003) contends that the legitimacy of the ruling party derives almost entirely from postive expectations, arguing that only optimistic expectations prevent emerging social problems like inequality and the uncertainty that followed the various employment and social welfare reforms. A strong indication of such perceptions within China comes from the self-identification of the regime with economic growth. Chinese leaders have actively promoted the idea that the political status quo shields economic growth. This pursuit became clear with the current Chinese President, Hu Jintao, explicitly highlighting political stability a key factor for ensuring high economic growth (AFX News, 2005).[2]

In this paper, we intend to quantify the role of optimistic economic expectations in keeping the Chinese happy, amidst all the social and economic

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[1] Examples of this idea from public think-tanks and political scientists include Holbig (2006), Giessmann (2007), and Zeng (2003).

[2] Younis et al. (2008), looking at the differential growth experience across South Asian countries in the past few decades, indeed also suggest that political stability and economic growth go hand in hand, though they cannot ascertain the main direction of causality.

changes.[3] The main research questions we pursue are: who has optimistic economic expectations? To what extent do these optimistic economic expectations make the Chinese happy? And, by how much does life satisfaction fall, if expectations change from good to bad?

We try to answer these questions using a large-scale household survey conducted for the year 2002. The survey contains information on both future income expectations and happiness, in addition to extensive information about socioeconomic characteristics and personality traits. We also relate observed expectations to official records of the number of labour disputes (at the provincial level), in order to ascertain whether expectations matter for observed aggregate behaviour.

The following section reviews the institutional background and relevant literature. Section 3 describes the data. Section 4 analyses expectations and their determinants. In Section 5, we investigate how expectations relate to happiness. Section 6 tests the robustness of our results, given a variety of possible critiques. Conclusions are provided in Section 7.

# 2 Background and literature

## 2.1 The Chinese situation

The economic reforms which begun in 1978 and lead China from a planned economy to a market economy have generated unprecedented income growth and dramatic social changes. Since the late 1980s, GDP growth has been around 10% per year, a historical record in terms of sustained growth. Accompanying this extraordinary growth record is an equally noteworthy increase in income inequality. According to the China Statistical Yearbook, the

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[3]Though economists have so far not addressed the question of happiness and social stability, psychologists and sociologists have reported positive correlations between the happiness of regions and their levels of social stability (eg. Diener and Suh 2000). Quite generally, low levels of happiness are related to instability in personal lives and group lives.

urban-rural income ratio increased from 190% in 1986 to 330% in 2006 (NBS, various years). Similarly, the Gini coefficient increased from 0.15 in 1988 to 0.32 in 2002 for the cities (Gusstafson, Li, and Sicular, 2008), and from 0.30 in the mid-1980s to 0.45 in the mid-2000s for rural areas (Benjamin, Brandt, and Giles, 2007).

In addition to the rapid income growth and change in relative income positions, the urban Chinese have also been subject to two important sources of social change. The first being the erosion of the social welfare system. Urban residents used to enjoy a 'cradle to grave' social welfare system during the pre-reform era. Since the mid 1990s, a new system has taken shape which places significant emphasis on individual responsibilities. Housing reform has led to the removal of subsidized housing, forcing urban households to purchase and/or rent housing from the market. The health care system transformed from a full state-covered medical service to an one-third coverage rate for state employees and null cover for private sector employees. Similarly, full pension coverage has changed to an individual retirement savings account, covering less than 50 per cent of all employees. In addition, high tuition fees and compulsory donations are charged at the primary, secondary, as well as tertiary education levels. The second source of social change for the urban population is that lifetime employment has been abolished and, as a result, some 15 million state sector employees were made redundant between 1995 and 1999 (Meng, 2000; MOLSS, 2003; Cai and Meng, 2003; Fan, 2000; Garnaut, Song, Wang, and Yao, 2001).

For rural people, the most important social changes are generated by large scale rural-urban migration. In the pre-reform era, individuals born in the countryside were not permitted to move. There was complete segregation of rural and urban economies. Rural-urban migration did not take place until the mid-1980s, although at very restricted levels. Since the early 1990s, however, large scale migration has accelerated. There are currently somewhere between 120 and 130 million migrants working in Chinese cities, with an es-

timated further 150 million to be realised within the course of the next few decades. Compared to most developed countries, where similar population movements occurred over a hundred years, China is experiencing the phenomenon on a much larger and faster scale. Although current rural-urban migration is less restrictive than before, migrants in cities have access only to jobs which the city dwellers are unwilling to take. In addition, they have no equal right to access urban social benefits. The unprecedented scale and pace of the migration movements (with the discriminatory nature) has also altered the life course for millions of Chinese farmers.

Against this background, our study attempts to ascertain to what degree optimistic economic expectations are keeping individuals happy, hence devoting stability to the Chinese society in times of transition.

## 2.2 The theoretical background

Income expectations can affect current utility in two different ways. Expectations affect utility indirectly via choices or, alternatively, as a direct consumption good.

In the standard economic model where expectations affect utility only via choices, individuals maximise $E\{\sum_{t=0}^{T} \delta^t U(X_{it})\}$ where future utility is discounted by $\delta^t$, and the consumption bundle, $X_{it}$, is dependent on the choices made before time period $t$. The choices are made, as such, to maximise the expected discounted stream of utility where, under the Von Neumann-Morgenstern assumptions, individual expectations are presumed to be rational, hence equal to the mathematical expectation. Note that expectations themselves have no place in the utility function.

In this framework, where no direct link between expectation and utility is present, both a positive or a negative correlation between current utility and expectations may be observed. A positive correlation can arise if the higher future income expectations are somewhat exogenous to current costly investments. For example, when arising due to circumstances completely beyond

individual control (say, the weather or an inheritance). In this situation, a rational individual would reduce precautionary savings today, increasing present consumption, and consequently giving rise to a positive correlation between income expectations and current utility. A negative correlation can arise under the exact opposite scenario, i.e. when high future expectations result from costly investments made today. Consider, for instance, a two-period model where individuals only differ with respect to their time discounting, keeping utility functions, $U(X_{it})$, homogenous. Given an increase in incomes, individuals who care more about the future will save more today, in order to enjoy higher consumption levels tomorrow. In this case, higher income expectations today are due to higher sacrifices made today for the sake of higher income in the future, implying a lower utility level today for individuals with higher income expectations.

This standard theoretical perspective will be important within the Chinese context, and, hence, later in our empirical strategy. After presenting our main argument for the importants of expectations to China, we explicitly examine whether savings and consumption can explain the found positive correlation. Additionally, we will seek evidence of a spurious negative relation between expectations and utility via unobserved variables such as discount rates.

An alternative theory linking income expectations to utility defines expectations as consumption goods. Support for this hypothesis derives from the literature within psychology and neuroscience. Findings point to distinct neural pathways by which individuals obtain psychic rewards from expectations of the future (eg. Berns et al. 2006). In its simplest form, this means the utility function, $U(.)$, is not merely a function of current consumption (captured by a vector $X_{it}$, that includes income), but also contains a large role for subjective expectations, $E_{it}[X_{it+1}]$, of future goods. Hence, here $U(.)$ is expressed as a function $U(X_{it}, E_{it}[X_{it+1}])$ rather than the standard $U(X_{it})$.

We regard this second possibility as the 'true' effect of expectations on

happiness as it relates to direct consumption benefits not captured via other variables.

## 2.3 Previous economic literature on expectations

The literature on subjective expectations in macro-economics is vast relative to that in micro-economics. The majority of the macro-economics studies deal with the usefulness of subjective expectations in predicting macro-economic variables such as inflation and growth (see, for example, Mankiw et al. 2003 and Souteles 2004). The few micro-economics studies on subjective expectations have so far mainly focussed on whether expectations of income and happiness conform to the rational expectations hypothesis (Hamermesh, 2004; Das and Van Soest 1999; Stutzer 2004; Hagerty 2003, and Frijters et al. 2008).

Whilst our paper uses explicit information on the expectations of individuals about their future income changes, the focus of the paper is on the importance of these expectations for other outcomes, rather than if expectations in themselves are rational. In a political sense, it does not matter whether or not these expectations are perfectly rational. However, what remains important is how expectations contribute to economic stability via effects on overall happiness.

To date, analysis of the effect of expectations on individual happiness remains absent from the empirical happiness literature, despite some theories hypothesising the importance of income expectations for happiness (e.g., the tunnel effect hypothesis by Senik (2005); and the theory of erroneous income expectations (Easterlin, 2001)). To our knowledge, the only available paper examining the causal effect of expectations on happiness is a recent study by Senik (2008) who implements the Russian Longitudinal Monitoring Survey (1994-2004), finding a strong effect of expectations on life satisfaction. Senik also finds that expectations improve self-rated health, reinforcing the notion that there is an actual benefit of expectations for current utility. The

main differences between our study and that of Senik (2008) are that our contexts differ and that we have access to many variables which are lacking in the Russian Longitudinal Monitoring Survey data, including self-reported relative income position, individual personality traits, mode of the day, and village/city level characteristics. Our rich data set allows us to better reveal the causal relationship between expectations and life salisfaction.

One of the main reasons why economists studying happiness avoid the role of expectations is due to traditional economic theory simply rejecting the notion of any direct effects from expectations on utility. Yet, the psychology literature has for a long time argued that expectations are consumption goods and, hence, have observable physical effects on individual well-being. For instance, according to Cannon (1914), negative expectations lead to fear. Fear is physically observable and unpleasant, making it a negative consumption good irrelevant of whether the event occurs. The idea that expectations themselves have a consumption value is a relatively new concept within economics, with only a handful of authors, such as Brunnermeier and Parker (2004), being notable exceptions. Their work addressed the issue of optimal savings when expectations of future consumption contain consumption value.

# 3   Data

We use data from the 2002 China Income Project Survey (CHIPs). The survey was conducted by the Institute of Economics at the Chinese Academy of Social Sciences (in early 2003) and comprises three sub-samples: urban households, rural households, and rural-urban migrant households. The rural survey was implemented in 22 out of the 30 provinces in China, while the urban survey was conducted in 12 provinces. Questionnaires for the three sub-samples are largely consistent, however, slight discrepancies are present. The total rural sample comprises of 9,200 households and 37,969 individuals. The urban sample includes 6,835 households with 20,548 individuals. And,

the migrant sample covers 2,000 households with 5,318 individuals. Most of the questions were asked of all individuals who were living in the household, with only the subjective questions inquired to one person in each household (household heads or spouses). Thus, our final sample includes only individuals of whom the income expectation questions were asked.

The survey questions one individual in each household on how they think their household income would change in the next five years. The possible answers are:

1. A reduction
2. No change
3. A slight improvement
4. A significant improvement.

In the analysis, we will refer to '1. A reduction' as 'pessimistic', '2. No change' and '3. A slight improvement' as 'neutral', and '4. A significant improvement' as 'optimistic'.

In addition, individuals are asked to rate their general happiness (life satisfaction) on a scale ranging from 1 (not happy at all) to 5 (very happy). Figure 1 presents the distributions of these variables for the various sub-samples.

For the total sample, around 10.6 and 24.6 per cent of individuals expect their incomes to 'reduce' or remain 'unchanged' in the next five years, respectively; while the remaining 74.8 per cent believe that their income will 'increase'. Comparing this proportion to those found in Das and Soest (1999) for the Netherlands, Chinese households seem to have much higher income growth expectations. Das and Soest (1999) find that during a recession around 11 per cent of individuals believe that their income will increase in the next 12 months, while during an economic boom this figure increases to 33 per cent.

