

# 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 or so, China has experienced significant economic and social changes. The degree, sheer size, and the speed of these changes are unprecedented in human history. Although its economic changes are closely followed around the world, its social changes are less visible. These changes have undoubtedly impacted on individuals' day-to-day life and how they feel and perceive the world around and ahead of them, which, in turn, may have a significant impact on the social and political stability of China.

Many authors have commented on the relationship between economic expectations and social and political stability in China during period of significant changes.<sup>1</sup> In 1992, 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) directly alleges that the legitimacy of the ruling party derives almost entirely from positive expectations and that it is only these expectations that keep a lid on emerging social problems like inequality and the uncertainty that followed the various employment and social welfare reforms. A strong indication that this is also how things are perceived within China comes from the self-identification of the regime with economic growth: China's leader have actively promoted the idea that the political status quo protects economic growth. For instance, the current Chinese President Hu Jintao explicitly said in a 2005 meeting with central bankers that political stability had been a key factor in ensuring high economic growth in China (AFX News 2005).<sup>2</sup>

This paper intends to quantify the role of optimistic economic expectations in keeping the Chinese happy, which, in turn, is strongly associated

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

<sup>2</sup>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 cant ascertain the main direction of causality.

with social stability<sup>3</sup>, amidst all the social and economic changes. The main research questions are: who has optimistic economic expectations? To what extent do these optimistic economic expectations make the Chinese happy? And how much would life satisfaction drop if expectations were to go from good to bad?

We try to answer these questions using a large-scale household survey conducted for the year 2002, which has information on both future income expectations and happiness, as well as 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 to ascertain whether expectations matter for observed aggregate behaviour.

The next section reviews the institutional background and relevant literature. Section 3 describes the data. Section 4 analyses expectations and their determinants. Section 5 goes a step further to investigate how expectations relate to happiness. Section 6 checks the robustness of our results to a variety of possible critiques. Conclusions are provided in Section 7.

## 2 Background and literature

### 2.1 The Chinese situation

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

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<sup>3</sup>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.

inequality. According to the China Statistical Yearbook, the 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 (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 is 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 led to the removal of subsidized housing and now urban households must purchase or rent housing from the market. Health care changed from fully state-covered medical service to around one-third coverage rate for state employees and no 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 primary, secondary, as well as tertiary education level. 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 who were born in the countryside were not permitted to move. There was a complete segregation of rural and urban economies. Rural-urban migration did not occur until the mid 1980s and even then it was a very restricted movement. Since the early 1990s, however, large scale migration has accelerated. There are currently 120-130 million migrants working in Chinese cities and it is

estimated that in the course of the next couple of decades another 150 million of the rural labour force will probably migrate to urban areas. Compared to most developed countries where similar population movements occurred over a hundred years, China is experiencing the phenomenon on a much larger scale and within a much shorter period of time. Although current rural-urban migration is less restrictive than before, migrants in cities are subject to a “Guest Worker” regime, in that they only have access to jobs which city dwellers are unwilling to take and have no right to access urban social benefits. The unprecedented scale and pace of the migration movements and its discriminatory nature have changed the life course for millions of Chinese farmers.

Against this background, our study attempts to ascertain the degree to which optimistic economic expectations are keeping individuals happy and thereby bring stability to Chinese society in this time of transition.

## 2.2 The theoretical background

Income expectations can affect current utility in two distinct ways. Expectations can firstly affect utility indirectly via choices. It can secondly affect utility 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  $t$ . The choices are made such as to maximise the expected discounted stream of utility where, under the Von Neumann-Morgenstern assumptions, individual expectations are presumed to be rational and thus equal to the mathematical expectation. Note that expectations themselves have no place in the utility function.

In this standard 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 costs of investments, for instance, when they arise due to circumstances completely beyond individual control (say, the weather or an inheritance). In this situation a rational individual would reduce their precautionary savings today and thus increase their consumption today, giving rise to a positive correlation between income expectations and current utility. A negative correlation can arise in the exact opposite scenario, i.e. when future high expectations are the result of current costs of investments. Say, for instance, in a 2-period model that individuals differ with respect to their time discounting but not their basic utility function  $U(X_{it})$ . Individuals who care more about the future will save more today in order to have higher consumption tomorrow from increased incomes. In that case, the higher income expectations today are due to higher sacrifices made today for the sake of the higher income in the future, implying that utility today is lower for those with higher income expectations.

This standard perspective will be important in China and important in our empirical strategy. After presenting our main argument for how important expectations are to China, we will explicitly examine whether savings and consumption can explain the found positive correlation, and we will also investigate whether we can find evidence of a spurious negative relation between expectations and utility via unobserved variables such as discount rates.

An alternative possibility is that expectations are consumption goods in themselves. Support for this hypothesis derives from the literature on psychology and neuroscience which has found that there are distinct neural pathways via 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, which would mean we should start thinking of  $U(\cdot)$  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 whilst that in micro-economics is small. 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 own future income growth, the focus of our paper is on the importance of these expectations for other outcomes rather than whether these expectations in themselves are rational. In a political sense, it does not really matter whether these expectations are perfectly rational or not. What matters is how they contribute to overall stability through their effect on overall happiness.

The effect of expectations on individuals’ happiness has been virtually absent from the empirical happiness literature until now, even though some theories do hypothesise that income expectations should matter greatly for

happiness (eg. the tunnel effect hypothesis by Senik 2004; or the theory of erroneous income expectations by Easterlin 2001). The only paper we know of that looks at the effect of expectations on happiness is the recent work by Senik (2008) who uses the Russian Longitudinal Monitoring Survey 1994-2004, showing a strong effect of expectations on life satisfaction in Russia. Senik (2008) 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 satisfaction.

One of the main reasons that the economic literature on happiness has so far not investigated the role of expectations is that in traditional economic theory expectations have no direct effect. Yet, the psychological literature has for a long time argued that expectations themselves are consumption goods and that they have observable physical effects on our well-being. For instance, negative expectations lead to fear (Cannon 1914). Fear is physically observable and unpleasant, making it a negative consumption good whether the event that is feared occurs or not. The idea that expectations themselves have a consumption value is fairly new in economics, with only few exceptions such as Brunnermeier and Parker (2004) who addressed the issue of optimal savings when expectations of future consumption themselves have consumption value.



### 3 Data

The data used are from the 2002 China Income Project Survey (CHIPs). The survey was conducted by the Institute of Economics at 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 and migrant surveys were conducted in 12 provinces. Questionnaires for the three sub-samples are largely consistent, though there are slight discrepancies. The total rural sample comprises of 9200 households and 37969 individuals, the urban sample includes 6835 households with 20548 individuals, and the migrant sample covers 2000 households with 5318 individuals.<sup>4</sup> Most of the questions were asked to all individuals who were living in the household, but the subjective questions were only inquired to one person in each household, who are often household heads or spouses. Thus, our final sample includes only individuals of whom the income expectation questions were asked.

The survey asks one individual in each household 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.

