Well Being and Unemployment in Russia in the 1990's:
Can Society's Suffering Be Individuals' Solace?

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Abstract

This paper studies the effect of regional unemployment rates on subjective well-being in post-Soviet Russia. Research conducted in Europe and the United States has documented that higher unemployment rates lead to lower reported life-satisfaction. By contrast, our Russian study finds a small but significant effect in the other direction. We estimate that during the period of our study (1995-2001), each percentage point increase in the local unemployment rate was correlated with the average well-being of people in the region increasing by an amount equivalent to moving 2% of the population up one level in life satisfaction measured on a five-point scale. Our intuition is that the so-called comparison effect drives this result: when individuals observe their peers suffering in a troubled economy, they lower their standards of what is good enough. All else equal, they thus perceive themselves to be better off in worse times. In highlighting the dependence of subjective well-being scores on expectations and reference groups, we sound a note of caution against using happiness data from economies in crisis to draw macroeconomic policy conclusions.

1. Introduction

How important is overall macroeconomic performance to individuals' well-being? Clearly, people care about their own incomes and their ability to find and keep a good job. But how much do they care about what is happening more generally to the economy around them? There are a number of plausible channels through which the state of an economy may directly affect individuals' well-being. In a good economy, a person may feel that his or her own prospects for success in the labor market are greater, crime will be lower, and public goods will be more plentiful. In times of economic crisis, even people who manage to retain their jobs and livelihoods may worry about social unrest, be concerned about their own economic future, or empathize with those whose economic situation has deteriorated.

Economists generally assume that a strong economy is good for individuals, yet they have a limited understanding of what it is about economic growth that contributes to well-being. Critics both inside and outside the economics profession have asserted that economists often focus narrowly on higher incomes as a policy goal at the expense of other objectives that citizens might value, such as redistribution or full employment. [2] Although a more detailed understanding of the effect of macroeconomic performance on the well-being of individuals might help policy-makers decide among competing social priorities, economists have generally shied away from trying to measure such a murky and subjective phenomenon.

In recent years, an increasing number of economists and other social scientists have experimented with an unconventional and direct approach to the problem: measuring the relationship between macroeconomic conditions and individuals' responses to survey questions about life satisfaction. Using macroeconomic data and life satisfaction responses from panel surveys, Di Tella et al. (2001) find that high unemployment has a strong negative effect on reported well-being, even for those who are employed. Their work and that of several others suggest that policymakers should devote significant resources to reducing unemployment – not just because being unemployed is extraordinarily painful for the individuals directly affected, but also because society as a whole is subjectively better off when unemployment rates are lower.[3] As far as we know, there is not a comparable literature on unemployment rates and well being for the transition and developing economies.

In this paper, we examine the effect of regional unemployment rates on subjective well-being in Russia during the economically tumultuous years from 1995 to 2001. Contrary to intuition and previous findings elsewhere in the literature, we find that, all else equal, Russians – including those who were employed - were happier when unemployment rates were higher. We stress that our finding is not that Russians enjoy being jobless. On the contrary, being unemployed in Russia was an extremely negative experience. Not having a job was, by one measure, four times worse for happiness than having experienced a divorce. Nor do we find that Russians were happier because of the general economic crisis and associated high unemployment rates that plagued the nation in the

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[2] One well-known critique of the value of increasing national income is Hirsch (1976). Easterlin (1974) used well-being data to argue that beyond a certain level of income, increasing per capita income does not necessarily improve peoples' lives.
[3] See also Clark and Oswald (1994), Clark and Oswald (1996), Oswald (1997), Di Tella et al (2002), Alesina et al (2003), Wolfers (2003), Clark (2003).

1990s: Russians experienced a dramatic drop in overall life satisfaction as unemployment rates peaked in 1998 and just as dramatic a rise as the economy recovered in 2000 and 2001. Rather, our finding is this: after we control for the standard variables – personal circumstances, region, and time of survey - we find that on average people reported higher well-being in times and places where the unemployment rates were higher. In other words, both the employed and the unemployed were happier on average in regions with higher unemployment rates than in those with lower ones.

More work is needed in order to determine whether the divergence of our results from the rest of the literature is due to the peculiar economic situation in post-Soviet Russia, to cultural or historical factors which affected attitudes toward unemployment or peer groups, or to differences between the structure of our data and those used in other studies. Our impression, though, is that the extraordinary economic turmoil of post-Soviet Russia created an unusual situation in which people's subjective well-being was more closely linked to comparison with others than was the case in other studies. In August 1998 — the midpoint of our survey period — Russia suffered an extraordinary and acute economic crisis that included a debt default, a two-fold real devaluation of the currency, and a temporary paralysis of the entire national payments system. The 1998 crisis was sudden and unexpected, and it came after a period of relative stability following several years of sharp decline. During the 1990s, and perhaps especially in 1998, Russians were forced to reformulate their ideas of economic "success." With the rules of the game uncertain and changing, we suggest, individuals' expectations and standards came to depend more heavily on the economic well-being of the rest of society than is the case in more stable environments.

While we suspect that our unusual finding is in large measure due to the extraordinary conditions of Russia in the 1990's, we also believe that it illuminates the range of perspectives from which individuals react to their economic environment in all situations. In suggesting that comparison with other people becomes more important to subjective well-being in times of economic turmoil, our study underscores the connection between economic uncertainty and demands for redistribution. In highlighting the importance of comparison in individuals' responses to unemployment rates, our study implicitly calls for caution in using micro-econometric happiness regressions as a tool for weighing macroeconomic policy priorities, particularly in times of economic upheaval.