With regard to life satisfaction, slightly more than 10 per cent of the sample either regard themselves as being 'not satisfied at all' or 'not very satisfied', 32 per cent are considered to be 'fair', while 58 per cent of individuals are either 'satisfied' or 'very satisfied'. We compare these finding to ones from the US, where around 73 per cent of respondents said (in Gallup polls) that they were 'satisfied' or 'very satisfied' with their lives. This number being 84% in 2007.[4] Yet, the number of Americans who are dissatisfied is in the 10 to 15 per cent of the whole of the 1980-2007 period. The numbers for other OECD countries fall in a similar range (see Clark et al. 2008), suggesting that the Chinese are less happier than the average OECD respondent, with simultaneously there not being a relatively large group who is dissatisfied. Rather, there are fewer satisfied Chinese and more in the neutral range.

Figure 1 indicates that urban residents (on average) have the worst income expectations, with migrants second, and rural residents being the most optimistic. With regard to happiness, though, the pattern is not as clear. On average, the proportion of individuals who are unhappy is slightly higher for urban residents, while the proportion that regards themselves as being fairly happy is highest for migrants. Once again, rural residents are the happiest group.

Figure 2 presents the relationship of expectations and happiness with income levels for each of the three sub-samples. Within each group, individuals with higher life satisfaction and high income expectations have higher income levels. However, if we examine the income levels across groups, this relationship does not seem to be clear. The happiest rural Chinese have much lower income levels relative to the least happy urban Chinese. This seems to suggest that income itself does not matter to a great extent, and that it is perchance mainly the relative income position which defines whether individuals are happy. This finding is consistent with the literature (see,

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[4]http://www.gallup.com/poll/103483/Most-Americans-Very-Satisfied-Their-Personal-Lives.aspx

for example, Clark et al. 2008) and was already analysed quite extensively for this data by the works of Knight and Gunatilaka (2008) and Song and Appleby (2008).[5]

Table 1 gives summary statistics of all the other variables used in the analyses, disaggregated by sub-sample. On average, urban households have the highest per capita household income and expenditure, followed by migrants and rural households. A striking aspect is that although the income level of migrants is only three quarters of that of urban households, their savings rate is around 3 percentage points higher than both urban and rural residents. This is a reflection of the temporary nature of their current status and a reflection that migration is seen as an investment decision with inter-temporal costs and benefits. Not surprisingly, hence, migrants have the lowest level of net assets.

In the rural and urban household surveys, households were asked to report their incomes in the preceding five years. This was not asked of the migrants. Using this information, we are able to calculate changes in household income for these two sub-samples. The summary statistics show that, in the early years, the degree of income changes for urban and rural household are quite similar, while in later years a much higher income growth is observed for urban households than for their rural counterparts.

# 4    The determinants of income expectations

In this section, we examine what determines individual income expectations. The literature on individual level income expectations is quite thin (Das and Van Soest 1999; and Ramos, 2006). The prime focus in this literature has been to question whether individual level expectations conform to the rational expectations hypothesis. Typical findings report that individuals

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[5]These two papers give extensive additional background information to the Institutions in China in this period and analyse the income-happiness relation for this sample.

make predictable but smallish mistakes. This contradicts the relatively large literature within psychology which argues that observed expectations differ systematically from outcomes (for a survey, see Rabin 1998).

## 4.1 Methodology

We model the income expectation, $IE_i$, of individual $i$ as the result of a transformation of a latent variable measured on a 4-point scale:

$$
\begin{aligned}
IE_i^* &= x_i\beta + \epsilon_i \\
IE_i &= k \Leftrightarrow \lambda_{k-1} \leq IE_i^* < \lambda_k \\
\lambda_0 &= 0, \lambda_4 = +\infty, \epsilon_i|x_i \sim N(0,1),
\end{aligned}
$$

where $x$ is a vector of observed individual variables, $IE_{it}^*$ is the latent income expectation, $\lambda_k$ - the thresholds increasing in $k$, and $\epsilon_i$ is a normally distributed error-term. This assumption makes the model a standard ordered Probit model. In line with much of the literature on limited dependent variables, we also run simple OLS models of income expectations of which the coefficients are more intuitive as they have a direct size interpretation.[6] The results, using both estimation methodologies, are largely consistent. This is a usual finding in the literature on limited dependent variables, notably for happiness (see Ferrer et al. 2004). For simplicity of interpretation, only OLS results are reported in Table 2 and discussed below, with the Ordered Probit model results reported in Appendix A1.

As regressors, we include a set of variables which are common to all samples, such as individual and household characteristics, a log per capita income, and a self-assessed relative income position in the city/village where the respondents reside. For the urban and rural samples, we then estimate

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[6]Implicitly, when running an OLS on income expectations, we assume that $IE_i = IE_i^*$ and that $E[\epsilon_i|x_i] = 0$.

additional specifications using variables only available for these very samples (Model 2). The additional specifications being, notably, retrospective annual income changes and self-assessed "good mood", where the inclusion of mood is meant to overcome the well-known dependence of satisfaction answers on transient emotions.[7]

## 4.2   Interpretations of results

Starting from the total sample (first column of Table 2), we find that log per capita income and its squared term are not statistically significant for income expectations, while individual self-assessed relative income position in the city/village has a large positive effect.[8] Individuals who regard themselves as being positioned at the top-end of the income distribution (within their home city/village) have higher income expectations than their counterparts who place themselves at the lower-end of the income distributions. This is noteworthy as it suggests a time of widening income distributions, with those already enjoying a positional advantage being better able to take the opportunities that come along. A change from the lowest to highest income position increases income expectation scores by 0.47 points.

Another interesting finding is that urban individuals, despite having much higher incomes (conditional on all the other variables), have much lower income growth expectations relative to their migrant and rural counterparts.

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[7]The question addressing mood differs slightly between the rural and urban questionnaires. In the former, the question was asked about individuals' mood on that day, while the question posed to the latter was framed in terms of "recently". Further, the question on "relative economic position" has a different scale for the urban/migrant sample and the rural sample. In the urban/migrant surveys, answers are on a four point scale (the lowest 25%, low middle 25%, high middle 25%, and top 25%), while in the rural survey the answer is a five point scale (lowest 20%, low middle 20%, middle 20%, high middle 20%, and top 20%). To construct a consistent measure we transformed the different scale into a consistent continuous variable which is bounded between zero and 1 and denotes the mid-points of the cumulative distribution of the answer categories.

[8]When log per capita income entered as a linear term into the income expectation equation, the effect is positive and statistically significant at the 10 per cent level.

At the same time, rural people seem to have the highest income expectations among the three groups. Such findings conform with intuition since individuals with the most ground to make up believe that they stand to gain most in the near future. Together with the finding on positional effects, overall it would seem that it is the poor who expect to gain the most. On the other hand, within each group, it is those already best-placed who expect to perform better.

The effects of household composition and individual characteristics on income expectations all seem reasonable: individuals from couple only households have lower income expectations than their counterparts from other types of households. Additional children and adults increase the income expectation scores by 0.02 and 0.05, respectively. Males seem to have higher income expectations than females. Age has a U-shape relationship with income expectations, while Households with higher level of average years of schooling have more optimistic expectations. Healthy individuals and those whose spouses are healthy have high expectations, whereas neither own party membership nor spouse party membership affect income expectations. Being unemployed, or having a spouse who is unemployed, lowers income expectations. A similar result holds for individuals who work longer hours, though the effect is minute. Overall, the findings suggest that individuals with the greatest amount of human capital and those with the ability to spread efforts (i.e. members of large households) possess the most optimistic expectations.

Turning to the estimated results of Model 1 for the three separate samples (columns 2, 4, and 5 of Table 1), we find large variations in the determinants of income expectations. Income has a large inverse U-shape relationship with respect to income expectations for the urban sample, while no statistically significant effects are found for either the migrant or rural sample. These relationships are presented in Figure 3. The figure illustrates for the urban sample that the expectation score for the lowest income is around 2.8, increasing to 3.2 when log income is increased (to 8.5), and then declines with

an increase in income. At the highest income level, the expectation score actually reduces to below the level for the lowest income group, perhaps indicating that at the very top-end individuals expect to have reached their peak. For migrants, the relationship is positive, almost linear, in line with the notion that migrants were, in 2002, only starting to take the opportunities available to them. There seems to be no effect of log income on income expectations for the rural sample.

The negative effect of weekly hours worked on income expectations is only found for the migrant sample, which seems plausible given the extreme number of hours that migrants work on aggregate (71 hours a week, vs. 44 for other urban residents).

The results for Model 2 are reported in columns 3 and 6 for the urban and rural samples, respectively, with very plausible coefficients for the added variables: income expectations increase with past income increases and current mood. Rural households with migrated members have significantly higher income expectations than households without migrants, reflecting the positive effect of migration on rural household income. The other remaining relations appear to be hardly effected by the additional variables.

# 5 The relationship between income expectations and happiness

Our next question is how income expectations are associated with individual subjective wellbeing.

## 5.1 Methodology

We model the happiness level $H_i$ of individual $i$ as the result of a transformation of a latent variable measured on a 4-point scale:

$$
\begin{aligned}
H_i^* &= x_i\gamma + \sum_j (IE_i = j)\delta_j + u_i \\
H_i &= k \Leftrightarrow \mu_{k-1} \leq H_i^* < \mu_k \\
\mu_0 &= 0, \mu_5 = +\infty, u_i|x_i \sim N(0,1),
\end{aligned}
$$

with $x$ a set of observed individual variables, $H_i^*$ denoting latent happiness, $\mu_k$ the thresholds increasing in $k$, $u_i$ a normally distributed error-term, and $(IE_i = j)$ a set of dummy variables with $j = 1, .., 4$.

We first estimate a standard microeconometric happiness equation. The specification for Model 1 is the same as the expectation function except that we include the income expectation variable as an explanatory variable in the happiness equation. In Model 2, we exclude the variable indicating the previous income change (changes between 1999-2001). We should mention, here, that the inclusion or exclusion of past income changes makes little difference to the effect of income expectations. The most important coefficients are reported in Table 3.[9]

## 5.2   Interpretations

We first investigate the relationship between income and happiness. As normally found in this literature, income brings happiness to individuals. The relationship, however, differs among different samples. For the urban population the relationship is positive and non-linear, whereas for the migrant and rural samples a linear positive relationship is observed.[10] The income gradient is much higher for the urban sample, while rural people seem to achieve the same level of happiness with much less income due to their higher baseline happiness level (see Figure 4). Among the three sample groups, at each

[9]The full results are available upon request from the authors, and the Ordered Probit model results are presented in Appendix C.

[10]When log per capita household income entered as a linear term it is statistically significant at the 1 per cent level for both rural and migrant samples.

particular income level (apart from log per capita income levels below 7), migrants have the lowest happiness level. Relative to income levels, the association between the relative income position and happiness is much stronger. The coefficients on the self-assessed relative income position indicate that a change from the lowest level of relative income position to the average level (where the relative income score equals 0.5) increases urban, migrant, and rural individual happiness scores by 0.41, 0.36, and 0.45 points (half of the observed coefficients), respectively. The equivalent increase in log income needed to achieve the same increase in happiness would be an increase of 1, 6, and 100 folds for the three samples, respectively. Hence, relative income dominates absolute income in terms of importance for happiness.

As discussed before, both rural and urban residents are significantly happier than the migrants. The difference being 0.36 and 0.12 scores, respectively. A salient aspect is that rural residents are the poorest group in the sample, and all of the migrants were once rural residents whose migration increased their absolute income dramatically. One of explanations for this paradox is that the migration process leads the migrants to start comparing themselves to a group richer than themselves, i.e. the urban residents. This idea is consistent with the fact that it would take a 0.33 increase in perceived relative position for the migrants to be as happy as the urban residents.[11] Of course, relative income is not the only reason for the unhappiness of the migrants. Other things, such as unfair treatment they receive in cities, the hard work they perform, and the fact that they are away from their families should also deplete happiness.