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<sup>4</sup>The sample of migrant workers were drawn from those who live in urban residential communities. As many migrants live on construction sites and in factory dormitories who do not register with urban communities, the sample may not be representative of the migrant population. Based on information revealed from a newly conducted census of migrants the main bias of this sample is that it over represents family migration while under represents single migrants (see Gong, Kong, Li, and Meng, 2008).

In addition, individuals are asked to rate their general happiness on a scale ranging from 1 (not happy at all) to 5 (very happy). Table 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 believe that their income will reduce or be unchanged in the next five years, respectively; while the remaining 74.8 per cent thinks 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 people believes that their income will increase in the next 12 months, while during a boom this figure increases to 33 per cent.

With regard to life satisfaction, slightly more than 10 per cent of our 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 are either satisfied or very satisfied. If we compare this to the US, for instance, then around 73% said in Gallup polls they were satisfied or very satisfied with their lives, with this number being 84% in 2007.<sup>5</sup> Yet, the number of Americans who are dissatisfied is in the 10-15% of the whole of the 1980-2007 period. The numbers for other OECD countries fall in a similar range (see Clark et al. 2008) which means that the Chinese are less happy than the average OECD respondent but that there is simultaneously not a relatively large group who is dissatisfied. Rather, there are fewer satisfied Chinese and more in the neutral range.

Figures 1 and 2 present these distributions and their relationship with income levels, respectively, for the three sub-samples separately. Figure 1 indicates that urban residents on average have the worst income expectations, with migrants second, and rural residents with the highest income expectations. With regard to happiness, though, the pattern is not clear. On

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<sup>5</sup><http://www.gallup.com/poll/103483/Most-Americans-Very-Satisfied-Their-Personal-Lives.aspx>

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 present 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 than the least happy urban Chinese. This seems to suggest that income itself does not matter too much, and that it is perchance mainly the relative income position which matters in terms of whether people will be happy or not. This finding is consistent with the literature (Clark et al. 2008).

Table 1 also gives summary statistics of all 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 point 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, though this was not asked of 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 house-

hold 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 individuals' income expectations. The literature on individual level income expectations is quite small (Das and Van Soest 1999; and Ramos, 2006). The focus in that literature has been the question of whether individual level expectations conform to the rational expectations hypothesis, typically finding that individuals make predictable but smallish mistakes. This contrasts to the finding of a large psychological literature which has argued for a long time that observed expectations differ systematically from outcomes (for a survey, see Rabin 1998).

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:

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

with  $x$  a set of observed individual variables,  $IE_{it}^*$  denoting latent income expectation,  $\lambda_k$  the thresholds increasing in  $k$ , and  $\epsilon_i$  a normally distributed error-term. This 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 easier to interpret.<sup>6</sup> The results using both estimation methodologies are largely consistent, which is a common finding in the literature on limited dependent

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

variables, notably for happiness (see Ferrer et al. 2004). For simplicity of interpretation, only OLS results are reported in Table 2 and discussed below, while the Ordered Probit model results are reported in Appendix A.

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 the respondent reside. For the urban and rural samples, we then estimate additional specifications using variables only available for rural and urban samples (Model 2), 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.<sup>7</sup>

Starting from the total sample (the 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.<sup>8</sup> People who regard themselves as being positioned at the high end of the income distribution within the city/village they reside in have higher income expectations than their counterparts who place themselves at the lower end of the income distributions. This is noteworthy because it suggests that this is a time of widening income distributions with those already with a positional advantage better able to take the opportunities that come along. A change from the lowest to highest

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<sup>7</sup>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.

<sup>8</sup>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.

income position increases income expectation scores by 0.47 points.

Another interesting finding is that urban people, despite having much higher incomes and conditional on all the other variables, have much lower income growth expectations than their migrant and rural counterparts, while rural people seem to have the highest income expectations among the three groups. This is what one would expect in the sense that it suggests that those with the most to catch up believe they stand to gain most in the near future. Together with the finding on positional effects, it would seem that, as a whole group, it is the poor who expect to gain the most but that within each group it is those already best-placed that expect to do 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 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 higher expectations. Healthy individuals and those whose spouses are healthy have high expectations, whereas neither own party membership nor spouse party membership affect income expectations. Unemployed or spouses being unemployed have lower income expectations, and so as those who work longer hours, though the effect is very small. In all, these findings suggest that those with the greatest amount of human capital and those who are better able to spread their efforts (i.e. those in larger households) have the highest 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 which shows that for the urban sample, the expectation score for the lowest income is around 2.8, increasing to 3.2 when log income increased to 8.5 and then reduces 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 expectation for the rural sample.

Second, the negative effect of weekly hours worked on income expectations is only found for the migrant sample, which seems plausible given the “Guest Worker” system migrant workers are subject to. As guest workers, the objective for migrants is to earn as much as they can while in the cities. If their hourly income is too low, they are prepared to work extremely long hours. Indeed, the average number of hours worked per week for our migrant sample is 71 versus 44 and 35 for the urban and rural samples, respectively.

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, indicating the positive effect of migration on rural household income. The other relations appear hardly effected by these additional variables.

## 5 The relationship between income expectations and happiness

Our next question is how these income expectations are associated with individuals' subjective wellbeing.

We model the happiness level  $H_i$  of individual  $i$  as the result of a transformation of a latent variable measured on a 5-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  $j = 1, \dots, 5$ .

We first estimate a standard microeconomic happiness equation. The specification for Model 1 is the same as the expectation function except that we include the income expectation variable as one of the explanatory variables in the happiness equation. In Model 2 we exclude the variable indicating the previous income change (changes between 1999-2001). We may 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.<sup>9</sup>

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<sup>9</sup>The full results are available upon request from the authors, and the Ordered Probit model results are presented in Appendix B.



## 5.1 Interpretations of the results

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 sample a linear positive relationship is observed.<sup>10</sup> The income gradient is much higher for the urban sample than for the other two samples, while rural people achieve the same level of happiness with much less income due to their higher baseline level of happiness (see Figure 4). Among the three group, at each 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 of income (where the relative income score equals 0.5) increases urban, migrant, and rural individuals' 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 dwarfs absolute income in terms of importance for happiness.

As discussed before, both rural and urban residents are significantly happier than the migrants. The difference is 0.36 and 0.12 score between migrants and rural and urban residents, respectively. What is a salient aspect is that rural residents are the poorest group in the sample and that all the migrants used to be rural residents whose migration increased their absolute income dramatically. Our preferred explanation for this paradox is that the migration process leads the migrants to start to compare themselves to a group richer than themselves, i.e. the urban residents. This idea is consis-

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<sup>10</sup>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.

tent 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<sup>11</sup>. 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 generate unhappiness.

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 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 people's happiness and the effect is stronger for the rural sample than for the urban sample. Further, rural households with member(s) migrated are less happier than their counterparts without member(s) migrated, despite the fact that the same variable gives them higher income expectations (see Table 2). This means migration is probably best viewed as an investment for both the migrants and the remaining rural household.