2. Data and empirical strategy

2.1 Use of well-being data

Studies of subjective well-being ("happiness research") typically rely on survey questions in which individuals are asked to rate satisfaction with life on an ordinal scale. The use of survey data on well-being among economists was pioneered by Richard Easterlin in the mid-1970's. His cross country research showed that despite large increases in per capita income over decades, average reported happiness levels have increased only modestly in most countries and have even declined in a few others.[4] He and others have argued that the reason why happiness scores have not risen was that

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[4] Easterlin (1974).

expectations have risen as fast as means and individual utility depends as much on comparison with others (who are also becoming better off) as it does on an absolute sense of economic well-being.[5]

Since Easterlin, there has been a slow and intermittent rise in interest in working with and explaining data on subjective well-being. Recent cross-national comparisons of happiness data following up on Easterlin's work – including Veenhoven (1991), Inglehart and Klingemann (2000), and Graham and Pettinato (2002) for Latin America – have confirmed that people in poor countries in fact have lower levels of reported well-being. These results suggest that the expectation and comparison effects that Easterlin highlights are more important at higher levels of per capita income, although they still seem to be play at poorer ones. In many recent studies, researchers have attempted to apply insights from happiness data to specific policy problems, such as estimating the welfare benefits from cigarette taxes (Gruber and Mullainathan, 2002), determining the optimal tradeoff between inflation and unemployment (Di Tella et al 2001, Wolfers 2003), and analyzing political sustainability of market-oriented growth in the developing world (Graham and Pettinato, 2002).

While it has become more common to use happiness data in economic research, there remains an understandable reluctance to rely on subjective data of this kind. Problems include the limited range of possible answers (usually an ordinal scale of between 3 and 7 steps), the error-prone context of the data collection (usually a personal interview with an individual), and the very likely possibility that different people approach an open-ended question about life satisfaction in different ways (e.g. as a measure of "success" vs. as a measure of well-being). Thus it seems surprising that aggregated analyses of happiness responses reveal anything useful at all. Yet psychologists find that responses to happiness questions are highly correlated with measurable signs of affect, such as frequency of smiling and laughing and amount of contact with friends.[6] In addition, one of the main accomplishments of happiness research in recent years has been to demonstrate that the determinants of well-being in various countries are remarkably consistent. Di Tella et al (2002) highlight the similarity of regression coefficients for 12 European countries and the United States, and Graham and Pettinato (2002) find that the determinants of well being in Latin America are remarkably similar to those in the U.S. and Europe.

Perhaps the weightiest criticism of the use of happiness survey responses in econometric studies is that respondent characteristics such as mood, personality, and language play an overwhelming role in determining responses, yet they cannot be observed and controlled for.[7] This is not a problem if these unobservable characteristics are uncorrelated with explanatory variables; in that case the regressions will simply explain less of the data. But if these characteristics are correlated with explanatory variables – for example, if having a sunny disposition leads both to higher happiness scores and to higher income – then coefficient estimates will be biased. One way to address this problem is to use longitudinal data. In this approach, an individual's responses from other years are incorporated into the regression, either by using a fixed effects estimator or directly using past responses as controls. Our analysis is based on such a longitudinal data set, which we describe below.

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[5] For a review of social science literature exploring the role of comparison, see Clark and Oswald (1996). For a review of the psychology literature on income and well-being, see Diener (1984) and Diener and Biswas-Diener (1999).
[6] For a summary of many of these findings, see Kahneman (1999).
[7] For a discussion of the problems of using subjective survey data, see Bertrand and Mullainathan (2001).

2.2 The Russian Longitudinal Monitoring Survey (RLMS)

The Russian Longitudinal Monitoring Survey (RLMS) is a nearly-annual, nationally representative, longitudinal survey of Russian households. Our sample includes data from 15,657 individuals who responded to the RLMS in at least one of the most recent five rounds of the survey, which took place in 1995, 1996, 1998, 2000, and 2001 (always in the fall).[8] The average respondent answered just over three out of five surveys. In each round we have between 8,000 and 10,000 respondents.

Of the hundreds of questions asked by the RLMS, critical to our study is the following question:

"To what extent are you satisfied with your life in general at the present time?

Fully satisfied	5
Rather satisfied	4
Both yes and no	3
Less than satisfied	2
Not at all satisfied	1"[9]

It is the response to this question that we interpret as expressing the respondents' subjective well-being or "happiness." Table 1 displays the distribution of happiness responses in our sample. There is a clear migration of respondents from higher levels of happiness to lower levels in the first three rounds – especially between 1996 and 1998 (there was no survey in 1997). There was a nadir in 1998, immediately following the August financial crisis, and a rebound in 2000 and 2001. (1999 was another omitted year.) The modal response in every year but 1998 was "rather unsatisfied." In 1998 the most frequent response was the most negative option offered: "not at all satisfied."

One of the limitations of using ordinal life-satisfaction responses for longitudinal statistical analysis is that an individual's responses can be very stable over time, perhaps because she has a culture- or personality-based default response (e.g., "Somewhat happy") to which she will consistently return. Yet as Graham et al. (forthcoming) and Senik (2002) have pointed out, there is actually quite a bit of intra-personal variation in the RLMS happiness responses. Table 2 shows the evolution of happiness responses from one round to the next over the five rounds of RLMS data from 1995 to 2001. Each cell in the table shows the likelihood that, given that a respondent selected the response at left in one period, that same person would choose the response listed across the top of the table in the next period. The diagonal entries (in bold) thus show the likelihood of repeating a response two years in a row. Only in the two most negative categories are respondents most likely to repeat their previous response. Even there, roughly half the respondents moved up or down in the next round. For the respondents, fluctuation in happiness responses was undoubtedly one of the unfortunate results of living in a time of drastic political, economic, and cultural change; for the

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[8] More specifically, the survey data was collected in October to December 1995 (Round 6), October to December 1996 (Round 7), October 1998 to January 1999 (Round 8), September to December 2000 (Round 9), and September to December 2001 (Round 10).