All the other variables seem to be consistent with the literature on the individual correlates of happiness (eg.Frey and Stutzer 2002). For example, age has a U-shape relationship with happiness, females on average are happier than males, and married people are happier than singles. Health brings

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[11]When comparing the answers of the migrant group with the urban group it is found that on the urban scale, migrants are about 0.2 lower than the other urban residents which is thus about 2/3 of the happiness difference between the migrants and the urban residents.

happiness to people, while unemployment reduces happiness. It is interesting to find that party members seem to be happier for the urban sample but not the other samples. Perhaps the benefits of party membership are higher in the cities. As expected, mood is positively associated with one's happiness and this effect is stronger for the rural sample than for the urban sample. Further, rural households with member(s) who have migrated are less happier than their counterparts, despite the fact that the same variable gives them higher income expectations (see Table 2). This suggests that migration is probably best viewed as an investment for both the migrating member and the remaining rural household.

The most important finding for this paper is that income expectations are positively associated with individual happiness. When treated as a linear variable, the coefficients range between 0.14 to 0.18. If we simply enter each response possibility as a separate dummy variable, we find that relative to individuals with pessimistic expectations, those who expect their future income to be unchanged report around 0.13 to 0.38 points higher happiness levels. If we compare individuals with pessimistic expectations to others carrying optimistic income expectations, the happiness difference increases by 0.38 to 0.64 points for the three samples. This is a 8 to 13 per cent increase in happiness levels, making expectations even more important than relative income. Unlike relative income, high expectations are not a zero-sum game.

As a confirmatory mind experiment, we can ask how important expectations are relative to log income. If we compare the coefficients and ask how much increase in log-income would be equivalent to a change in expectations from neutral to significant improvement, we find the answer is 0.6, 1.65, and 2.7 for the urban, migrant, and rural samples, respectively. This translates to an income increase of 85%, 420% and 1400% respectively. Even at the current economic growth rates experienced in China, this is not a realistic income increase for any individual to expect, even if spread out over a long period of time. Hence, the effect of expectations is far greater in terms of the

effect on life satisfaction than the possible effect of higher income could be. This suggests that the importance of expectations does not run via material consumption alone. Expectations matter beyond their material component. Note that, it does not mean that individuals expect their immaterial welfare to improve. It may simply be the feeling of material progress that gives respondents satisfaction over and beyond actual consumption. A good analogy of this feeling is the feeling one gets from the prospect of achieving one of life's main aims, such as having children. It is not only the actual achievement that gives satisfaction, but also the mere prospect that this is going to happen.

## 5.3   Micro-simulations

To further show the importance of income expectations in determining happiness, we perform micro-simulations. First, we use the estimated results (from Model 1) to predict for each indvidual the (predicted) probability of being at each happiness level. We compare the results to the actual average proportion of each sample sitting at each of the happiness levels. The motivation behind this is to show the general ability of the Ordered Probit models in predicting the sample proportions. Second, we antcipate individual happiness levels given pessimistic expectations. Finally, we repeat the second step, however this time under optimistic expectations. The results are reported in Table 4.

The results presented in Panel A are actual happiness distributions for the total sample and for the three separate samples. Panel B reports the three predicted happiness distributions from our estimated model. Comparing results from the two panels, it is clear that our model mimics the actual distributions closely, indicating a good fit for the Ordered Probit model.

In Panel C, we show the predicted happiness distributions assuming that everyone had pessimistic income expectations. For the total sample, we find that had individuals all expected falling income, their happiness level would

have decreased significantly. Comparing results in Panel C with those in Panel A, we observe that the proportion of individuals documented as being not happy at all would have increased two fold (from 1.5 per cent to 3.0 per cent). The proportion reported as being very happy would have fallen from 11.4 per cent to 5.4 per cent (a drop of 48% of the original level). Similar patterns are observed for all the three separate samples. The most dramatic changes are observed for the migrant sample: the proportion who would be very happy would have fallen to only 36 per cent of the actual proportion.

Panel D assigns every individual optimistic income expectations. Here we observe a significant increase in happiness. For the total sample, the extremely unhappy group would have declined to 37 per cent of the actual observed level. Conversely, the extremely happy group would have increased by 51 per cent. These effects are found to be most profound for the urban sample. Assuming everyone possessed optimistic income expectations would have reduced the extremely unhappy group to 19 per cent of the actual level and increased the extremely happy group by 136 per cent. This reflects mainly the fact that actual expectations of the urban group are the lowest given the three sub-samples. Hence, a switch to universal optimistic expectations would have the greatest effect on this group.

# 6 Alternative hypotheses

Having made our central argument, we now attempt to dislodge our findings by presenting alternative hypotheses.

## 6.1 Is the effect of expectations all about consumption and savings?

Within textbook economic theory, expectations themselves have no direct causal effect on utility. Consequently, expectations should have no direct

effect on life satisfaction, if life satisfaction is to be interpreted as an empirical proxy for utility. Rather, the effect of expectations on observed 'utility' runs via the effect of expectations on current choices that affect current consumption. Mainly, positive expectations about future wealth translate themselves into a reduced motivation for precautionary savings, thereby increasing present consumption. If this is true, then, by adding indicators of current consumption we would expect those with higher expectations to engage less in savings and for the life satisfaction effect to disappear.

Our data allows for such predictions from standard theory. In Table 5, we show, for each of the 3 samples, the savings rates for individuals with pessimistic, neutral, and optimistic expectations. The information revealed from Table 5 does not indicate any clear pattern. Nonetheless, the migrant sample is an exception. Migrants who expected income reductions saved much more than the rest of the group, clearly demonstrating precautionary saving behaviour. For the other two groups, there is no prima facie evidence of precautionary savings and, hence, no clear link between expectations and current consumption.

Additionally, we re-estimate both the income expectation and life satisfaction regressions whilst adding indicators of current savings and net assets to the original list of regressors. In the income expectations regression, the effect of saving is only significant for the migrant sample. This is consistent with Table 5. When these variables are added to the happiness equation, the effect of assets is positive for all the samples (as one would expect). The effect of savings on happiness is negative and significant for the migrant and rural samples, again complying with intuition: higher savings, conditional on income, imply lower current consumption.[12]

Table 6 compares the coefficient of income expectations on happiness from regressions with and without savings and net assets variables. As evident, their inclusion hardly changes the found effects of expectations, implying that

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[12]The full results of the models with saving and net assets variables are in Appendix D.

the effect of expectations on consumption is not responsible for the strong effect on happiness.

## 6.2   Is there reverse causality due to personality?

So far, we have implicitly taken the error terms of income expectations and happiness ($\epsilon_i$ and $u_i$) to be orthogonal. Yet, we know that reverse causality plays a large role in the coefficients of many regressors on life satisfaction (see Ferrer and Frijters 2004). Unmeasured personality traits, in particular, can affect both a regressor and life satisfaction, leading to a spurious correlation between the two variables. In the context of expectations, optimistic personality traits lead to both high expectations and high life satisfaction, without there being a causal relation between expectations and life satisfaction per se.

One reply to such criticism is that our list of current variables already includes an indicator of current mood which is highly significant and was solely included to trace personality traits. Nevertheless, given the low explanatory power of the model, it is hard to completely dismiss the possibility that the found effects of expectations are not due to reverse causality.

As a first check, on whether personality traits are the missing variables leading to a spurious correlation between life satisfaction and expectations, we can include all available personality factors (regressors) that arguably reflect personality traits. There are no true psychologically recognised personality factors in our dataset, however there are questions in the urban and rural surveys which may reveal individual personality traits. For example, whether people follow the news and feel they are trusted by their boss.[13] We

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[13]For the urban survey, we include two indices which are generated using factor analysis from a group of questions regarding how often people read newspapers, books, and magazines; whether they listen to the radio and whether they follow topics on the economy, policy and politics. In addition, we include the following questions on individuals' description of their own personality: 1. I do my best to keep myself fit; 2. I always feel happy when I am at home; 3. In the next 10 years my health will go down the hill; 4. Maybe my lifestyle is not good, but I could not be bothered to change it; 5. My boss really trust

include these variables in model 2. The results are reported in the last panel of Table 6. Including these personality traits increased adjusted $R^2$ for the urban sample from 0.26 to 0.28, and from 0.30 to 0.31 for the rural sample, even though most of these personality indicators are statistically significant in the happiness equations. The results in Table 6 show that the expectation variables remain highly significant and only drop by 9 to 13% for the urban sample and from 5 to 8% for the rural sample. Hence, to the degree that our sample is suited for this question, personality traits do not appear to be able to capture the strong effect of expectations on happiness.

## 6.3 Is there reverse causality due to other unobservables?

A final check on the issue of reverse causality is to identify random variation. For this, we need instruments that affect expectations but do not directly affect happiness. Whilst we do not have laboratory-type instruments in our data, a few candidates seem to be reasonable for the rural sample.

Our main candidate instruments derive from indicators of the financial prospects of the villages in which the rural respondents live. These are unlikely to be related to individual personality or even individual choices. To this end, the rural survey comprises a village module which was answered by heads of villages from where the sample was drawn. In that module, the village heads provide information on village characteristics, income changes, and financial situations. We select variables from the village module which may affect income expectations of the sample households but should have

me; 6. After a day's work, I feel exhausted; 7. I often work after hours; 8. Many people come to talk to me about news and current affairs; and 9. I am a very trendy person.

For the rural sample, we include one variable regarding how often the individual helps his/her neighbours and relatives; two indices about the level of importance of family/friends/nice life/health/leisure and work/religion/politics; a dummy regarding whether the local elections are important to the individual, and one about whether income is important to the individual.

no direct effect on their happiness. These are; per capita village level debt owed by others and the proportion of the sample households in each village of which some members migrated.

Per capita village level debt owed by others indicates the village financial management ability. Villages which are better at financial management should be able to recover most of their debt owed by others. This should affect a village member's income expectations, while having no direct current effect on their happiness since we control for current income. Similarly, migrant workers send and/or bring home remittances and generate higher incomes for the whole village. Thus, the proportion of the sample households with migrated members, controlling for whether the household itself has a member migrated, should impact a household's income expectations but should have no effect on subjective wellbeing.

An additional instrument derives from the possibility of habit formation in expectations. If individuals use the past to predict the future (a learning habit often hypothesised to hold in macro-economics), then these prior experiences will affect expectations. Whilst, the most recent income change experience, current consumption and wealth measures should prevent these previous experiences from having any direct effect on life satisfaction. We use household income changes between 1999 and 2001 (log per capita income in 2001 minus log per capita income in 1999) to capture past income changes.

### 6.3.1 Instrumental variable methodology

Instrumental variable estimation in a bivariate Ordered Probit model is not a standard option in existing software packages. We thus explicitly model the endogeneity between income expectations and happiness as arising through the correlation of the error terms:

$$H_i^* = x_i\gamma + \sum_j (IE_i = j)\delta_j + u_i$$

$$IE_i^* = x_i\beta + Z_i\eta + \epsilon_i$$

$$u_i, \epsilon_i | x_i, Z_i \sim N(0, \begin{bmatrix} 1 & \rho^2 \\ \rho^2 & 1 \end{bmatrix})$$

Although this model would be weakly identified from the normality assumption, the main source of identification of the effect $\delta_j$ comes from the existence of the instruments $Z_i$. The likelihood function for an individual observation is:

$$L(H_i = H, IE_j = J | \beta, \gamma, \delta, \eta, \rho, \lambda, \mu) =$$
$$\int_{\lambda_{J-1} - x_i\beta - Z_i}^{\lambda_J - x_i\beta - Z_i} [\Phi(\mu_H - x_i\gamma - \delta_J|\epsilon_i) - \Phi(\mu_{H-1} - x_i\gamma - \delta_J|\epsilon_i)] f(\epsilon_i) d\epsilon_i$$

This model was programmed into Gauss, with standard tests implemented for the internal consistency of the instruments. We present these results in Table 6. The model includes all the personality traits and saving and net asset variables.