The most important finding for this paper is that income expectations are positively associated with individuals' happiness. When it is treated as a linear variable, the coefficients ranges between 0.14 to 0.18. When we simply enter each response possibility as a separate dummy variable, we find that relative to those who believe that their future income will fall, those who expect their future income to be unchanged have around 0.13 to 0.38 point higher happiness level. If we compare those who believe their income will fall

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<sup>11</sup>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.

with those who believe that their income level will be significantly improved, the happiness difference increases by 0.38 to 0.64 point for the three samples. This is a 8 to 13 per cent increase in happiness level and makes 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 growth rates experienced in China, it is clear that this is not a realistic income increase for any individual to expect, even if it were spread out over a long time. Hence the effect of expectations is far bigger in terms of effect on life satisfaction than the possible effect of greater income could be, indicating that the importance of expectations does not run via material consumption alone. Expectations matter beyond their material component. Note that this 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, like having children. It is not just the actual reaching of the aim that gives satisfaction, but also the mere prospect that this is going to happen.

## 5.2 Micro-simulations

To show further how important income expectations are in determining happiness, we do micro-simulations. First, we use the estimated results (from model 1) to predict for everybody their predicted probability of being at each

happiness level. We compare these results with the actual average proportion of each sample being in each of the happiness level to show the general ability of the Ordered Probit models to predict the sample proportions. Second, we predict individuals' happiness level assuming that everybody has the income expectation that in five years their income will fall. Finally, we repeat the second step but assuming that everybody has the income expectation that in five years their income level will be significantly improved. The results are reported in Table 4.

The results presented in Panel A are the actual happiness distributions for the total sample as well as 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 predicts the actual distributions very closely, indicating a good fit for the Ordered Probit model.

In Panel C we show the predicted happiness distributions assuming that everybody in the sample had an expectation of falling incomes in five year time. For the total sample, we find that had individuals all expected falling income, their happiness level would have fallen significantly. Comparing results in Panel C with those in Panel A, it is found that the proportion which stated as being not happy at all would have increased two fold from 1.5 per cent to 3.0 per cent, while the proportion indicated 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, with the most dramatic changes observed for the migrant sample: the proportion who would be very happy would have dropped to only 36 per cent of the actual proportion.

Panel D assigns everyone the expectation of significant income improvements in the next five years. Here we observe a significant increase in happiness. For the total sample, the extremely unhappy group would have fallen to

37 per cent of that it actually is, while the extremely happy group would have increased by 51 per cent. These effects are found to be the most profound for the urban sample, where assuming everybody had expected significant income improvement would have reduced the extremely unhappy group to 19 per cent of its actual level and increased the extremely happy group by 136 per cent. This mainly reflects the fact that the actual expectations of the urban group is the lowest of the three sub-samples and that hence a switch to universal optimistic expectations would have the greatest effect on them.

## **6 Alternative hypotheses**

Having made our central argument, we now try and see whether we can 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, and hence 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 we would expect those with higher expectations to engage less in savings and for the life satisfaction effect of expectations to disappear when we add indicators of current consumption.

Our data allows us to check on both these predictions from standard theory. In Table 5 we show for each of the 3 samples what the savings

rates are for those with pessimistic, neutral, and optimistic expectations. The information revealed from Table 5 does not indicate a clear pattern, except for the migrant sample where those who expected to have income reductions saved much more than the rest of the group, a clear indication of 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 saving 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, 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 saving on happiness is negative and significant for the migrant and rural samples, which is again what one would expect because higher savings, conditional on income, imply lower current consumption.<sup>12</sup>

Table 6 compares the coefficient of income expectations on happiness from regressions with and without saving and net assets variables. As we can see from these, their inclusion hardly changes the found effects of expectations, implying that it is not the effect of expectations on consumption that is 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

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<sup>12</sup>The full results of the models with saving and net assets variables are upon request from the authors.

can affect both a regressor and life satisfaction, leading to a spurious correlation between satisfaction and a regressor. In the context of expectations, the worry would be that optimistic personality traits lead to both high expectations and high life satisfaction, without there being a causal relation between expectations and life satisfaction.

One reply to this criticism is that our list of current variables already includes an indicator of current mood which is highly significant and was expressly meant to pick up personality traits. Nevertheless, given the low explanatory power of the model as a whole, it is hard to completely dismiss the possibility that the found effects of expectation are not due to reverse causality.

The first check on whether personality traits are the missing variables leading to a spurious correlation between life satisfaction and expectations is to include as many personality traits or regressors that arguably pick up personality traits as there are in the data. There are no true psychologically recognised personality factors in our dataset, but there are questions in urban and rural surveys which may reveal individuals' personality traits such as whether people follow the news and feel they are trusted by their boss.<sup>13</sup> We include these variables into model 2 and the results of effects of expectations on happiness with all these personality controls are reported in the last panel

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<sup>13</sup>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 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.

of Table 6. Including these personality traits increased adjusted  $R^2$  for the urban sample from 0.26 to 0.28 and for the rural sample from 0.30 to 0.31, 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 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 explain 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 look for 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.

First, 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 and current consumption and wealth measures should prevent these previous experiences from having any direct effect on life satisfaction. We use household income change between 1999 and 2001 (log per capita income in 2001 minus log per capita income in 1999) to capture past income changes. In addition, the rural survey comprises a village module which was answered by heads of villages where the sample was drawn. In that module, the village heads provide information on village characteristics, income changes, and financial situations. We choose a few variables from the village module which may affect income expectations of the sample households but should have no direct effect on their happiness: 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 villagers' income expectations, while having no direct current effect on their happiness since we control for current income. Migrant workers 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 or not, should impact a households' income expectations but should have no effect on their subjective wellbeing.

### 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:

$$\begin{aligned}
 H_i^* &= x_i\gamma + \sum_j (IE_i = j)\delta_j + u_i \\
 IE_i^* &= x_i\beta + Z_i\eta + \epsilon_i \\
 u_i, \epsilon_i | x_i, Z_i &\sim N\left(0, \begin{pmatrix} 1 & \rho^2 \\ \rho^2 & 1 \end{pmatrix}\right)
 \end{aligned}$$

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 now reads

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

This model was then 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 shows that past income increases have a significant positive impact on individuals' 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 have higher level of outstanding debt owed by others, villagers may have low income expectations over and above their own household income earning potentials. The proportion of sample households have members migrated also has a strong positive impact on income expectations, as expected. The significance of each of the three instruments is high, a necessarily requirement for instruments.

The IV estimate of high expectations versus the default (negative expectations) is 0.56, 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 ■ 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 really matter?

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 and 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 but the graph does show that the higher the income expectations, the lower the number of labour dispute cases. Hence, in the one dimension of political

stability for which we could find data, the correlation with expectations is as we expected.

## 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, like India or Bangladesh.<sup>14</sup> This means that continued optimistic expectations are indeed a large part of the explanation for the relative stability of China during the immense transition it is going through.