[9] The original coding of the question uses a score of 1 for "Fully satisfied" and 5 for "Not at all satisfied," but for ease of interpretation we reverse the ranking and consider the score an ascending measure of life satisfaction.

researcher, these happiness responses provide variation that is essential to more powerful statistical results.

2.3 Description of unemployment data

Our data on unemployment rates consist of annual unemployment rates for each of 38 regions in which the RLMS was conducted, collected by Goskomstat, the Russian statistical agency, and reported in the statistical appendix of the IMF'S Russia country report.[10] To protect the identify of individuals, the publicly available RLMS data classify respondents by only eight large regions (North Caucasian, Moscow and St. Petersburg, Western Siberia, etc.).[11] By signing a confidentiality agreement, we were able to link individuals to thirty-eight more finely divided regions.[12]

Table 3 shows summary statistics for our regional unemployment rates, along with comparable statistics for US states and European countries used in a study by Alesina et al (2003).[13] These data show that while the dynamics of unemployment rates in Russia during the period of our study differed from those in the US and European datasets used in other studies, they were not so different as to be incomparable. Regional unemployment rates were higher in Russia than the averages for US states and for countries in Europe, but the overall standard deviation (.032) was between the US figure (.023) and the European figure (.042). Comparing the relative importance of the within and between standard deviation in the data series,[14] we find that the structure of unemployment is similar in the Russian and US datasets, while there is relatively more between variation in the European dataset. This is not surprising, given that Russia and the US are single economies (with single macroeconomic policies and relative freedom of movement within the country), while Europe was made up of separate economies pursuing separate macroeconomic policies and having relatively less labor mobility.

The overwhelming importance of joblessness in late-1990s Russia is reflected in RMLS responses. Table 4 shows how Russians responded to the question, "How concerned are you that you might lose your job?" over the five rounds of the RLMS from 1995 to 2001. Around 40% of all respondents reported that they were "Very concerned" that they might lose their job; another 20% reported that they were "Somewhat concerned." Anxiety over unemployment peaked in the 1998 survey, taken just months after the August onset of the financial crisis, in which almost 70% of respondents marked the highest or next-to-highest level of concern. The high level of worry about unemployment is comparable to what Argentines reported in the Latinobarometro survey in the

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[10] International Monetary Fund, "Russian Federation: Statistical Appendix," IMF Country Report No. 03/145. Table 10: "Russian Federation: Unemployment Rate by Regions (ILO Methodology), 1995-2001."

[11] The regional identifiers are available at http://www.cpc.unc.edu/projects/rlms/data/regionalidentifiers.html .

[12] The RLMS uses the concept of "primary statistical units" (PSUs). While we refer to the PSUs as "regions," some represent cities and others entire oblasts or regions. In some cases, such as St. Petersburg and Moscow oblast, the PSU used by the RLMS matches the regional boundaries by which Goskomstat reports local unemployment rates. In other cases, our unemployment data is for an entire *oblast* while the PSU is a city or sub-region within that oblast; in a few cases more than one PSU lies within a single oblast. Thus the specific matching of the local unemployment rate to the PSUs varies from region to region.

[13] In the first row, we report statistics for Russia in which the regional unemployment rates are not weighted; in the last row they are weighted according to each region's representation in the RLMS.

[14] "Within standard deviation" represents the part of overall standard deviation that is due to changes over time in the rate within a single region, state, or country, and "between standard deviation" represents the part that is due to differences in the mean rate across regions, states, or countries.

midst of their crisis in 2001-2002.[15] (In the United States in recent years, by contrast, the percentage of people responding that they were worried about losing their job ranged from 10% in June, 1999, to 23% in October, 2003.[16])

Concern about unemployment struck Russian society fairly indiscriminately: 42% of Russians over 25 who had not attended university reported the highest level of concern, but so did 35% of those who had attended university. (Those numbers rise to 55% and 45% in the 1998 survey.) Likewise, 40% of individuals whose family income is in the bottom half for their region reported the highest level of concern about unemployment, but so did 34% of those in the top half. (The numbers rise to 43% and 37% in the 1998 survey.)

It should be recognized that unemployment did not mean the same thing in Russia in the late-1990s that it did in Europe or the United States, the two places where comparable studies have taken place. This is true both in a technical sense and in a broader, more philosophical sense. Technically speaking, although unemployment rates in Russia were calculated according to the same ILO methodology as is used elsewhere, there was much more prevalent underemployment and work without pay in the Russian case than elsewhere. This, too, is clear from RLMS responses. In the 1998 survey, 8% of employed respondents reported having been sent on compulsory unpaid leave in the past 12 months and 60% reported that their employer owed them money. The majority of these people were owed 1 or 2 months of wages, but almost 20% were owed wages from more than 8 months before. That these people were counted among the employed provides some indication that the line between employment and unemployment was more blurred in this context than is the case in the US and the European countries in which comparable studies have been conducted.

In addition to the large number of "virtually" employed people – e.g. those working without getting paid, or getting paid late and/or in goods rather than wages – there are also many people in Russia who work in the black market or informal economy.[17] We do not (for obvious reasons) have sound data on how many of those working in the black economy report themselves as unemployed. Yet we accept that this twist on the concept of unemployment, along with "virtual" employment, may in part explain the rather unusual findings that we report below. We also had approximately 50 respondents that reported zero income but seemed to have other traits (such as high education and happiness levels) that suggested that they were earning substantial income on the black market. Some of these respondents reported zero income also reported that they were employed; some did not. To avoid the bias this could create, we excluded these respondents from our analysis.