### 6.3.2 Interpretations

The results in Table 7 show that past income increases have a significant positive impact on individual income expectations. Per capita village debt owed by others reduces income expectations. The intuition for this is simple: if a village mismanages their finances and has higher levels of outstanding debt owed by others, village members may have low income expectations over and above their own household income earning potentials. As expected, the proportion of sample households with migrated members also has a strong positive impact on income expectations. The significance of each of the three

instruments is high, a necessary requirement for instruments.

The IV estimate of high expectations versus the default (negative expectations) is 0.56. It is basically the same as the coefficient of the direct ordered Probit estimation (which is 0.57). An interesting aspect of our findings is that the estimated $\rho$ is very close to zero which suggest no significant endogeneity problems. Our preferred interpretation of this is that the omitted traits that would lead to a spurious positive relation (like unobserved consumption) cancel out the omitted traits that would lead to a spurious negative relation (such as work effort).

The test for the internal validity are shown at the bottom of Table 7. They are based on additional specifications in which the instruments were allowed to have non-zero coefficients in the happiness equation, interpreting the increase in the likelihood as a ratio-test of their instrument validity. It shows that we cannot reject the internal validity of the instruments with a 1% significant level though a 5% significant level means a rejection of the joint validity of the first two instruments. The important thing to report here, though, is that the coefficients on income expectations and $\rho$ are virtually identical (no more than 1% difference) across these auxilliary specifications. Hence, any choice of two of these 3 instruments as 'valid' begets the same result on the effect of expectations on happiness.

## 6.4   Do expectations matter for behaviour?

As a final critique to our main analyses we can pose the question whether expectations truly matter for any observed behaviour, let alone political stability. Perhaps self-reported expectations are just cheap-talk. In this line, the relation between expectations and happiness is one between unobserved subjective traits common to both and not indicative at all of any great significance of expectations.

When looking for observed behaviour, we face the unfortunate circumstance that hardly any social and political stability measure exists in China

that would allow us to test directly the effect of income expectations on stability. Nevertheless, we are able to find some provincial level data on urban annual labour disputes. In Figure 5, we plot our sample average income expectations at the provincial level (12 data points) for our urban sample against the log of the number of labour disputes in 2004. The number of observations is obviously too small to conduct any meaningful analyses. However, the graph does indicate that the higher the income expectations, the lower the number of labour dispute cases. Hence, in the one dimension of political stability, the correlation with expectations is as hypothesised.

# 7    Conclusions

In this paper, we examined the importance of optimistic income expectations for the happiness levels of the Chinese. We found that optimistic expectations were amongst the most important explanatory variables, roughly equal in size to the importance of perceived relative income. We found that the difference between optimistic expectations and pessimistic expectations was worth about 9 to 15% on a happiness scale. The effect is particularly strong and important for the rural-to-urban migrants, which is predicted to grow to around half the total population in the next 20 years. Given that the Chinese are roughly as happy as a middle-income country like Nigeria or Croatia, a shift towards negative expectations would bring them to the happiness levels of relatively poor and unstable countries, such as India or Bangladesh.[14] This means that continued optimistic expectations could indeed well be a large part of the explanation for the relative stability of China during the immense transition that this country is going through.

Our treatment of expectations on a proxy of utility is a deviation from the standard economic assumption, where expectations themselves are not

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[14]Here, we have taken the comparison levels of the mentioned other countries from the World Value Survey (Veenhoven, 2004).

considered consumption goods but rather matter indirectly via choices. We found the effect of expectations to be very large and robust to the inclusion of incomes and savings, which are the choices theoretically associated with income expectations. As Senik (2008) points out, the direct importance of expectations for utility opens up a whole new set of questions. In this paper, we have taken the line that expectations are important for keeping the unhappiness associated with large societal transitions to a minimum. The role of expectations and expectation manipulation, in normal times, is a field still wide open to economists, both experimentally and empirically.

# References

[1] AFX NEWS (2005), 'China's Hu says political stability helps maintain high economic growth ', October 15th, http://www.forbes.com/markets/feeds/afx/2005/10/15/afx2278991.html

[2] Anderson, Jonathan. "How to Think About China ." UBS, (2005).

[3] Baum, R. (1992), 'Political Stability in Post-Deng China: Problems and Prospects', Asian Survey, Vol. 32, No. 6, pp. 491-505

[4] Berns, G., Chappelow, J., Cecik, M., Zink, C., Pagnoni, G., Martin-Skurski, M. (2006), 'Neurobiological substrates of dread'. *Science* 312, pp. 954-58.

[5] Brunnermeier, M and Parker, J. (2004) "Optimal expectations." National Bureau of Economic Research Working Paper 10707, available at www.nber.org/papers/w10707.

[6] Cannon, W. B. (1914). "Recent Studies of Bodily Effects of Fear, Rage, and Pain." Journal of Philosophy, Psychology and Scientific Methods 11 (6): 162-165

[7] Clark, A., Frijters, P., Shields, M.A. (2008), 'A survey of the income happiness gradient', Journal of Economic Literature, 46(1), March 2008, pp. 95-144. also IZA, NCER, and DELTA discussion paper.

[8] Das, M. and van Soest, A. (1999). A panel data model for subjective information on household income growth. Journal of Economic Behavior and Organization, 40 (4), 409-426.

[9] *Diener, E., & Suh, E. M. (Eds.). (2000). Culture and subjective well-being.* Cambridge, MA: MIT Press.

[10] Easterlin, R.A. (2001). Income and happiness: Towards a unified theory. Economic Journal, vol. 111, pp. 465-484.

[11] Ferrer-i-Carbonel, A. and Frijters, P. (2004), "The effect of methodology on the determinants of happiness", Economic Journal 114, 641-659

[12] Frey, B.S. and Stutzer, A. (2002a). What can economists learn from happiness research? Journal of Economic Literature, vol. 40, pp. 402–435.

[13] Frijters, P., Shields, M.A., and J.P. Haisken-DeNew (2008), 'How rational were expectations in East Germany after the falling of the wall?', *forthcoming* Canadian Journal of Economics, IZA working paper.

[14] Giessmann, H.J. (2007), 'ChIndian and ESEAN: about national interests, regional legitimacies, and global challenges', FES Briefing Paper 7 , Berlin.

[15] Hagerty, M. (2003). Was life better in the "good old days"? Intertemporal judgements of life satisfaction. Journal of Happiness Studies, 4, 115-139.

[16] Hamermesh, D. S. (2004), 'Subjective Outcomes in Economics', NBER Working Paper No. W10361

[17] Harwood, Kate, Neil MacLean and Kevin Durkin (2007). "First-time mothers' expectations of parenthood: What happens when optimistic expectations are not matched by later experiences?" Developmental Psychology 43(1): 1-12.

[18] Holbig, Heike (2006) 'Ideological reform and political legitimacy in China: challenges in the post-Jiang era', German Institute of Global and Area Studies, no 18.

[19] Kahneman, Daniel and Amos Tversky (1979). "Prospect Theory: An Analysis of Decision under Risk." Econometrica 47 (2): 263-292.

[20] Knight, J., and Gunatilaka R. (2008), 'Aspirations, adaptation and subjective well-being of rural-urban migrants in China. *Discussion Paper* number 381, University of Oxford.'

[21] Mankiw, N. Gregory & Ricardo Reis & Justin Wolfers, (2003). "Disagreement about Inflation Expectations," NBER Working Papers 9796.

[22] Perry, Elizabeth and Selden, Mark. Chinese Society: Change, Conflict and Resistance. (London: Routledge, 2000).

[23] Rabin, M. (1998). Psychology and economics. Journal of Economic Literature, 36, pp. 11-46.

[24] Senik, C. (2004). When information dominates comparison: A panel data analysis using Russian subjective data. Journal of Public Economics, vol. 88, pp. 2099-2123.

[25] Senik, C. (2008). Is man doomed to progress? *Journal of Economic Behavior and Organization*, vol. 68, pp. 140-152.

[26] Song, Lina & Appleton, Simon, 2008. "Life Satisfaction in Urban China: Components and Determinants," IZA Discussion Papers 3443, Institute for the Study of Labor (IZA). [

[27] Souleles, N. (2004). Expectations, heterogeneous forecast errors, and consumption: Micro evidence from the Michigan Consumer Sentiment Surveys. Journal of Money, Credit, and Banking, 36, 39-72.

[28] Stutzer, A. (2004). The role of income aspirations in individual happiness. Journal of Economic Behavior and Organization, 54(1), 89-109.

[29] Lu, Xiaobo. "Corruption and Regime Legitimacy in China ." China's New Politics, edited by Francois Godement (Paris: La Documentation Francais, 2003).

[30] Veenhoven, R., Average happiness in 90 nations 1990-2000, World Database of Happiness, RankReport 2004/1c, Internet: worlddatabaseofhappiness.eur.nl

[31] Younis, M., Lin, X.X., Sharahili, Y., Selvarathinam, S. (2008), 'Political stability and economic growth in Asia', American Journal of Applied Sciences 5 (3), 203-208.

[32] Zeng, Shiping (2003), 'Leadership change, legitimacy, and party transition in China', Journal of Chinese Political Science, Volume 8, Numbers 1-2 / September, 2003, 47-63

# Table 1: Summary Statistics

| | Total sample | | Urban sample | | Migrant sample | | Rural sample | |
|---|---|---|---|---|---|---|---|---|
| Income expectations: | Freq | % | Freq | % | Freq | % | Freq | % |
| Reduction | 1,821 | 10.57 | 1,260 | 19.23 | 177 | 9.56 | 384 | 4.36 |
| No change | 4,235 | 24.59 | 2,109 | 32.18 | 531 | 28.67 | 1,595 | 18.09 |
| Slight improvement | 10,043 | 58.31 | 3,039 | 46.38 | 1013 | 54.70 | 5,991 | 67.95 |
| Significant improvement | 1,123 | 6.52 | 145 | 2.21 | 131 | 7.07 | 847 | 9.61 |
| Life satisfection (happiness) | | | | | | | | |
| Not satisfied (happy) at all | 262 | 1.53 | 144 | 2.21 | 32 | 1.73 | 86 | 0.98 |
| Not very satisfied (happy) | 1,534 | 8.97 | 663 | 10.19 | 178 | 9.63 | 693 | 7.93 |
| Fair | 5,415 | 31.67 | 2045 | 31.44 | 827 | 44.75 | 2,543 | 29.09 |
| Satisfied (happy) | 7,940 | 46.44 | 3,188 | 49.01 | 693 | 37.5 | 4,059 | 46.43 |
| Very satisfied (happy) | 1,945 | 11.38 | 465 | 7.15 | 118 | 6.39 | 1,362 | 15.58 |
| | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. |
| Per capita income in 2002 | | | 8508 | 5611 | 6896 | 6770 | 2772 | 2333 |
| Per capita expenditure in 2002 | | | 6284 | 4481 | 4746 | 3819 | 2208 | 2192 |
| Saving rate 2002 | | | 0.23 | 0.27 | 0.26 | 0.28 | 0.23 | 0.34 |
| Net total assets | | | 132401 | 166754 | 23625 | 87313 | 37330 | 41301 |
| Income change 2001-2002 | 0.10 | 0.43 | 0.16 | 0.35 | | | 0.05 | 0.48 |
| Income change 2000-2001 | 0.06 | 0.36 | 0.08 | 0.22 | | | 0.04 | 0.44 |
| Income change 1999-2000 | 0.09 | 0.30 | 0.08 | 0.22 | | | 0.10 | 0.35 |
| Income change 1998-1999 | 0.06 | 0.26 | 0.06 | 0.29 | | | 0.06 | 0.29 |
| Number of children living in the household | | | 0.57 | 0.56 | 0.66 | 0.73 | 1.16 | 0.98 |
| Living in couple only household | | | 0.19 | | 0.31 | | 0.07 | |
| Proportion married | | | 0.95 | | 0.91 | | 0.96 | |
| Proportion of male household head | | | 0.46 | | 0.62 | | 0.75 | |
| Age of the household head | | | 47.08 | 10.94 | 35.33 | 8.96 | 45.84 | 10.15 |
| Years of schooling of household head | | | 10.79 | 3.18 | 7.92 | 2.79 | 7.10 | 2.56 |
| Years of schooling of spouse | | | 10.23 | 3.49 | 7.47 | 2.75 | 6.01 | 2.88 |
| Proportion of household head is party member | | | 0.34 | | 0.03 | | 0.17 | |
| Proportion of spouse is party member | | | 0.27 | | 0.02 | | 0.05 | |
| Proportion of household head unemployed | | | 0.08 | | 0.01 | | 0.01 | |
| Proportion of spouse unemployed | | | 0.08 | | 0.02 | | 0.01 | |
| Proportion of household head healthy | | | 0.60 | | 0.90 | | 0.80 | |
| Proportion of spouse healthy | | | 0.56 | | 0.72 | | 0.75 | |
| No. of observations | | | 6569 | | 1858 | | 8831 | |