Our treatment of expectations on a proxy of utility is a deviation from the standard economic assumption that expectations themselves are not consumption goods but only 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

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<sup>14</sup>Here, we have taken the comparison levels of the mentioned other countries from the World Value Survey (Veenhoven, 2004).

and expectation manipulation in normal times is a field still wide open to economists, both experimentally and empirically.

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**Table 1: Summary Statistics**

	Total sample		Urban sample		Migrant sample		Rural sample	
	Freq	%	Freq	%	Freq	%	Freq	%
Income expectations:								
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 satisfaction (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**

	<u>Total sample</u>	<u>Urban sample</u>		<u>Migrant sample</u>	<u>Rural sample</u>	
	Model 1	Model 1	Model 2	Model 1	Model 1	Model 2
Log per capita income	-0.064 [0.085]	0.932 [0.329]***	0.930 [0.328]***	-0.296 [0.296]	-0.032 [0.121]	-0.100 [0.122]
(Log per capita income) <sup>2</sup>	0.005 [0.005]	-0.054 [0.019]***	-0.054 [0.018]***	0.020 [0.017]	0.003 [0.008]	0.006 [0.008]
Income change (2001-2002)			-0.013 [0.031]			0.040 [0.018]**
Income change (1999-2001)			0.171 [0.034]***			0.066 [0.017]***
Income position in the city/village	0.467 [0.022]***	0.576 [0.042]***	0.536 [0.043]***	0.435 [0.072]***	0.395 [0.027]***	0.366 [0.028]***
Good mood			0.139 [0.021]***			0.087 [0.015]***
Dummy indicating hh with members migrated						0.079 [0.017]***
Couple only households	-0.039 [0.020]**	0.045 [0.036]	0.051 [0.036]	0.042 [0.055]	-0.294 [0.032]***	-0.284 [0.032]***
No. of children age 0-18 at home	0.019 [0.008]**	-0.006 [0.025]	-0.009 [0.025]	-0.024 [0.036]	0.015 [0.009]*	0.010 [0.009]
No. of adults age >18	0.053 [0.007]***	0.054 [0.018]***	0.056 [0.018]***	0.020 [0.043]	0.032 [0.008]***	0.027 [0.008]***
Dummy for married	-0.111 [0.028]***	-0.123 [0.050]**	-0.124 [0.049]**	-0.211 [0.080]***	-0.015 [0.038]	-0.009 [0.038]
Own age	-0.026 [0.004]***	-0.057 [0.007]***	-0.055 [0.007]***	-0.018 [0.013]	0.014 [0.005]***	0.013 [0.005]**
(Own age) <sup>2</sup> /10	0.002 [0.000]***	0.005 [0.001]***	0.005 [0.001]***	0.001 [0.002]	-0.002 [0.001]***	-0.002 [0.001]***
HH mean schooling year aged>20	0.010 [0.002]***	0.012 [0.004]***	0.012 [0.004]***	0.015 [0.007]**	0.005 [0.003]	0.006 [0.003]*
Own gender (male==1)	0.064 [0.013]***	0.090 [0.022]***	0.086 [0.022]***	0.039 [0.037]	0.006 [0.017]	0.008 [0.017]
Own unemployment	-0.093 [0.033]***	-0.044 [0.044]	-0.039 [0.044]	-0.041 [0.157]	-0.090 [0.074]	-0.083 [0.073]
Spouse being unemployed	-0.062 [0.029]**	-0.060 [0.037]	-0.050 [0.037]	0.235 [0.132]*	-0.021 [0.068]	-0.008 [0.067]
Own weekly working hours /10	-0.006 [0.003]*	-0.005 [0.010]	-0.006 [0.010]	-0.026 [0.009]***	0.001 [0.004]	0.002 [0.004]
Dummy for own healthy	0.093 [0.015]***	0.077 [0.024]***	0.058 [0.024]**	0.222 [0.064]***	0.077 [0.020]***	0.072 [0.019]***
Dummy for spouse being healthy	0.054 [0.015]***	0.089 [0.025]***	0.079 [0.025]***	0.017 [0.057]	0.025 [0.019]	0.021 [0.019]
Dummy for own party membership	0.012 [0.018]	0.007 [0.022]*	0.006 [0.022]	0.075 [0.094]	0.024 [0.019]	0.024 [0.019]
Dummy for spouse party member	0.011 [0.014]	0.043 [0.024]	0.034 [0.024]	0.049 [0.144]	-0.022 [0.034]	-0.019 [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 [0.022]***	0.296 [0.027]***	0.278 [0.027]***	0.378 [0.066]***	0.146 [0.044]***	0.131 [0.042]***	
Expectation (=slight improvement)	0.368 [0.021]***	0.388 [0.026]***	0.358 [0.026]***	0.383 [0.063]***	0.303 [0.041]***	0.263 [0.040]***	
Expectation (=sig. improvement)	0.521 [0.030]***	0.644 [0.067]***	0.610 [0.066]***	0.608 [0.090]***	0.434 [0.049]***	0.375 [0.047]***	
Log per capita income	0.104 [0.092]	1.348 [0.320]***	1.313 [0.319]***	0.417 [0.308]	0.105 [0.147]	0.164 [0.145]	
(Log per capita income) <sup>2</sup>	0.002 [0.006]	-0.064 [0.018]***	-0.060 [0.018]***	-0.016 [0.018]	0.000 [0.010]	-0.003 [0.009]	
Income change (2001-2002)			-0.163 [0.029]***			-0.067 [0.018]***	
Income position in the city/village	0.884 [0.025]***	0.836 [0.041]***	0.751 [0.042]***	0.726 [0.075]***	0.913 [0.034]***	0.751 [0.033]***	
Good mood			0.260 [0.020]***			0.469 [0.017]***	
Dummy indicating hh with members migrated						-0.038 [0.020]*	
Couple only households	0.004 [0.021]	-0.023 [0.035]	-0.025 [0.034]	0.021 [0.057]	0.079 [0.039]**	0.034 [0.038]	
No. of children age 0-18 at home	0.004 [0.009]	0.005 [0.024]	0.009 [0.024]	0.072 [0.037]*	-0.002 [0.011]	0.001 [0.010]	
No. of adults age >18	-0.003 [0.008]	0.007 [0.018]	0.013 [0.017]	0.007 [0.044]	0.002 [0.010]	0.007 [0.010]	
Dummy for married	0.222 [0.030]***	0.223 [0.048]***	0.204 [0.048]***	0.107 [0.083]	0.213 [0.047]***	0.215 [0.045]***	
Own age	-0.017 [0.004]***	-0.029 [0.007]***	-0.026 [0.007]***	-0.006 [0.013]	-0.015 [0.006]**	-0.012 [0.006]*	
(Own age) <sup>2</sup> /10	0.002 [0.000]***	0.003 [0.001]***	0.003 [0.001]***	0.001 [0.002]	0.002 [0.001]***	0.002 [0.001]**	
HH mean schooling year aged>20	0.000 [0.003]	-0.003 [0.004]	-0.005 [0.004]	-0.007 [0.007]	0.001 [0.004]	0.000 [0.004]	
Own gender (male==1)	-0.043 [0.014]***	-0.051 [0.021]**	-0.061 [0.021]***	0.032 [0.039]	-0.049 [0.021]**	-0.046 [0.020]**	
Own unemployment	-0.116 [0.036]***	-0.121 [0.043]***	-0.121 [0.042]***	0.139 [0.163]	-0.132 [0.090]	-0.057 [0.086]	
Spouse being unemployed	-0.081 [0.032]**	-0.052 [0.036]	-0.047 [0.035]	-0.276 [0.137]**	-0.116 [0.082]	-0.112 [0.079]	
Own weekly working hours /10	-0.007 [0.004]**	0.008 [0.010]	0.010 [0.010]	-0.003 [0.009]	-0.012 [0.005]**	-0.012 [0.005]**	
Dummy for own healthy	0.150 [0.016]***	0.133 [0.024]***	0.098 [0.024]***	0.025 [0.067]	0.171 [0.024]***	0.141 [0.023]***	
Dummy for spouse being healthy	0.114 [0.016]***	0.102 [0.024]***	0.080 [0.024]***	0.147 [0.059]**	0.125 [0.023]***	0.096 [0.022]***	
Dummy for own party membership	0.048 [0.015]***	0.071 [0.021]**	0.037 [0.023]***	0.101 [0.149]	-0.031 [0.041]	-0.032 [0.022]	
Dummy for spouse party member	0.056 [0.020]***	0.050 [0.023]***	0.063 [0.021]*	-0.005 [0.097]	0.044 [0.023]*	0.028 [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**