In a broader sense, the meaning of unemployment in late-1990s Russia was inextricably linked with the evolving Russian economy and the legacy of Soviet communism. In the Soviet centrally planned economy, full employment and job security were arguably the most important goals both of central planners and of ordinary citizens.[18] Most Russians in our survey, as veterans of that pre-1991 economic system, remained strongly influenced by its standards. Being unemployed was not merely an unpleasant state; it was unthinkable. It was in large measure the impermissibility

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[15] Comparison figures available from authors on request.

[16] Zogby International, "The Economy as Viewed From Main Street: No Recovery Yet, New Zogby Poll Reveals," December 1, 2003, http://www.zogby.com/news/ReadNews.dbm?ID=760, viewed March 11, 2004.

[17] For detail on the concept of the "virtual economy", see Gaddy and Ickes (2003).

[18] The argument was made most persuasively by David Graning (1987), who proposed that the guaranteed right to a job in the Soviet Union was the single most essential component of an implicit deal between the communist rulers of the USSR and the population, a deal that ensured the political survival of the system.

of large-scale unemployment that prevented policy-makers from shutting down Russia's vast sector of hopelessly noncompetitive industrial enterprise.[19]

It is important to be clear about why we chose to focus on unemployment. Our interest is in how individuals' well-being is affected by their economic environment, so the unemployment rate is actually just one of several measures which could capture this idea. We focus on the unemployment rate here largely because it is a well-understood measure of macroeconomic health and because it has been examined in a number of other studies. In addition, since we have data on individuals' employment status, we can examine the relationship between the personal cost of becoming unemployed and the social cost of higher unemployment. The prevalence of forced leave and delayed pay (and the imperfect matching of regional unemployment rates with RLMS regional units) suggest that unemployment figures may be a complicated indicator of macroeconomic performance.

2.4 Empirical approach

As mentioned above, the longitudinal nature of the RLMS presents a rare opportunity to correct for the correlation of independent variables with unobservable and unchanging factors influencing life satisfaction. Yet conducting panel analysis on well-being data also creates a dilemma. The standard approach to correcting for person-specific unobservables in longitudinal data is to conduct a fixed effects regression, which essentially obtains correlations among changes in each individual's attributes and ignores variation across individuals. Since happiness is here measured on an ordinal scale (a ranking rather than a continuum), the standard approach to cross-sectional estimation would be to use an ordered logit or ordered probit maximum likelihood estimator. But there is no accepted fixed effects form of these estimators, since time-demeaning of ordinal variables produces non-ordinal variables.[20]

One approach is to respect the ordinal nature of the data by using an ordered logit or probit estimator, and make some effort to correct for unobservable variables by, for example, including the lagged value of happiness as we do below. The second is to take full advantage of the longitudinal data and use fixed effects techniques to correct for unobservables, which requires making some heroic assumptions about the survey data. (Specifically, we must assume that the ordinal steps are equal in magnitude, i.e. the difference between "Fully satisfied" and "Yes and No" is the same as the difference between "Yes and No" and "Not at all satisfied.")

We conducted regressions with both approaches and found broadly comparable results, although levels of significance and pseudo-R^2's were higher with the ordered logit. We focus on the results using ordered logit here. Our regressions include the individual's previous happiness response, which goes some way towards correcting for persistence in happiness responses due to unobservable characteristics. As in Senik (2002), we assume that residuals in many of our regressions

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[19] This was a critical argument in the thesis that the Russian economy in the 1990s evolved into a mutant form called the "virtual economy" in which enterprises could avoid the discipline of the market economy and continue to "employ" people, even without paying wages. See Gaddy and Ickes (2003).
[20] This is dealt with in Senik (2002) and briefly in Winkelmann and Winkelmann (1998). The fixed effects estimator replaces each variable with its time-demeaned value – the variable minus its within-group (here, within individual) average: $X_{it} - \overline{X_i}$. Conducting any arithmetical operations with happiness responses requires treating them as numbers, not as ordered categories.

may be correlated across individuals, which, if not corrected for, can bias standard errors downward.[21]

We face a further econometric challenge because of our use of grouped unemployment data to estimate individual's happiness results. The residuals of individuals of the same region may be correlated (perhaps due to unobserved regional events or characteristics), which will also tend to bias standard errors downward (particularly on the coefficient for unemployment rate).[22] Unfortunately our statistical package does not allow us to correct for both kinds of autocorrelation at once. We therefore report statistics generated under each error structure specification separately.[23]

3. Results – happiness and unemployment in Russia

Table 5 reports the results of our basic regression, an ordered logit maximum likelihood regression of reported life satisfaction (five point scale) on lagged life satisfaction, personal characteristics including age, gender, income, education, marital status, and occupation, the regional unemployment rate, and dummies for time period and region. (Table 6 reports the summary statistics for our explanatory variables.) Based on the coefficient estimate, which we report in the third column, it is possible to calculate the marginal effect of a change in the independent variable on the likelihood of giving each of the five possible. We report the marginal effect (column 2) for only the lowest of the five categories — i.e., the response of "not at all satisfied" with your life in general[24] — since the interpretation is the most straightforward and since (as shown in Table 1) a large portion of respondents gave that response.[25]

In the final two columns we report z-statistics and significance levels of the coefficient estimate under two assumptions about the structure of the error terms: in the second column we correct for autocorrelation of error terms across observations for the same individual; in the third column we correct for autocorrelation of error terms across observations for the same region.

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[21] More specifically, the correlation of error terms within observations from the same individuals (perhaps due to differences in personality, culture, or language) reduces the effective degrees of freedom on coefficient estimation and produces a standard error that is too low, absent correction.

[22] For more on the problems with regressing micro units on aggregate variables, see Moulton (1990).

[23] The intuition here is that when there are correlated unobservables within clusters (observations from the same regions-year in our case), then there are effectively fewer observations than what we have. In the absence of correction, the reported standard errors are too low. Correction, meanwhile, changes the size of the standard errors but not the coefficient values.