**Table 2:** Determinants of income expectations, OLS

| | Total sample | Urban sample | | Migrant sample | Rural sample | |
|---|---|---|---|---|---|---|
| | Model 1 | Model 1 | Model 2 | Model 1 | Model 1 | Model 2 |
| Log per capita income | -0.064 | 0.932 | 0.930 | -0.296 | -0.032 | -0.100 |
| | [0.085] | [0.329]*** | [0.328]*** | [0.296] | [0.121] | [0.122] |
| (Log per capita income)$^2$ | 0.005 | -0.054 | -0.054 | 0.020 | 0.003 | 0.006 |
| | [0.005] | [0.019]*** | [0.018]*** | [0.017] | [0.008] | [0.008] |
| Income change (2001-2002) | | | -0.013 | | | 0.040 |
| | | | [0.031] | | | [0.018]** |
| Income change (1999-2001) | | | 0.171 | | | 0.066 |
| | | | [0.034]*** | | | [0.017]*** |
| Income position in the city/village | 0.467 | 0.576 | 0.536 | 0.435 | 0.395 | 0.366 |
| | [0.022]*** | [0.042]*** | [0.043]*** | [0.072]*** | [0.027]*** | [0.028]*** |
| Good mood | | | 0.139 | | | 0.087 |
| | | | [0.021]*** | | | [0.015]*** |
| Dummy indicating hh with members migrated | | | | | | 0.079 |
| | | | | | | [0.017]*** |
| Couple only households | -0.039 | 0.045 | 0.051 | 0.042 | -0.294 | -0.284 |
| | [0.020]** | [0.036] | [0.036] | [0.055] | [0.032]*** | [0.032]*** |
| No. of children age 0-18 at home | 0.019 | -0.006 | -0.009 | -0.024 | 0.015 | 0.010 |
| | [0.008]** | [0.025] | [0.025] | [0.036] | [0.009]* | [0.009] |
| No. of adults age >18 | 0.053 | 0.054 | 0.056 | 0.020 | 0.032 | 0.027 |
| | [0.007]*** | [0.018]*** | [0.018]*** | [0.043] | [0.008]*** | [0.008]*** |
| Dummy for married | -0.111 | -0.123 | -0.124 | -0.211 | -0.015 | -0.009 |
| | [0.028]*** | [0.050]** | [0.049]** | [0.080]*** | [0.038] | [0.038] |
| Own age | -0.026 | -0.057 | -0.055 | -0.018 | 0.014 | 0.013 |
| | [0.004]*** | [0.007]*** | [0.007]*** | [0.013] | [0.005]*** | [0.005]** |
| (Own age)$^2$/10 | 0.002 | 0.005 | 0.005 | 0.001 | -0.002 | -0.002 |
| | [0.000]*** | [0.001]*** | [0.001]*** | [0.002] | [0.001]*** | [0.001]*** |
| HH mean schooling year aged>20 | 0.010 | 0.012 | 0.012 | 0.015 | 0.005 | 0.006 |
| | [0.002]*** | [0.004]*** | [0.004]*** | [0.007]** | [0.003] | [0.003]* |
| Own gender (male==1) | 0.064 | 0.090 | 0.086 | 0.039 | 0.006 | 0.008 |
| | [0.013]*** | [0.022]*** | [0.022]*** | [0.037] | [0.017] | [0.017] |
| Own unemployment | -0.093 | -0.044 | -0.039 | -0.041 | -0.090 | -0.083 |
| | [0.033]*** | [0.044] | [0.044] | [0.157] | [0.074] | [0.073] |
| Spouse being unemployed | -0.062 | -0.060 | -0.050 | 0.235 | -0.021 | -0.008 |
| | [0.029]** | [0.037] | [0.037] | [0.132]* | [0.068] | [0.067] |
| Own weekly working hours /10 | -0.006 | -0.005 | -0.006 | -0.026 | 0.001 | 0.002 |
| | [0.003]* | [0.010] | [0.010] | [0.009]*** | [0.004] | [0.004] |
| Dummy for own healthy | 0.093 | 0.077 | 0.058 | 0.222 | 0.077 | 0.072 |
| | [0.015]*** | [0.024]*** | [0.024]** | [0.064]*** | [0.020]*** | [0.019]*** |
| Dummy for spouse being healthy | 0.054 | 0.089 | 0.079 | 0.017 | 0.025 | 0.021 |
| | [0.015]*** | [0.025]*** | [0.025]*** | [0.057] | [0.019] | [0.019] |
| Dummy for own party membership | 0.012 | 0.007 | 0.006 | 0.075 | 0.024 | 0.024 |
| | [0.018] | [0.022]* | [0.022] | [0.094] | [0.019] | [0.019] |
| Dummy for spouse party member | 0.011 | 0.043 | 0.034 | 0.049 | -0.022 | -0.019 |
| | [0.014] | [0.024] | [0.024] | [0.144] | [0.034] | [0.034] |
| rural | 0.253 | | | | | |
| | [0.026]*** | | | | | |
| urban | -0.232 | | | | | |
| | [0.024]*** | | | | | |
| Region | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 17033 | 6489 | 6474 | 1841 | 8703 | 8579 |
| R-squared | 0.16 | 0.08 | 0.09 | 0.11 | 0.09 | 0.10 |

Standard errors in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

**Table 3:** Determinants of happiness (OLS)

| | Total sample | Urban sample | | Migrant sample | Rural sample | |
|---|---|---|---|---|---|---|
| | Model 1 | Model 1 | Model 2 | Model 1 | Model 1 | Model 2 |
| Expectation (=no change) | 0.263 | 0.296 | 0.278 | 0.378 | 0.146 | 0.131 |
| | [0.022]*** | [0.027]*** | [0.027]*** | [0.066]*** | [0.044]*** | [0.042]*** |
| Expectation (=slight improvement) | 0.368 | 0.388 | 0.358 | 0.383 | 0.303 | 0.263 |
| | [0.021]*** | [0.026]*** | [0.026]*** | [0.063]*** | [0.041]*** | [0.040]*** |
| Expectation (=sig. improvement) | 0.521 | 0.644 | 0.610 | 0.608 | 0.434 | 0.375 |
| | [0.030]*** | [0.067]*** | [0.066]*** | [0.090]*** | [0.049]*** | [0.047]*** |
| Log per capita income | 0.104 | 1.348 | 1.313 | 0.417 | 0.105 | 0.164 |
| | [0.092] | [0.320]*** | [0.319]*** | [0.308] | [0.147] | [0.145] |
| (Log per capita income)$^2$ | 0.002 | -0.064 | -0.060 | -0.016 | 0.000 | -0.003 |
| | [0.006] | [0.018]*** | [0.018]*** | [0.018] | [0.010] | [0.009] |
| Income change (2001-2002) | | | -0.163 | | | -0.067 |
| | | | [0.029]*** | | | [0.018]*** |
| Income position in the city/village | 0.884 | 0.836 | 0.751 | 0.726 | 0.913 | 0.751 |
| | [0.025]*** | [0.041]*** | [0.042]*** | [0.075]*** | [0.034]*** | [0.033]*** |
| Good mood | | | 0.260 | | | 0.469 |
| | | | [0.020]*** | | | [0.017]*** |
| Dummy indicating hh with members migrated | | | | | | -0.038 |
| | | | | | | [0.020]* |
| Couple only households | 0.004 | -0.023 | -0.025 | 0.021 | 0.079 | 0.034 |
| | [0.021] | [0.035] | [0.034] | [0.057] | [0.039]** | [0.038] |
| No. of children age 0-18 at home | 0.004 | 0.005 | 0.009 | 0.072 | -0.002 | 0.001 |
| | [0.009] | [0.024] | [0.024] | [0.037]* | [0.011] | [0.010] |
| No. of adults age >18 | -0.003 | 0.007 | 0.013 | 0.007 | 0.002 | 0.007 |
| | [0.008] | [0.018] | [0.017] | [0.044] | [0.010] | [0.010] |
| Dummy for married | 0.222 | 0.223 | 0.204 | 0.107 | 0.213 | 0.215 |
| | [0.030]*** | [0.048]*** | [0.048]*** | [0.083] | [0.047]*** | [0.045]*** |
| Own age | -0.017 | -0.029 | -0.026 | -0.006 | -0.015 | -0.012 |
| | [0.004]*** | [0.007]*** | [0.007]*** | [0.013] | [0.006]** | [0.006]* |
| (Own age)$^2$/10 | 0.002 | 0.003 | 0.003 | 0.001 | 0.002 | 0.002 |
| | [0.000]*** | [0.001]*** | [0.001]*** | [0.002] | [0.001]*** | [0.001]** |
| HH mean schooling year aged>20 | 0.000 | -0.003 | -0.005 | -0.007 | 0.001 | 0.000 |
| | [0.003] | [0.004] | [0.004] | [0.007] | [0.004] | [0.004] |
| Own gender (male==1) | -0.043 | -0.051 | -0.061 | 0.032 | -0.049 | -0.046 |
| | [0.014]*** | [0.021]** | [0.021]*** | [0.039] | [0.021]** | [0.020]** |
| Own unemployment | -0.116 | -0.121 | -0.121 | 0.139 | -0.132 | -0.057 |
| | [0.036]*** | [0.043]*** | [0.042]*** | [0.163] | [0.090] | [0.086] |
| Spouse being unemployed | -0.081 | -0.052 | -0.047 | -0.276 | -0.116 | -0.112 |
| | [0.032]** | [0.036] | [0.035] | [0.137]** | [0.082] | [0.079] |
| Own weekly working hours /10 | -0.007 | 0.008 | 0.010 | -0.003 | -0.012 | -0.012 |
| | [0.004]** | [0.010] | [0.010] | [0.009] | [0.005]** | [0.005]** |
| Dummy for own healthy | 0.150 | 0.133 | 0.098 | 0.025 | 0.171 | 0.141 |
| | [0.016]*** | [0.024]*** | [0.024]*** | [0.067] | [0.024]*** | [0.023]*** |
| Dummy for spouse being healthy | 0.114 | 0.102 | 0.080 | 0.147 | 0.125 | 0.096 |
| | [0.016]*** | [0.024]*** | [0.024]*** | [0.059]** | [0.023]*** | [0.022]*** |
| Dummy for own party membership | 0.048 | 0.071 | 0.037 | 0.101 | -0.031 | -0.032 |
| | [0.015]*** | [0.021]** | [0.023]*** | [0.149] | [0.041] | [0.022] |
| Dummy for spouse party member | 0.056 | 0.050 | 0.063 | -0.005 | 0.044 | 0.028 |
| | [0.020]*** | [0.023]*** | [0.021]* | [0.097] | [0.023]* | [0.040] |
| rural | 0.357 | | | | | |
| | [0.028]*** | | | | | |
| urban | 0.118 | | | | | |
| | [0.026]*** | | | | | |
| Regions | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 17033 | 6489 | 6474 | 1841 | 8703 | 8579 |
| R-squared | 0.23 | 0.23 | 0.26 | 0.16 | 0.24 | 0.30 |