<b>Panel A: Actual</b>	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
<b>Panel B: Predicted</b>				
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
<b>Panel C: Predicted (assuming all expected income fall)</b>				
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
<b>Panel D: Predicted (assuming all expect income improve significantly)</b>				
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**

	<u>Urban Sample</u>		<u>Migrant Sample</u>		<u>Rural Sample</u>	
	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

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

**Table 7: IV estimates of happiness regression**

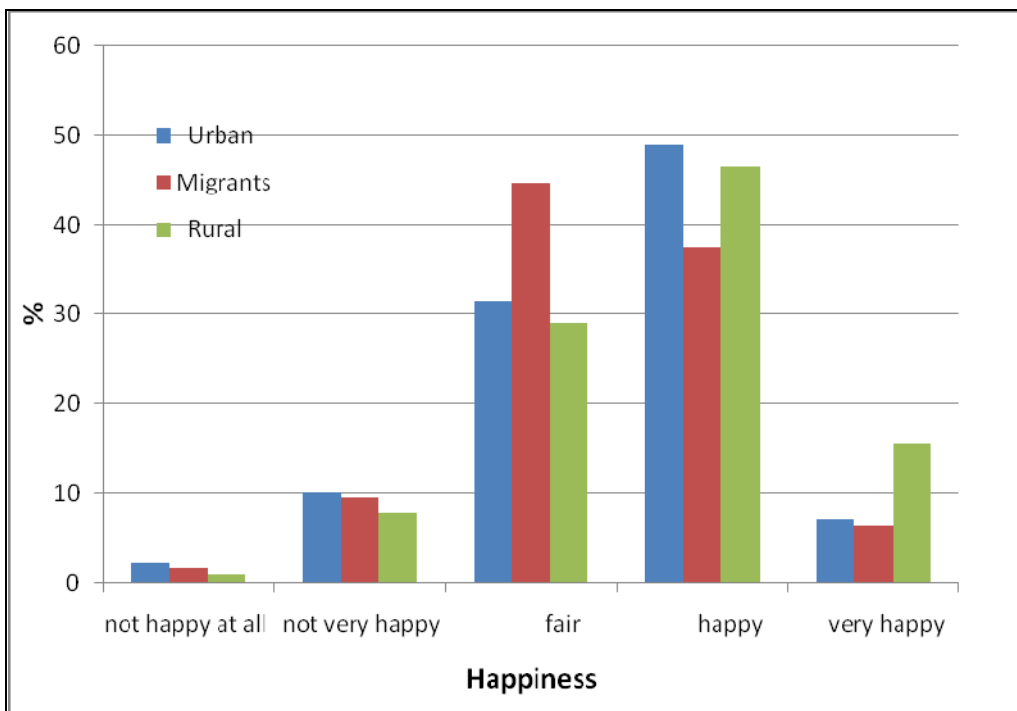
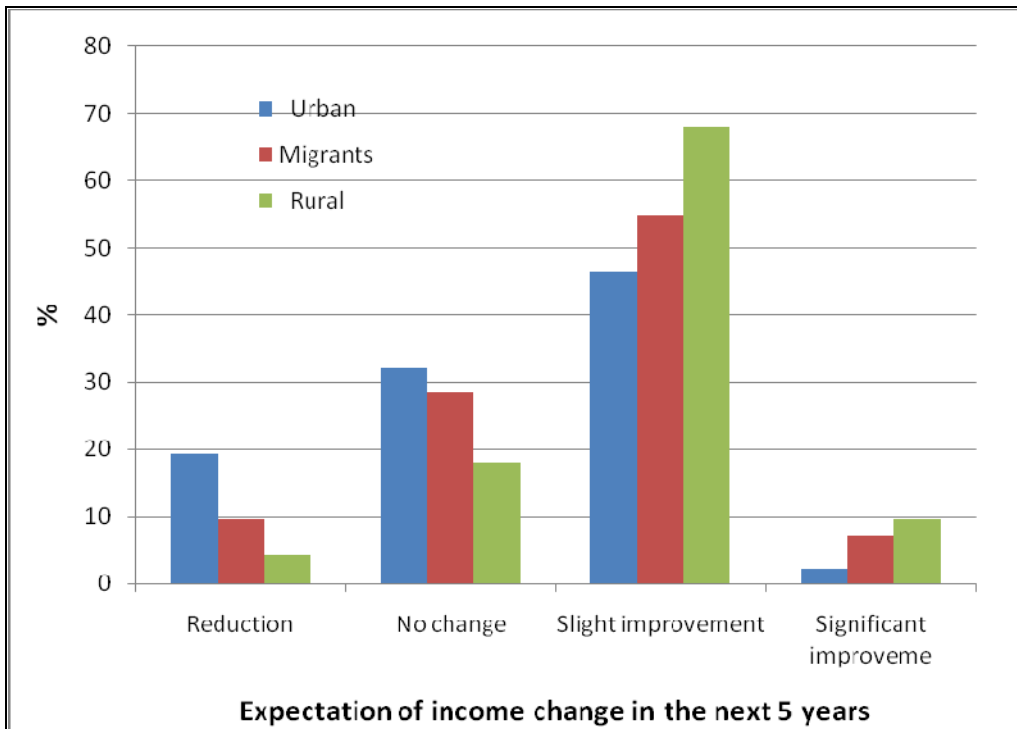
	ML Ordered Probit	
	Happiness IV	Expectations
Income expectations = no change	0.205 [0.086]***	
Income expectations = slight improvement	0.370 [0.146]***	
Income expectations = significant improvement	0.556 [0.234]***	
Log per capita income	0.290 [0.201]	-0.304 [0.235]
(Log per capita income) <sup>2</sup>	-0.088 [0.136]	0.213 [0.155]
Income change (2001-2002)	-0.098 [0.029]***	0.049 [0.033]*
Good mood	0.665 [0.031]***	0.153 [0.029]***
Dummy indicating hh with members migrated	-0.044 [0.031]	0.092 [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 bracket below the Chi-square test is the p-value.