[24] For dummy variables, the marginal effect statistic reports the change in likelihood of giving the lowest of the five responses categories as the dummy variable changes from 0 to 1. For continuous variables, the statistic reports the change in likelihood of a category 1 response with a 1 standard deviation increase in the variable.

[25] The coefficient estimates reflect the effect of the independent variables on a logistic distribution which spans a set of threshold points. The likelihood of falling in a given category is given by the cumulative distribution between the threshold points for that category. Changing an independent variable shifts the distribution. The effect will be unambiguous for the highest and lowest category: a positive coefficient will move the distribution up, and thus reduce the likelihood of scoring in the lowest category and increase the likelihood of scoring in the highest category. The effect for intermediate categories cannot be determined without some calculation. See Greene (2000), pp. 926-931.

3.1 Results for controls

In most respects our results are consistent with what others have found elsewhere. We find that the likelihood of giving a highly negative response increases with age before decreasing after age 53.[26] Men are happier[27] than women, which departs from the usual findings of studies of happiness in the advanced economies.[28] We included two measures of income. The first was household equivalence income, which divides total reported monthly income for all household members by the square of the number of family members (thus capturing some of the economies of household life). The second was a set of categorical variables identifying one's place in the region's economic distribution, by quartile. [29] The latter measure reflects the insight that income relative to a reference group is as important as the absolute level of income.[30] Both absolute and relative income significantly and positively affected happiness in our regressions.

Russians with high school diplomas are less happy than those without, but those who attended university are slightly more satisfied. There is no statistically significant difference between being single and being married or widowed, although people who report being divorced are quite a bit less happy. (In most other studies, married people are significantly happier than single people.) Retirees and the unemployed are less happy than people employed out of the home, while self-employed people, students, and housewives are happier.

Year and region dummies yield important information. Overall happiness was at its lowest point at the time of the 1998 survey, which was taken just months after the onset of Russia's financial crisis, and it rebounded quite strongly in 2000 and 2001 as the economic crisis was largely resolved and the popular Putin had assumed the presidency. Region effects, which we do not report here, are quite large in magnitude and significant. Among the regions surveyed, the one that appears

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[26] In other words, happiness appears to be U-shaped in age, as many others have found. The U-shaped path of well-being with age could reflect the evolution of expectations over the life-cycle – optimism during youth, disappointment in middle age, and adjustment to reduced expectations in old age. It could also be the result of a misspecification of material comfort through income – older households may be financing consumption out of savings rather than income, while younger households may be directing their income toward savings or transferring it to older relatives. If consumption rather than income is what affects well-being, the U-shape could be purely an artifact of this effect. Senik (2002) uses household expenditure rather than income, which should account for some of the life cycle savings effect that might be driving the U-shaped happiness-age relationship, but she finds the U shape as well.

[27] By using the term "happier" here and throughout this section, we really mean that they are less likely to give a category 1 response out of 5 on the happiness scale. In fact, rather than describe them as "happier," it would be more appropriate to speak about them being "less unhappy," since the modal response for the entire sample (Table 1) is category 2, "Rather unsatisfied."

[28] See, for example, Blanchflower and Oswald (2004) and Frey and Stutzer (2002). In Latin America, we find that there is no consistent difference between happiness levels of men and women. See Graham and Sukhtankar (2004), forthcoming. Our finding matches that of Senik (2002).

[29] While household expenditures are typically a more accurate measure of household consumption in economies with large black markets and informal sectors, we do not have extensive expenditure data for our respondents. We accept that there is a large margin of error in our household income measure, and also that it does not reflect the major role played by home grown food in household consumption. Our intent in using the relative ranking in addition to the straight income measure is that it may capture some of what is not captured by income. We also eliminated our zero income respondents (as discussed above) in an attempt to reduce error. The consistent relationship between both measures of income and happiness, meanwhile, suggests that our income measure is picking up a significant component of household consumption, meanwhile.

[30] For an examination of the importance of relative income in job satisfaction and a review of the related literature, see Clark and Oswald (1996).

most conducive to well-being (after controlling for differences in income, unemployment rates, and other factors) is Kazan, the capital of Tatarstan, in Russia's Volga valley region. The least happy place surveyed is in Altai Krai, in Western Siberia. Our results suggest that moving to the latter from Moscow would be worse than losing one's job, getting divorced, and dropping down an income quartile.[31]

3.2 The effect of the unemployment rate on well-being: results and discussion

Our estimate of the effect of regional unemployment rates on happiness suggests that respondents were positively affected by higher regional unemployment. It does not imply that Russians liked being unemployed; in fact, joblessness was a singularly damaging experience, with a negative effect on well-being substantially greater than that of dropping from the highest income quartile to the lowest.[32] Still, our coefficient estimates suggest that Russian society as a whole benefited from higher unemployment rates, since the estimated subjective cost to individuals who became unemployed was outweighed by the estimated benefit to society from having higher rates. Using coefficient estimates from an OLS version of our full regression (in order to make the meaning of the coefficients more manageable), we find that a one percentage point increase in the unemployment rate would be equivalent to raising the mean happiness score by .02, or moving 2% of respondents up one point on the five-point happiness scale.[33]

This highly unintuitive result is in sharp contrast to every study we have seen in the well-being literature. Much of the rest of the paper is devoted to explaining this result. It is also important to make a few observations at the outset.