Standard errors in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

**Table 4:** Actual and predicted happiness distribution with different income expectations

| Panel A: Actual | Total sample | Urban sample | Migrant sample | Rural sample |
|---|---|---|---|---|
| Not happy at all | 0.015 | 0.022 | 0.017 | 0.010 |
| Not happy | 0.090 | 0.102 | 0.097 | 0.079 |
| Fair | 0.317 | 0.314 | 0.446 | 0.291 |
| Happy | 0.465 | 0.491 | 0.376 | 0.464 |
| Very happy | 0.114 | 0.072 | 0.064 | 0.156 |
| Average score | 3.570 | 3.490 | 3.372 | 3.677 |
| **Panel B: Predicted** | | | | |
| Not happy at all | 0.014 | 0.021 | 0.017 | 0.009 |
| Not happy | 0.090 | 0.103 | 0.097 | 0.079 |
| Fair | 0.318 | 0.318 | 0.449 | 0.293 |
| Happy | 0.463 | 0.486 | 0.373 | 0.463 |
| Very happy | 0.115 | 0.073 | 0.065 | 0.156 |
| **Panel C: Predicted (assuming all expected income fall)** | | | | |
| Not happy at all | 0.030 | 0.038 | 0.044 | 0.020 |
| Not happy | 0.149 | 0.159 | 0.178 | 0.129 |
| Fair | 0.389 | 0.382 | 0.513 | 0.361 |
| Happy | 0.377 | 0.389 | 0.243 | 0.404 |
| Very happy | 0.054 | 0.032 | 0.022 | 0.088 |
| **Panel D: Predicted (assuming all expect income improve significantly)** | | | | |
| Not happy at all | 0.006 | 0.004 | 0.006 | 0.005 |
| Not happy | 0.052 | 0.037 | 0.052 | 0.052 |
| Fair | 0.257 | 0.204 | 0.372 | 0.245 |
| Happy | 0.513 | 0.586 | 0.457 | 0.489 |
| Very happy | 0.172 | 0.169 | 0.113 | 0.210 |
| No. of observations | 17033 | 6489 | 1814 | 8703 |

**Table 5:** Saving by income expectations

|  | Urban Sample | | Migrant Sample | | Rural Sample | |
|---|---|---|---|---|---|---|
|  | yuan | % | yuan | % | yuan | % |
| Reduced | 5982 | 18.13 | 5370 | 19.90 | 2651 | -5.19 |
| Not change | 5563 | 19.28 | 4161 | 8.96 | 2812 | 8.30 |
| Improved | 6836 | 23.79 | 5081 | 12.03 | 2850 | 10.73 |
| Significantly improved | 6153 | 17.44 | 7445 | 0.67 | 3918 | -4.11 |
| Total | 6249 | 21.12 | 5015 | 11.10 | 2938 | 8.16 |

**Table 6:** Comparison of estimated expectation effects with and without saving and assets variables

| | Total sample | Urban sample | | Migrant sample | Rural sample | |
|---|---|---|---|---|---|---|
| **Model without saving and assets** | Model 1 | Model 1 | Model 2 | Model 1 | Model 1 | Model 2 |
| Expectation (=no change) | 0.263 | 0.296 | 0.277 | 0.379 | 0.146 | 0.136 |
| | [0.022]*** | [0.027]*** | [0.027]*** | [0.066]*** | [0.044]*** | [0.042]*** |
| Expectation (=slight improvement) | 0.368 | 0.388 | 0.357 | 0.384 | 0.303 | 0.264 |
| | [0.021]*** | [0.026]*** | [0.026]*** | [0.063]*** | [0.041]*** | [0.040]*** |
| Expectation (=sig. improvement) | 0.521 | 0.644 | 0.615 | 0.604 | 0.434 | 0.376 |
| | [0.030]*** | [0.067]*** | [0.066]*** | [0.090]*** | [0.049]*** | [0.047]*** |
| **Model with saving and assets** | | | | | | |
| Expectation (=no change) | 0.263 | 0.297 | 0.278 | 0.372 | 0.149 | 0.138 |
| | [0.022]*** | [0.027]*** | [0.027]*** | [0.066]*** | [0.044]*** | [0.042]*** |
| Expectation (=slight improvement) | 0.369 | 0.39 | 0.359 | 0.377 | 0.309 | 0.271 |
| | [0.021]*** | [0.026]*** | [0.026]*** | [0.063]*** | [0.041]*** | [0.040]*** |
| Expectation (=sig. improvement) | 0.52 | 0.637 | 0.608 | 0.595 | 0.439 | 0.381 |
| | [0.030]*** | [0.067]*** | [0.066]*** | [0.090]*** | [0.049]*** | [0.047]*** |
| **Model with personality traits** | | | | | | |
| Expectation (=no change) | | | 0.243 | | | 0.129 |
| | | | [0.027]*** | | | [0.042]*** |
| Expectation (=slight improvement) | | | 0.311 | | | 0.248 |
| | | | [0.026]*** | | | [0.040]*** |
| Expectation (=sig. improvement) | | | 0.561 | | | 0.354 |
| | | | [0.065]*** | | | [0.047]*** |

## Table 7: IV estimates of happiness regression

| | ML Ordered Probit | |
|---|---|---|
| | Happiness IV | Expectations |
| Income expectations = no change | 0.205 | |
| | [0.086]*** | |
| Income expectations = slight improvement | 0.370 | |
| | [0.146]*** | |
| Income expectations = significant improvement | 0.556 | |
| | [0.234]*** | |
| Log per capita income | 0.290 | -0.304 |
| | [0.201] | [0.235] |
| (Log per capita income)$^2$ | -0.088 | 0.213 |
| | [0.136] | [0.155] |
| Income change (2001-2002) | -0.098 | 0.049 |
| | [0.029]*** | [0.033]* |
| Good mood | 0.665 | 0.153 |
| | [0.031]*** | [0.029]*** |
| Dummy indicating hh with members migrated | -0.044 | 0.092 |
| | [0.031] | [0.037]*** |
| Income change (1999-2001) | | 0.109 |
| | | [0.027]*** |
| Per capita village negative debt/10 | | -0.011 |
| | | [0.004]*** |
| Proportion of sample hh in the vill has migrants | | 0.256 |
| | | [0.074]*** |
| Chi-square test for over-identification of the first instrument | | 4.90 |
| | | [0.03] |
| Chi-square test for over-identification of the second instrument | | 4.70 |
| | | [0.04] |
| Chi-square test for over-identification of the third instrument | | 0.05 |
| | | [0.82] |
| rho | -0.025 | |
| Observations | 8417 | |
| Mean Log-lik | -1.95 | |

Standard errors in brackets, except that the figure in the braket below the Chi-square test is the p-value.
* significant at 10%; ** significant at 5%; *** significant at 1%
The Chi-square-test is based on the likelihood ratio of an additional estimation where the first instrument was allowed to have a non-zero effect on happiness.