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

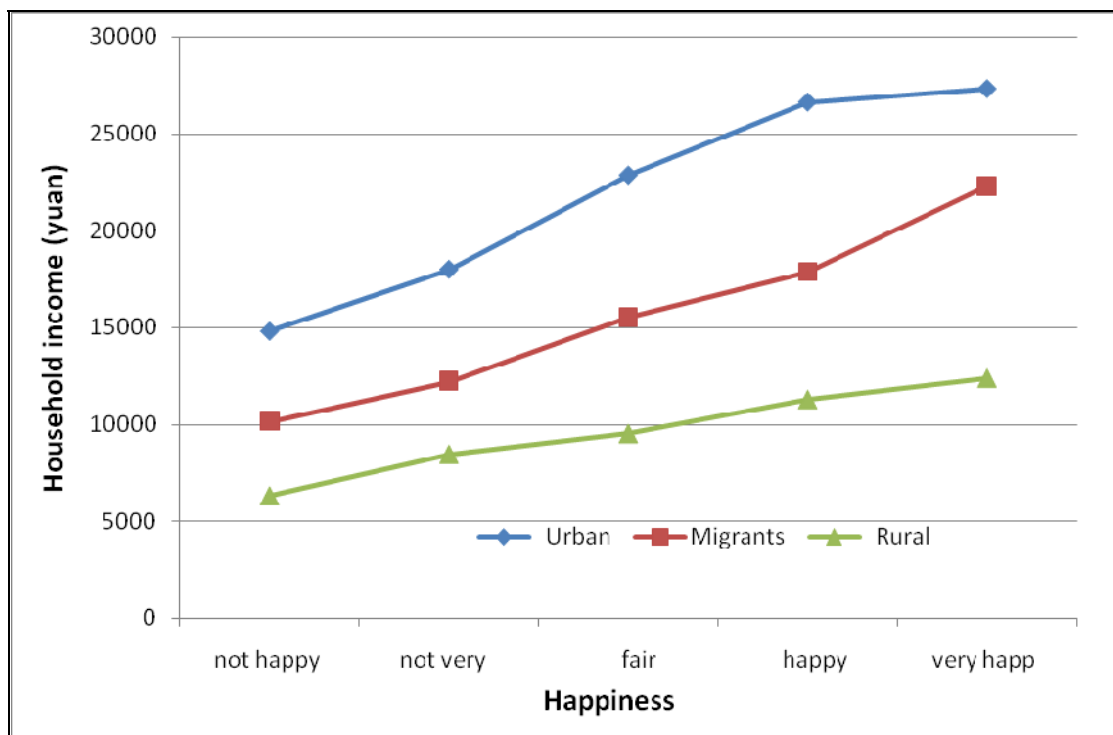
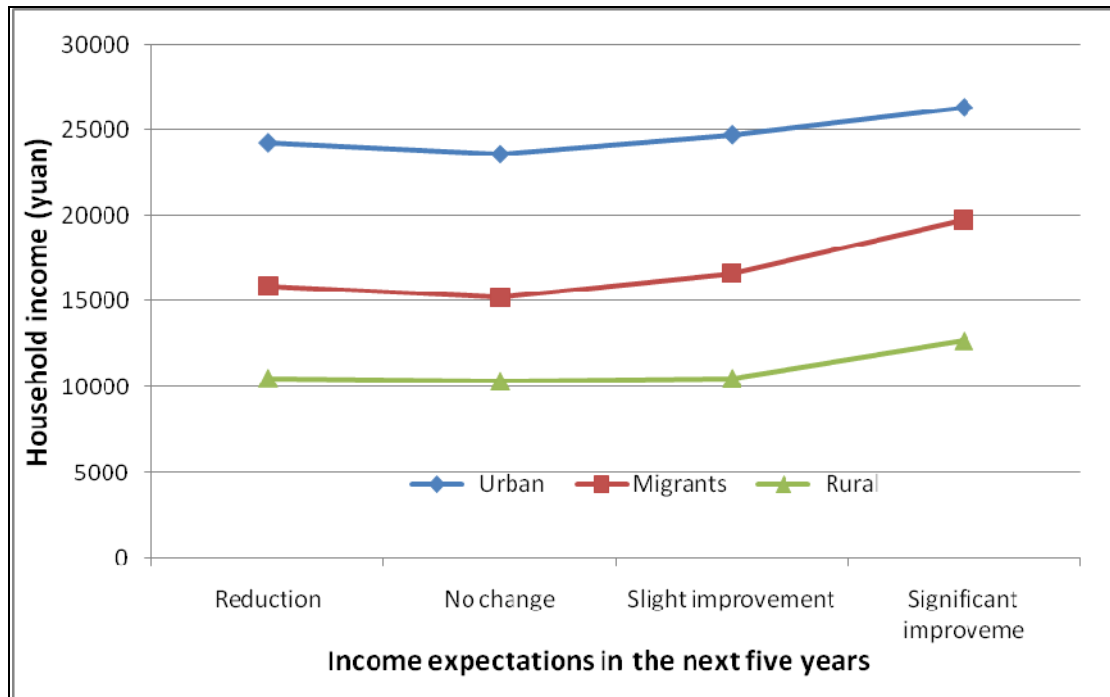
The Chi-square-test is based on the likelihood ratio of an additional estimation where the first instrument was allowed to have a non-zero effect on happiness.