First, the result depends largely on the fact that we control for the drastic well-being drop that the nation as a whole experienced in conjunction with its 1998 financial crisis. The trajectory of mean happiness responses over the 1995-2001 period roughly mirrors that of national unemployment rates.[34] (See Table 7.) When we conduct regressions like the one reported in Table 5

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[31] Our estimate is likely a lower bound, given selection bias. The happiness gap between Moscow and a locality in Altai Krai is partly due to sorting of energetic and talented people from the hinterlands to the economic opportunities of the country's economic center. In addition, the region dummies are likely capturing the general pattern that people were better off in cities than in rural Russia. Our three happiest places were Kazan, Moscow, City, and Moscow oblast; our three least happy places were localities in rural areas: Altaiskij Krai, Kur'isnkij Rajon; Krasnodarskij Kraj, Kushchevskij Rajon; and Smolensk CR.

[32] Note that this is the effect of being unemployed *while keeping income constant*. The large magnitude of the cost of joblessness (beyond the loss of income) is a well-documented fact in the literature. Darity and Goldsmith (1996) review some of the social psychology research exploring the well-being cost of being unemployed.

[33] For the full sample, the OLS coefficient value on *unemp* (being unemployed) is -.243 and the coefficient value on *unemprt* (the local unemployment rate) is 2.189. The effect of an increase of one percentage point in each regional unemployment rate is .01 (the fraction of the labor force moving to unemployment) multiplied by -.243 (the well-being cost of being unemployed) = -.00243, multiplied by .5 (the approximate fraction of the population in the labor force) = -.00122, added to .01 (the amount by which unemployment is rising) multiplied by 2.189 (the well-being cost of the unemployment rate). The subtotal of the second half is .02189, and the total is .02067. Di Tella et al (2001) and Di Tella et al (2003) perform similar calculations to estimate the well-being cost of recessions.

[34] The variability in mean happiness scores that occurred during the collection of the RLMS, as displayed in Table 6, is extraordinary. Comparing the evolution of mean happiness scores in the US General Social Survey (US-GSS) with those from the RLMS gives some idea of the singularity of the Russian experience. Over 22 rounds of surveys between 1972 and 1998, the mean happiness score in the US (on a scale of 1-3) ranges from a minimum of 2.14 in 1972 to a maximum of 2.25 in 1974. From the minimum to the maximum is an increase of only 5%. By contrast, the RLMS mean (on a scale of 1-5) ranges from 2.10 in 1998 to 2.62 in 2001, an increase of nearly 25%. The variability

without time dummies, we find the expected negative relationship between unemployment rates and well-being. This suggests that much of the negative effect of poor macroeconomic performance is being captured by the time dummies, and a positive relationship between unemployment rates and happiness only emerges when we focus more closely on inter-regional comparisons. Accepting that the crisis was, on the whole, an overwhelmingly negative experience for Russians, we believe that this inter-regional comparison reveals some important underlying complexity in the way that people react to macroeconomic developments.[35]

The second important observation concerns the nature of this positive response to higher unemployment. The most cynical view would be that this is an example of *schadenfreude* – malicious satisfaction at the misfortunes of others. More charitably, one could argue that people valued their own good fortune more in times when others were not so lucky (or felt less unhappy on account of their personal misfortune if they knew that others were also worse off). One of the important lessons of well-being research is the common-sense fact that everything subjective is relative. If reported well-being has a significant comparative component ("I feel pretty good because I'm doing well compared to. . ..."), then it is not surprising that people would *ceteris paribus* be less dissatisfied with their economic position – or life in general – when the local economy is lagging.

3.3 Channels through which the unemployment rate might affect well-being

There are a number of ways in which the economic welfare of others can affect the well being of individuals. A high unemployment rate may make people concerned about the possibility that they will lose their jobs and may cause them to increase effort at work or look for alternative employment. For a jobless individual, a higher unemployment rate may signal that getting back into the work force will take longer than expected. Economic malaise may also lead to personal malaise through externalities: one person's failure to find a job may inflict costs on others if it causes the unemployed person to commit criminal acts, reduce her economic contribution to society or her production of public goods, or otherwise act in ways that directly decrease the well-being of people around her. People may feel worse when the economy is bad because of sympathy with those who are out of work. A stagnant economy may also adversely affect individuals because it damages national or regional prestige.

Public health research has confirmed a link between stress-related ailments and the business cycle. In one important study, Brenner (1973) reported a strong correlation between unemployment rates and first admissions to mental hospitals between 1914 and 1967 in New York State. Burchell (1994) summarizes a number of studies illuminating the link between job insecurity and blood pressure, heart disease, and reported well-being, including one that asserts that the threat or anticipation of unemployment was as stressful as unemployment itself.

On the other hand, the economic fate of one's peers may have the opposite effect if it primarily serves as a means of comparison by which individuals form ideas about the baseline level of economic achievement that is expected of them. In that case, a higher level of unemployment

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of responses is not due to small sample size in the US-GSS: the RLMS surveys between 8,000 and 10,000 individuals each round, and the US-GSS surveys between 1,600 and 2,800 individuals each round. For a discussion of the comparability of the RLMS well-being data with other well-being datasets, see Veenhoven (2001).

[35] Every study to which we compare our results uses time dummies, so our use of time dummies does not explain why our results are different from what has been found elsewhere.

may bring some well-being benefits by reducing expectations of success, such that an unemployed person will feel more comfortable with being out of work and an employed person may appreciate her condition more.

The idea that individuals gauge their well-being by (and even derive well-being from) comparing themselves with others is well-established in the psychology literature. It has also been a central part of economists' treatment of happiness data since Easterlin (1974), who explained the failure of national happiness levels to rise with per capita income with reference to Duesenberry's (1949) relative income hypothesis. If people derive utility from moving ahead of their peers, as Duesenberry argued, it should come as no surprise that a society as a whole should experience no average increase in well-being as its aggregate income increases. A number of studies since then have confirmed the importance of expectations, reference groups, and relative position to well-being.[36] The positive effect of unemployment rates on the unemployed has been best documented by Clark (2003), who studied well-being survey responses and regional unemployment rates in Britain. He finds that higher rates actually increase the happiness of the unemployed (or, in other words, decrease their unhappiness), and that unemployed people are made less unhappy if other members of the same household are also unemployed.[37] No previous study that we are aware of has documented a positive effect of higher unemployment rates on the well-being of the employed.