**Figure 1:** Expectations and happiness
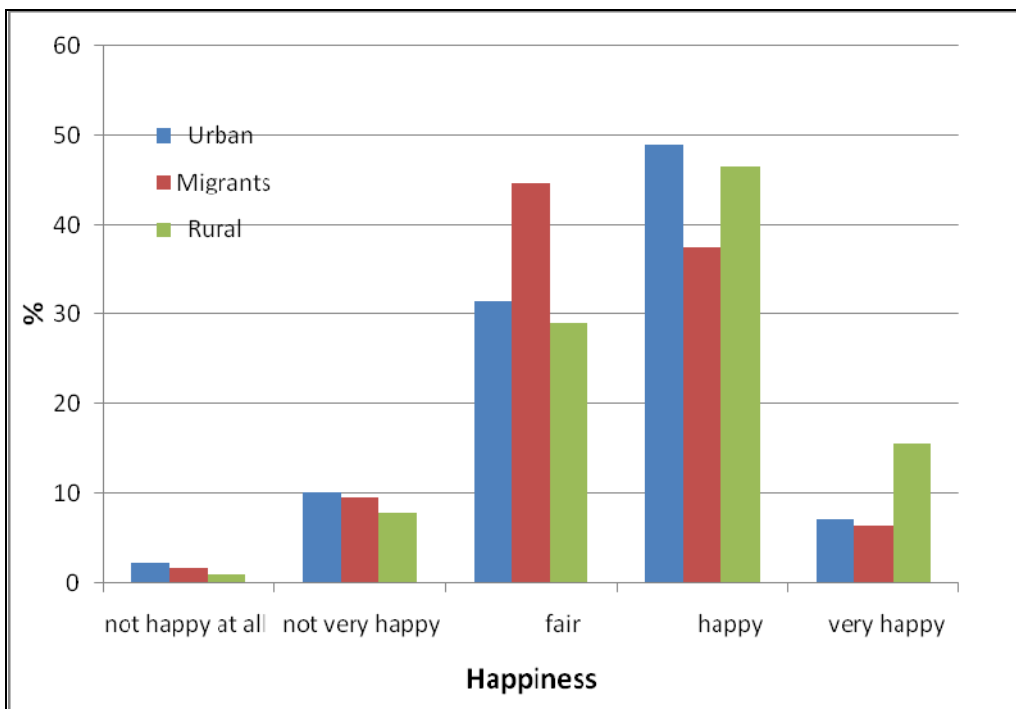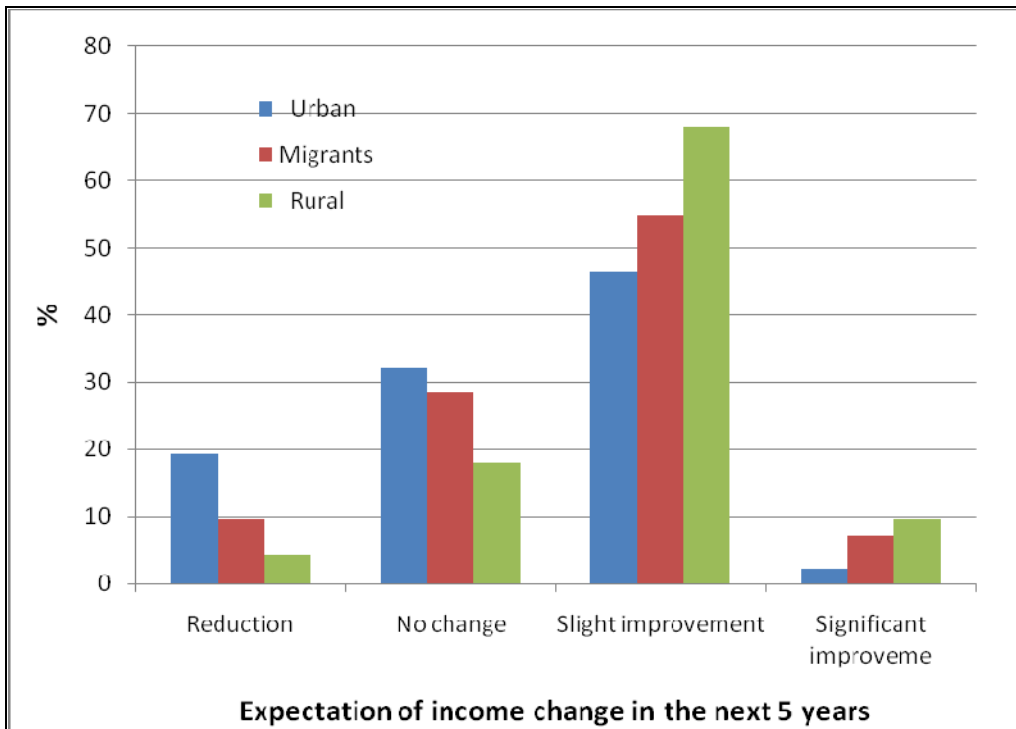
**Figure 2:** Income and expectation and happiness
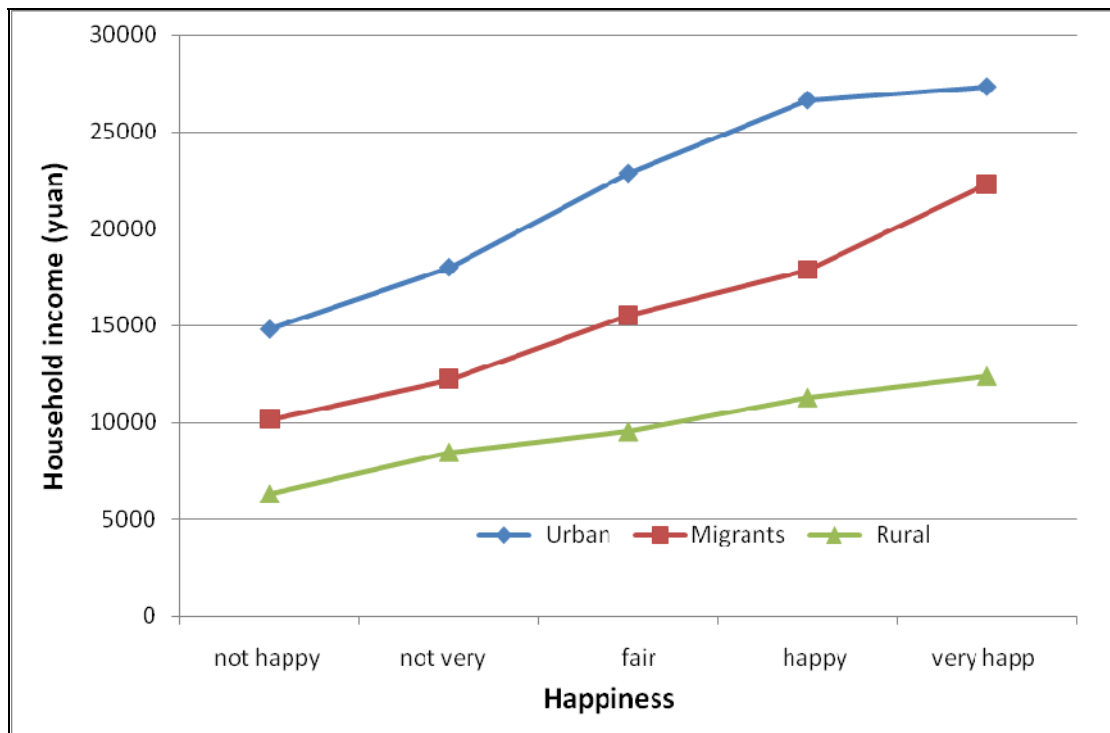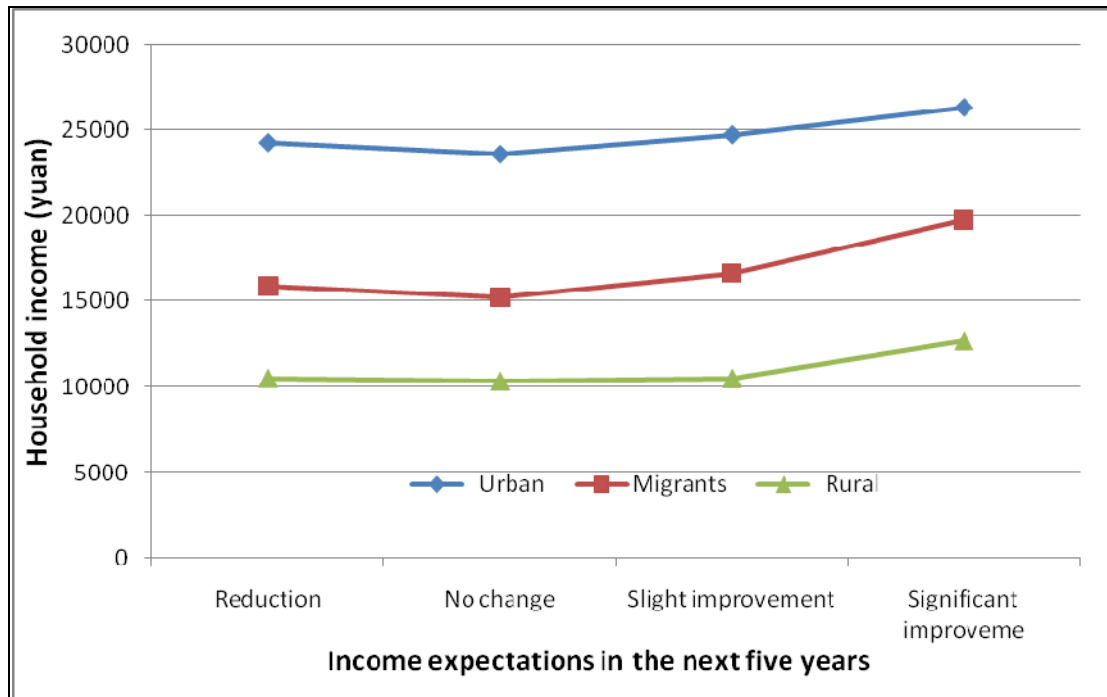
**Figure 3:** Predicted relationship between log per capita income and income expectations



Quadratic (Migrant and rural)       Linear (Migrant and rural)
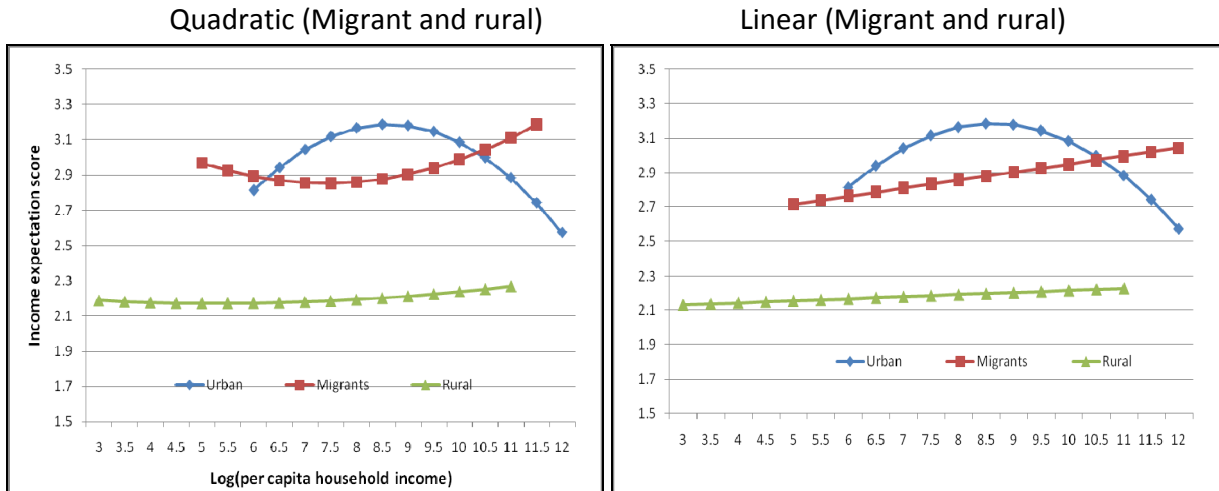
**Figure 4:** Predicted relationship between log per capita income and happiness

Quadratic income (Migrant and rural)      Linear (Migrant and rural)
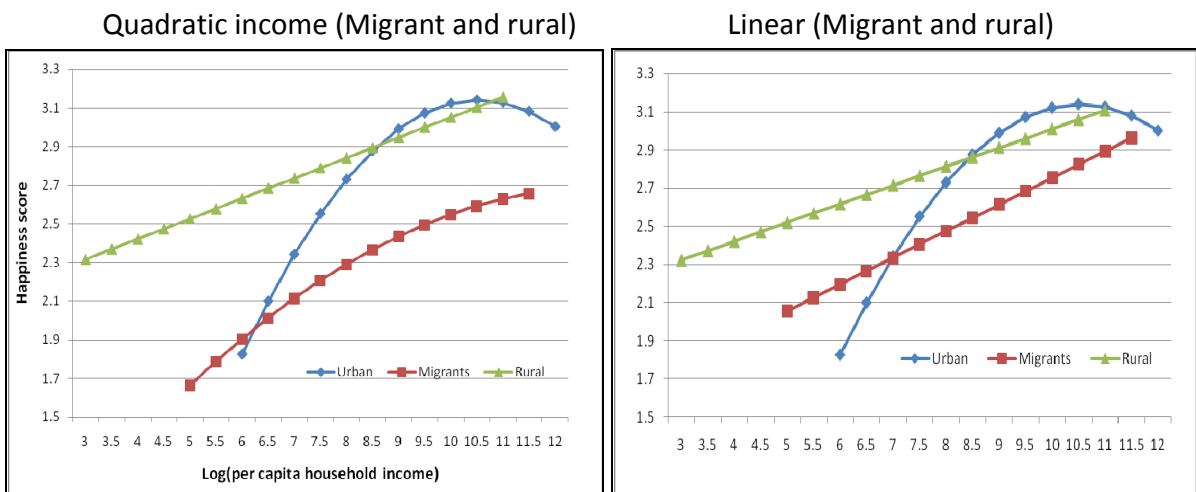
Figure 5: Relationship between average household income expectations and actual number of labour dispute cases



$Y=191.18-72.45*Expectation\ (t=1.12)$
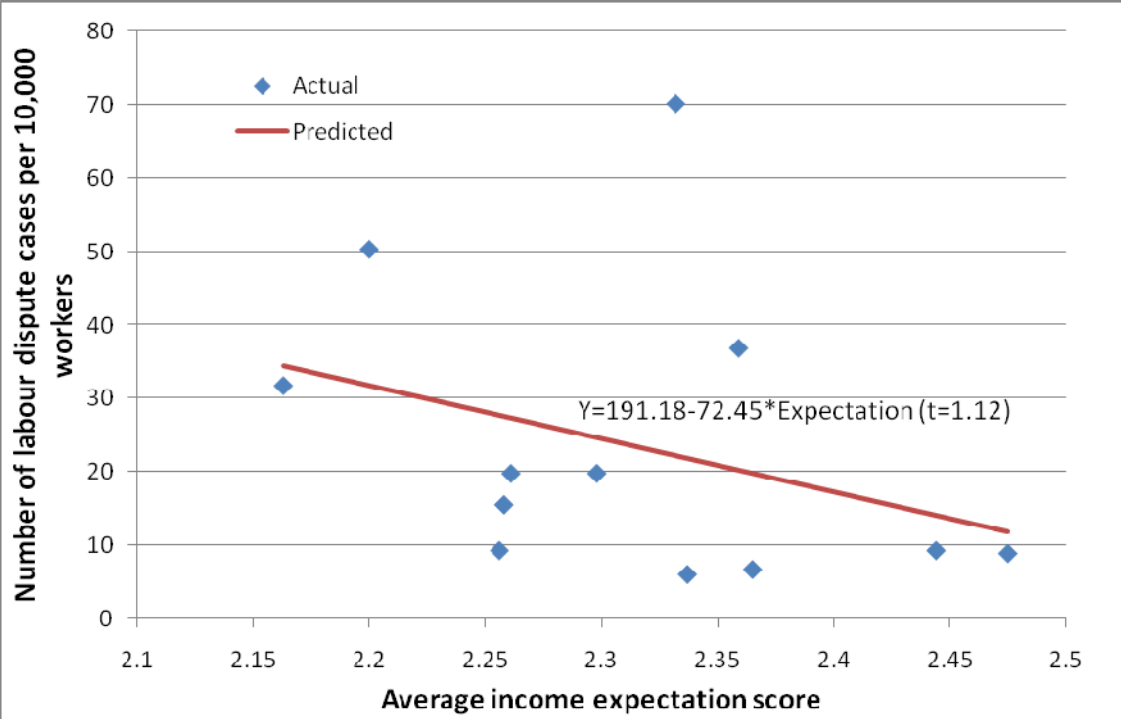
## Appendix A: Determinants of income expectations, Ordered Probit