**Figure 1: Expectations and happiness**

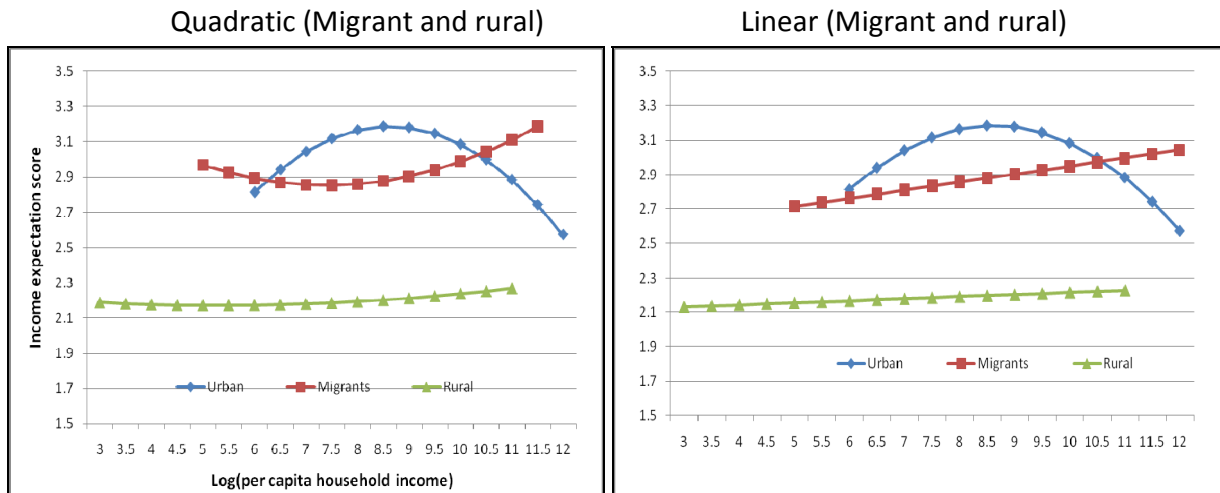




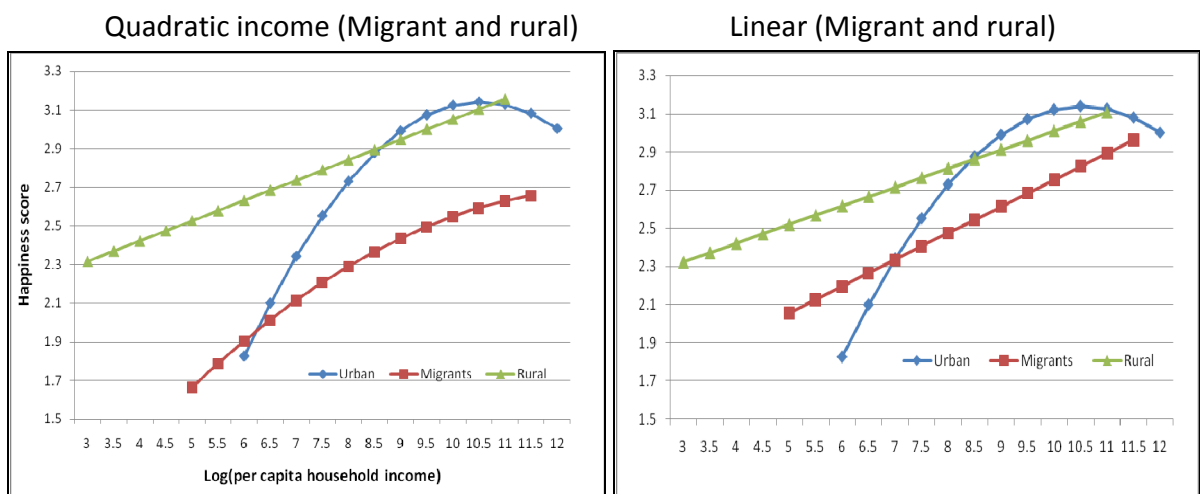
**Figure 2: Income and expectation and happiness**



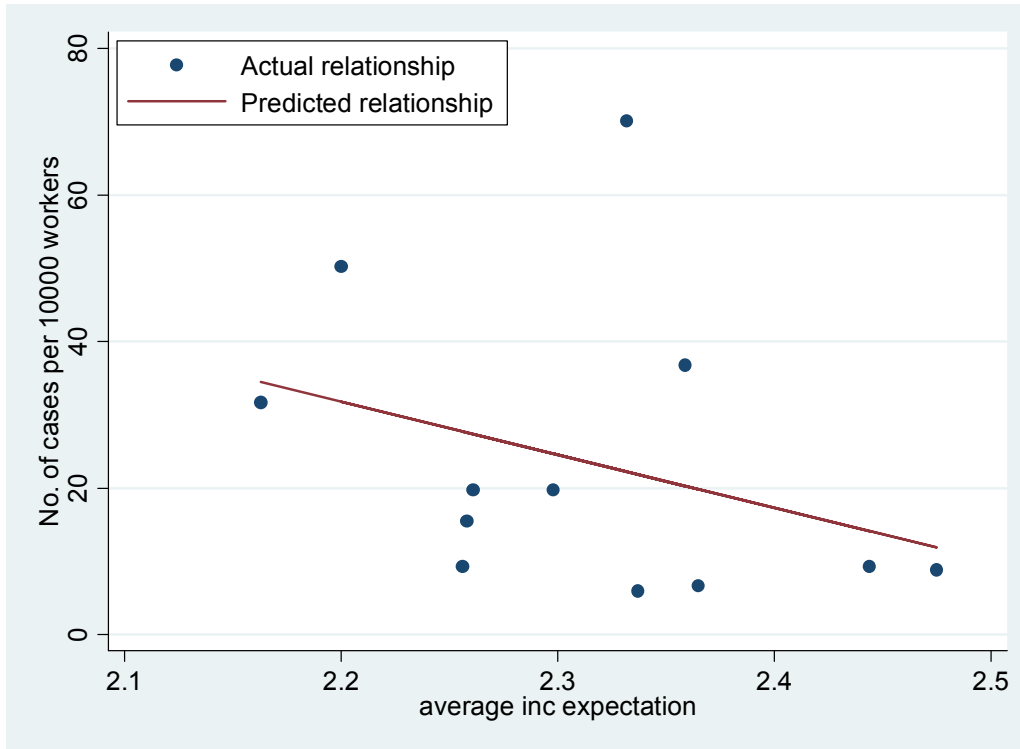
**Figure 3: Predicted relationship between log per capita income and income expectations**



**Figure 4: Predicted relationship between log per capita income and happiness**



**Figure 5:** Relationship between average household income expectations and actual number of labour disput cases, by province