In sum, there are a number of ways in which higher unemployment might damage well-being and only one (which we refer to as the comparison effect) by which it might make people happier. The finding that unemployment rates and well-being were positively correlated in our study suggests that the comparison effect dominated the other effects. We attempted to see if this was what was occurring in Russia, via a series of tests.

Our approach is to divide the sample based on characteristics related to the various effects we have discussed and conduct separate regressions on each group. None of these regressions directly tests the role of the comparison effect or another of the effects, because we cannot think of a way to divide the sample in which only one of the effects would be different between subsamples. For example, we expect that the implications of unemployment rates for personal employment would be particularly small for retirees, who are by definition not seeking work. Thus conducting separate regressions for working-age people and retirees would appear to be a good way of confirming that fear of being personally unemployed is one component of the negative response to higher regional unemployment rates. At the same time, retirees would probably also experience a weaker comparison effect than working-age people, since the unemployment rate is less of an indicator of what is expected of them. Hence the hypothesis we would be testing is ambiguous. In the absence of robust tests of the particular effects we describe, we take a more exploratory approach and divide the sample in a number of relevant ways and seek patterns.

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[36] Examples include Clark and Oswald (1996), Kahneman, Diener, and Schwartz (1999), Graham and Pettinato (2002), and Brown et al (2003).
[37] The household level effect is stronger for men, which is not surprising, as their identity is usually more associated with employment outside the household.

3.3 Split-sample regressions testing channels through which unemployment rates affect well-being

In order to determine whether the positive reaction to unemployment was evenly distributed across the sample, we conducted a number of regressions in which we split the sample according to intuitively significant characteristics of the population – gender, employment status, education level, age, etc. Table 8 presents the results. As in Table 5, the corresponding omitted/comparator groups for all of these regressions are: the lowest income quartile, the cohort that did not finish high school, single (as opposed to married or divorced) individuals, and those that are employed out of the home. Each row of the table reports coefficient estimates from a regression like that in Table 5 (using different subsamples) for two independent variables: a dummy variable for being personally unemployed and the regional unemployment rate.[38] To the right of the coefficient estimates and indicators of significance are statistics from each regression including the percentage of each subsample who are unemployed.

3.3.1 *The effect of being unemployed on well-being*

We begin by looking at how personal joblessness affects the well-being of various groups in the sample. While being unemployed is a significantly negative experience for all sub-samples we examine, the magnitude of that negative effect varies in quite consistent ways in our various tests. In general, the pattern seems to be that people who one would expect to command greater income – men, people with more education, urban dwellers, and married people – suffer more from being unemployed. The well-being cost of being unemployed is almost twice as great for men as it is for women (regressions 22 and 23), greater for more highly-educated people (18 & 19), and greater for married than unmarried people (26 and 27). Coefficient differences in many other regression sets follow this pattern, but only in the above cases are the coefficient differences statistically significant at the 95% level (see the last three columns of Table 8).

The categories of respondents that suffer the most from being unemployed are also, in general, the ones that themselves are less likely to be unemployed. We comparing the incidence of joblessness[39] in our split samples (reported in the fourth column from the right of Table 8). It is clear that lower probabilities of unemployment coincide with greater well-being costs from being unemployed when comparing people by income (regressions 8 & 9, 10 & 11), education (18 & 19), age (24 & 25), and urban/rural region (16 & 17).[40] Our finding matches the regional pattern described by Clark and Oswald (1994) in Britain. They find that the estimated cost of being unemployed in a region is roughly inversely proportional to the region's unemployment rate.

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[38] To convert these coefficient estimates into estimates of the marginal effect on the probability of giving the lowest response on the life satisfaction question (as in Table 5): multiply estimates for unemployed by -.176 and estimates for unemployment rate by -.176 * .0345 (the standard deviation for unemployment rate) = -.006.

[39] The incidence of joblessness for each subsample is just the sample mean of the dummy variable for being unemployed.

[40] In the absence of a direct question about rural or urban location, we relied on two indirect questions as proxies. The first was "born in a village or born in a city" and the second was "lives in a region where the majority were born in a city or not born in a city". The latter proved the most useful, as it accounts better for those who have moved away from their place of birth in later years.

There are two exceptions to this relationship between the likelihood of unemployment and the well-being costs of unemployment. Males are more likely to be without a job, yet they experience greater unhappiness from being unemployed than do females (regressions 22 & 23). The probability of joblessness for men in the sample is higher than that for females because more men seek work and thus report themselves as unemployed. The relationship also does not hold for regressions split by the respondent's level of concern about providing the essentials in the next year (12 & 13): people reporting great concern are more likely to be unemployed *and* they experience greater unhappiness from being unemployed. Dire economic concern seems to outweigh the forces that lower unemployment costs for those most likely to be jobless.

What are those forces? One explanation is that unemployment probabilities are negatively correlated with income levels, and our regressions capture the fact that being unemployed is more psychologically costly for low unemployment groups because it is also more economically costly for these groups. Thus respondents with a university education are more unhappy about unemployment because they are losing more income by being unemployed.[41] While this argument is compelling, it cannot alone explain the higher unemployment costs for those who report the most concern about providing the essentials, a group with a much lower income than the rest of the sample.

A second view is that different subsets of the population have different exogenously determined preferences for being employed, and that their rates of unemployment reflect those preferences. For example, perhaps people who attend university have a stronger dislike for being unemployed, and they therefore make greater efforts to obtain and hold a job.