| | Total sample | Urban sample | | Migrant sample | Rural sample | |
|---|---|---|---|---|---|---|
| | Model 1 | Model 1 | Model 2 | Model 1 | Model 1 | Model 2 |
| Log per capita income | -0.110 | 1.247 | 1.265 | -0.575 | -0.130 | -0.254 |
| | [0.139] | [0.475]*** | [0.477]*** | [0.452] | [0.224] | [0.228] |
| (Log per capita income)$^2$ | 0.009 | -0.072 | -0.074 | 0.039 | 0.010 | 0.016 |
| | [0.009] | [0.027]*** | [0.027]*** | [0.027] | [0.015] | [0.015] |
| Income change (2001-2002) | | | -0.023 | | | 0.069 |
| | | | [0.045] | | | [0.033]** |
| Income change (1999-2001) | | | 0.242 | | | 0.119 |
| | | | [0.050]*** | | | [0.032]*** |
| Income position in the city/village | 0.765 | 0.834 | 0.783 | 0.676 | 0.746 | 0.695 |
| | [0.037]*** | [0.061]*** | [0.063]*** | [0.111]*** | [0.052]*** | [0.053]*** |
| Good mood | | | 0.199 | | | 0.162 |
| | | | [0.030]*** | | | [0.027]*** |
| Dummy indicating hh with members migrated | | | | | | 0.151 |
| | | | | | | [0.031]*** |
| Couple only households | -0.065 | 0.069 | 0.076 | 0.064 | -0.489 | -0.475 |
| | [0.032]** | [0.052] | [0.052] | [0.084] | [0.059]*** | [0.059]*** |
| No. of children age 0-18 at home | 0.029 | -0.004 | -0.008 | -0.034 | 0.027 | 0.020 |
| | [0.014]** | [0.036] | [0.036] | [0.055] | [0.016]* | [0.016] |
| No. of adults age >18 | 0.090 | 0.084 | 0.086 | 0.035 | 0.061 | 0.051 |
| | [0.012]*** | [0.026]*** | [0.026]*** | [0.066] | [0.015]*** | [0.015]*** |
| Dummy for married | -0.173 | -0.175 | -0.180 | -0.326 | -0.016 | -0.006 |
| | [0.045]*** | [0.072]** | [0.072]** | [0.124]*** | [0.071] | [0.072] |
| Own age | -0.039 | -0.081 | -0.079 | -0.032 | 0.021 | 0.019 |
| | [0.006]*** | [0.010]*** | [0.010]*** | [0.019] | [0.010]** | [0.010]* |
| (Own age)$^2$/10 | 0.003 | 0.007 | 0.007 | 0.002 | -0.003 | -0.003 |
| | [0.001]*** | [0.001]*** | [0.001]*** | [0.002] | [0.001]*** | [0.001]*** |
| HH mean schooling year aged>20 | 0.015 | 0.017 | 0.018 | 0.023 | 0.008 | 0.010 |
| | [0.004]*** | [0.006]*** | [0.006]*** | [0.011]** | [0.006] | [0.006] |
| Own gender (male==1) | 0.100 | 0.131 | 0.127 | 0.068 | 0.008 | 0.012 |
| | [0.021]*** | [0.032]*** | [0.032]*** | [0.058] | [0.032] | [0.032] |
| Own unemployment | -0.138 | -0.064 | -0.056 | -0.100 | -0.159 | -0.150 |
| | [0.053]*** | [0.063] | [0.064] | [0.241] | [0.135] | [0.135] |
| Spouse being unemployed | -0.086 | -0.091 | -0.077 | 0.351 | -0.040 | -0.015 |
| | [0.047]* | [0.053]* | [0.053] | [0.205]* | [0.125] | [0.125] |
| Own weekly working hours /10 | -0.010 | -0.009 | -0.010 | -0.039 | 0.002 | 0.004 |
| | [0.006]* | [0.015] | [0.015] | [0.013]*** | [0.007] | [0.007] |
| Dummy for own healthy | 0.145 | 0.112 | 0.085 | 0.333 | 0.138 | 0.129 |
| | [0.024]*** | [0.035]*** | [0.036]** | [0.098]*** | [0.036]*** | [0.036]*** |
| Dummy for spouse being healthy | 0.078 | 0.126 | 0.112 | 0.010 | 0.046 | 0.038 |
| | [0.024]*** | [0.036]*** | [0.036]*** | [0.088] | [0.035] | [0.035] |
| Dummy for own party membership | 0.018 | 0.009 | 0.050 | 0.128 | -0.032 | 0.051 |
| | [0.023] | [0.032]* | [0.032] | [0.224] | [0.035] | [0.064] |
| Dummy for spouse party member | 0.017 | 0.062 | 0.007 | 0.082 | 0.050 | -0.027 |
| | [0.030] | [0.035] | [0.035] | [0.145] | [0.064] | [0.035] |
| rural | 0.407 | | | | | |
| | [0.041]*** | | | | | |
| urban | -0.362 | | | | | |
| | [0.039]*** | | | | | |
| Region | | | | | | |
| Observations | 17033 | 6489 | 6489 | 1841 | 8703 | 8703 |

Standard errors in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

## Appendix B: Determinants of happiness (Ordered Probit)

| | Total sample | Urban sample | | Migrant sample | Rural sample | |
|---|---|---|---|---|---|---|
| | Model 1 | Model 1 | Model 2 | Model 1 | Model 1 | Model 2 |
| Expectation (=no change) | 0.341 | 0.391 | 0.371 | 0.528 | 0.195 | 0.183 |
| | [0.031]*** | [0.040]*** | [0.040]*** | [0.096]*** | [0.063]*** | [0.063]*** |
| Expectation (=slight improvement) | 0.492 | 0.533 | 0.497 | 0.533 | 0.417 | 0.380 |
| | [0.030]*** | [0.039]*** | [0.039]*** | [0.092]*** | [0.059]*** | [0.060]*** |
| Expectation (=sig. improvement) | 0.744 | 1.001 | 0.967 | 0.876 | 0.624 | 0.565 |
| | [0.044]*** | [0.101]*** | [0.102]*** | [0.131]*** | [0.070]*** | [0.071]*** |
| Log per capita income | 0.137 | 1.499 | 1.492 | 0.585 | 0.053 | 0.135 |
| | [0.133] | [0.472]*** | [0.479]*** | [0.448] | [0.214] | [0.221] |
| (Log per capita income)$^2$ | 0.003 | -0.068 | -0.065 | -0.022 | 0.006 | 0.003 |
| | [0.008] | [0.027]** | [0.027]** | [0.026] | [0.014] | [0.014] |
| Income change (2001-2002) | | | -0.230 | | | -0.100 |
| | | | [0.043]*** | | | [0.028]*** |
| Income position in the city/village | 1.254 | 1.234 | 1.131 | 1.059 | 1.286 | 1.102 |
| | [0.036]*** | [0.062]*** | [0.064]*** | [0.111]*** | [0.050]*** | [0.051]*** |
| Good mood | | | 0.411 | | | 0.698 |
| | | | [0.031]*** | | | [0.027]*** |
| Dummy indicating hh with members migrated | | | | | | -0.058 |
| | | | | | | [0.030]** |
| Couple only households | 0.006 | -0.022 | -0.026 | 0.031 | 0.108 | 0.045 |
| | [0.031] | [0.051] | [0.052] | [0.083] | [0.056]* | [0.057] |
| No. of children age 0-18 at home | 0.007 | 0.014 | 0.018 | 0.106 | -0.001 | 0.004 |
| | [0.013] | [0.036] | [0.036] | [0.054]** | [0.015] | [0.016] |
| No. of adults age >18 | -0.007 | 0.010 | 0.020 | 0.009 | 0.002 | 0.009 |
| | [0.011] | [0.026] | [0.026] | [0.064] | [0.014] | [0.014] |
| Dummy for married | 0.293 | 0.297 | 0.274 | 0.160 | 0.270 | 0.287 |
| | [0.044]*** | [0.071]*** | [0.071]*** | [0.121] | [0.067]*** | [0.068]*** |
| Own age | -0.024 | -0.043 | -0.039 | -0.010 | -0.021 | -0.017 |
| | [0.006]*** | [0.010]*** | [0.010]*** | [0.019] | [0.009]** | [0.009]* |
| (Own age)$^2$/10 | 0.003 | 0.005 | 0.004 | 0.002 | 0.003 | 0.003 |
| | [0.001]*** | [0.001]*** | [0.001]*** | [0.002] | [0.001]*** | [0.001]** |
| HH mean schooling year aged>20 | -0.001 | -0.005 | -0.007 | -0.011 | 0.002 | 0.000 |
| | [0.004] | [0.006] | [0.006] | [0.010] | [0.006] | [0.006] |
| Own gender (male==1) | -0.064 | -0.075 | -0.092 | 0.047 | -0.075 | -0.076 |
| | [0.020]*** | [0.031]** | [0.032]*** | [0.056] | [0.030]** | [0.030]** |
| Own unemployment | -0.148 | -0.155 | -0.157 | 0.211 | -0.205 | -0.103 |
| | [0.051]*** | [0.062]** | [0.063]** | [0.236] | [0.129] | [0.130] |
| Spouse being unemployed | -0.105 | -0.065 | -0.060 | -0.406 | -0.179 | -0.182 |
| | [0.045]** | [0.052] | [0.052] | [0.199]** | [0.118] | [0.119] |
| Own weekly working hours /10 | -0.010 | 0.013 | 0.015 | -0.006 | -0.017 | -0.017 |
| | [0.005]* | [0.014] | [0.015] | [0.013] | [0.007]** | [0.007]** |
| Dummy for own healthy | 0.213 | 0.197 | 0.146 | 0.036 | 0.239 | 0.206 |
| | [0.023]*** | [0.035]*** | [0.035]*** | [0.097] | [0.034]*** | [0.035]*** |
| Dummy for spouse being healthy | 0.165 | 0.154 | 0.122 | 0.219 | 0.180 | 0.147 |
| | [0.023]*** | [0.036]*** | [0.036]*** | [0.086]** | [0.033]*** | [0.034]*** |
| Dummy for own party membership | 0.072 | 0.075 | 0.057 | -0.015 | 0.070 | -0.046 |
| | [0.022]*** | [0.031]** | [0.035]*** | [0.141] | [0.060] | [0.034] |
| Dummy for spouse party member | 0.080 | 0.112 | 0.102 | 0.159 | -0.043 | 0.049 |
| | [0.029]*** | [0.035]*** | [0.032]* | [0.219] | [0.033]** | [0.061] |
| rural | 0.525 | | | | | |
| | [0.040]*** | | | | | |
| urban | 0.173 | | | | | |
| | [0.038]*** | | | | | |
| Regions | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 17033 | 6489 | 6474 | 1841 | 8703 | 8579 |

Standard errors in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%