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 [0.139]	1.247 [0.475]***	1.265 [0.477]***	-0.575 [0.452]	-0.130 [0.224]	-0.254 [0.228]	
(Log per capita income) <sup>2</sup>	0.009 [0.009]	-0.072 [0.027]***	-0.074 [0.027]***	0.039 [0.027]	0.010 [0.015]	0.016 [0.015]	
Income change (2001-2002)			-0.023 [0.045]			0.069 [0.033]**	
Income change (1999-2001)			0.242 [0.050]***			0.119 [0.032]***	
Income position in the city/village	0.765 [0.037]***	0.834 [0.061]***	0.783 [0.063]***	0.676 [0.111]***	0.746 [0.052]***	0.695 [0.053]***	
Good mood			0.199 [0.030]***			0.162 [0.027]***	
Dummy indicating hh with members migrated						0.151 [0.031]***	
Couple only households	-0.065 [0.032]**	0.069 [0.052]	0.076 [0.052]	0.064 [0.084]	-0.489 [0.059]***	-0.475 [0.059]***	
No. of children age 0-18 at home	0.029 [0.014]**	-0.004 [0.036]	-0.008 [0.036]	-0.034 [0.055]	0.027 [0.016]*	0.020 [0.016]	
No. of adults age >18	0.090 [0.012]***	0.084 [0.026]***	0.086 [0.026]***	0.035 [0.066]	0.061 [0.015]***	0.051 [0.015]***	
Dummy for married	-0.173 [0.045]***	-0.175 [0.072]**	-0.180 [0.072]**	-0.326 [0.124]***	-0.016 [0.071]	-0.006 [0.072]	
Own age	-0.039 [0.006]***	-0.081 [0.010]***	-0.079 [0.010]***	-0.032 [0.019]	0.021 [0.010]**	0.019 [0.010]*	
(Own age) <sup>2</sup> /10	0.003 [0.001]***	0.007 [0.001]***	0.007 [0.001]***	0.002 [0.002]	-0.003 [0.001]***	-0.003 [0.001]***	
HH mean schooling year aged>20	0.015 [0.004]***	0.017 [0.006]***	0.018 [0.006]***	0.023 [0.011]**	0.008 [0.006]	0.010 [0.006]	
Own gender (male==1)	0.100 [0.021]***	0.131 [0.032]***	0.127 [0.032]***	0.068 [0.058]	0.008 [0.032]	0.012 [0.032]	
Own unemployment	-0.138 [0.053]***	-0.064 [0.063]	-0.056 [0.064]	-0.100 [0.241]	-0.159 [0.135]	-0.150 [0.135]	
Spouse being unemployed	-0.086 [0.047]*	-0.091 [0.053]*	-0.077 [0.053]	0.351 [0.205]*	-0.040 [0.125]	-0.015 [0.125]	
Own weekly working hours /10	-0.010 [0.006]*	-0.009 [0.015]	-0.010 [0.015]	-0.039 [0.013]***	0.002 [0.007]	0.004 [0.007]	
Dummy for own healthy	0.145 [0.024]***	0.112 [0.035]***	0.085 [0.036]**	0.333 [0.098]***	0.138 [0.036]***	0.129 [0.036]***	
Dummy for spouse being healthy	0.078 [0.024]***	0.126 [0.036]***	0.112 [0.036]***	0.010 [0.088]	0.046 [0.035]	0.038 [0.035]	
Dummy for own party membership	0.018 [0.023]	0.009 [0.032]*	0.050 [0.032]	0.128 [0.224]	-0.032 [0.035]	0.051 [0.064]	
Dummy for spouse party member	0.017 [0.030]	0.062 [0.035]	0.007 [0.035]	0.082 [0.145]	0.050 [0.064]	-0.027 [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 [0.031]***	0.391 [0.040]***	0.371 [0.040]***	0.528 [0.096]***	0.195 [0.063]***	0.183 [0.063]***	
Expectation (=slight improvement)	0.492 [0.030]***	0.533 [0.039]***	0.497 [0.039]***	0.533 [0.092]***	0.417 [0.059]***	0.380 [0.060]***	
Expectation (=sig. improvement)	0.744 [0.044]***	1.001 [0.101]***	0.967 [0.102]***	0.876 [0.131]***	0.624 [0.070]***	0.565 [0.071]***	
Log per capita income	0.137 [0.133]	1.499 [0.472]***	1.492 [0.479]***	0.585 [0.448]	0.053 [0.214]	0.135 [0.221]	
(Log per capita income) <sup>2</sup>	0.003 [0.008]	-0.068 [0.027]**	-0.065 [0.027]**	-0.022 [0.026]	0.006 [0.014]	0.003 [0.014]	
Income change (2001-2002)			-0.230 [0.043]***			-0.100 [0.028]***	
Income position in the city/village	1.254 [0.036]***	1.234 [0.062]***	1.131 [0.064]***	1.059 [0.111]***	1.286 [0.050]***	1.102 [0.051]***	
Good mood			0.411 [0.031]***			0.698 [0.027]***	
Dummy indicating hh with members migrated						-0.058 [0.030]**	
Couple only households	0.006 [0.031]	-0.022 [0.051]	-0.026 [0.052]	0.031 [0.083]	0.108 [0.056]*	0.045 [0.057]	
No. of children age 0-18 at home	0.007 [0.013]	0.014 [0.036]	0.018 [0.036]	0.106 [0.054]**	-0.001 [0.015]	0.004 [0.016]	
No. of adults age >18	-0.007 [0.011]	0.010 [0.026]	0.020 [0.026]	0.009 [0.064]	0.002 [0.014]	0.009 [0.014]	
Dummy for married	0.293 [0.044]***	0.297 [0.071]***	0.274 [0.071]***	0.160 [0.121]	0.270 [0.067]***	0.287 [0.068]***	
Own age	-0.024 [0.006]***	-0.043 [0.010]***	-0.039 [0.010]***	-0.010 [0.019]	-0.021 [0.009]**	-0.017 [0.009]*	
(Own age) <sup>2</sup> /10	0.003 [0.001]***	0.005 [0.001]***	0.004 [0.001]***	0.002 [0.002]	0.003 [0.001]***	0.003 [0.001]**	
HH mean schooling year aged>20	-0.001 [0.004]	-0.005 [0.006]	-0.007 [0.006]	-0.011 [0.010]	0.002 [0.006]	0.000 [0.006]	
Own gender (male==1)	-0.064 [0.020]***	-0.075 [0.031]**	-0.092 [0.032]***	0.047 [0.056]	-0.075 [0.030]**	-0.076 [0.030]**	
Own unemployment	-0.148 [0.051]***	-0.155 [0.062]**	-0.157 [0.063]**	0.211 [0.236]	-0.205 [0.129]	-0.103 [0.130]	
Spouse being unemployed	-0.105 [0.045]**	-0.065 [0.052]	-0.060 [0.052]	-0.406 [0.199]**	-0.179 [0.118]	-0.182 [0.119]	
Own weekly working hours /10	-0.010 [0.005]*	0.013 [0.014]	0.015 [0.015]	-0.006 [0.013]	-0.017 [0.007]**	-0.017 [0.007]**	
Dummy for own healthy	0.213 [0.023]***	0.197 [0.035]***	0.146 [0.035]***	0.036 [0.097]	0.239 [0.034]***	0.206 [0.035]***	
Dummy for spouse being healthy	0.165 [0.023]***	0.154 [0.036]***	0.122 [0.036]***	0.219 [0.086]**	0.180 [0.033]***	0.147 [0.034]***	
Dummy for own party membership	0.072 [0.022]***	0.075 [0.031]**	0.057 [0.035]***	-0.015 [0.141]	0.070 [0.060]	-0.046 [0.034]	
Dummy for spouse party member	0.080 [0.029]***	0.112 [0.035]***	0.102 [0.032]*	0.159 [0.219]	-0.043 [0.033]**	0.049 [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%