A third explanation is that a group's disutility from being unemployed is affected by social stigma, which is related to the prevalence of unemployment in that group. Thus university educated individuals feel worse about being unemployed because unemployment among their peers is less common. Stutzer and Lalive (2004) find that unemployed people who live in Swiss cantons where a higher percentage of the population voted to reduce unemployment benefits in a national referendum are more likely to find work than those that live in cantons with a weaker work ethic. The effect is weaker for those whose native tongue is not that of the canton, supporting their hypothesis that social stigma can determine how much effort people put into finding work.[42]

3.3.2 *The effect of regional unemployment rates on well-being*

Again using the regression results in Table 8, we analyze variations in the coefficient on the regional unemployment rate from our split sample regressions and detect what patterns emerge.

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[41] The equivalence income of the university-educated employed population in our sample is about 50% higher than that of the population of non-university education employed respondents.

[42] Powdthavee (2003) reports a similar stigma effect for crime victims in South Africa: victims of non-violent crimes suffer a smaller well-being drop if they live in areas where such crimes are more common (and thus are more accustomed to crime and less likely to blame themselves). Apostolov (2003) finds that welfare recipients are happier in U.S. states that vote for more generous benefits, controlling for the income effects on happiness. Of course, a vulnerability of such studies is the possibility of sorting. People who would suffer more from a crime may be less likely to settle in areas where crime is more common. People who are more likely to experience extended bouts of unemployment may be more likely to settle in areas in which the social stigma on unemployment is lower. It is likely that there is a skills sorting effect: e.g. in the regions where there are more unstable, low-skill jobs and therefore more of the workers to fill those jobs, the stigma of unemployment is also lower. The causal direction – from lower stigma or from the nature of jobs – is difficult to determine.

Although the magnitude of the coefficient does vary greatly from sub-sample to sub-sample, those differences are only statistically significant along a few dimensions: employment status, income, education, and ethnicity.[43]

Regressions 2 and 3 on Table 8 indicate a positive and very significant relationship between unemployment rates and well-being both for the employed and unemployed sub-samples. The value of the coefficient is much larger for the unemployed sample than for the employed, although the difference is significant only at the 90% confidence level and not with correction for within-region error correlation. The finding that jobless people react more positively to higher unemployment rates than do those with jobs is consistent with Clark (2003), who finds that higher unemployment rates reduced the well-being of the employed but increased that of the unemployed in Britain.

In most of our other split sample regressions, the group with the higher likelihood of being unemployed also has the larger positive effect of local unemployment rates on well-being. Thus people with lower incomes appear to be happier when regional unemployment rates are higher (regressions 8 & 9, 10 & 11), as do people living in majority rural-born regions (16 & 17), people who did not attend post-secondary school (18 & 19), and non-Russians – e.g. minorities (20 & 21). *A priori*, this is slightly surprising, since, all else equal, one would think that a rise in unemployment would be more likely to threaten the job of someone in a high-unemployment sub-sample. Yet as noted above, though, in most cases these groups also had a lower well-being cost of becoming unemployed. People whose well-being is less affected by not having a job may be less concerned about the implications of a rising unemployment rate for their own employment status.

This hypothesis fits the results for gender (regressions 22 and 23): men suffer more from being unemployed and are less likely to view higher rates positively. It fits less well for marriage: married people seem to favor higher unemployment rates more although they dislike the experience of personal joblessness more (26 and 27). It also does not explain the results for retirees: although retirees would be expected to have no concern about their own unemployment, they favor high unemployment rates less than does the rest of the sample (4 and 5).

At the least, this series of split-sample regression results provides more evidence that our full sample finding – that Russians appeared to respond positively to higher unemployment rates – was not an aberration, and is in direct contrast to findings of other studies which use similar approaches. We suspect that the particularly volatile and uncertain economic environment of post-Soviet Russia was partly responsible, although cultural differences and differences in the quality, extent, and type of the data also may have played a role. The "preference" for higher rates was more pronounced among samples of the population where personal unemployment had a smaller well-being cost.

Our tentative explanation for these findings is that in an uncertain economic environment in which plans are upset and familiar standards of success lose meaning, comparison with one's peers becomes more important. In more stable situations, people can rely more heavily on their own experience and on conventional wisdom to formulate ideas about what level of economic success is sufficient. In tumultuous times these standards lose value and people rely more heavily on comparison with their peers. The defining role of uncertainty is supported by the fact that groups with higher probabilities of unemployment, and thus greater uncertainty about their own futures, are

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[43] When standard errors are calculated robust to within-region error correlation , only relative income is associated with a significant difference - at the 90% level.

happier (less unhappy) when regional unemployment rates are higher. Respondents still seem to be concerned about what higher unemployment rates mean for their own future, as is suggested by the fact that people who most dislike being unemployed seem to react less positively to bad economic news. But the role of comparison appears to dominate this and other effects.

Our finding and explanation are in direct contradiction to those of Senik (2002), who uses the same data and a very similar specification to test the effect of reference group income on well-being. She finds a positive effect that is strongest among those sub-samples facing highest uncertainty. She concludes that uncertainty in late-1990s Russia explains the fact that the success of peers has, on balance, a positive effect. We suspect that she finds the opposite result for one of two reasons. First, she chooses a measure of reference group success – income of individuals of similar age, education, and occupation – that is probably more relevant to individuals' own economic future than the local unemployment rate. As a relative measure becomes more relevant, its information content – its predictive value for one's own fate – may increasingly dominates the comparison effect. Thus the local unemployment rate may have a stronger comparative value since it is less immediately relevant for most people.

A second explanation is that Senik's study may actually be capturing sampling error in the measurement of individuals' income. Senik's finding is that, controlling for an individual's income, the income of that individual's reference group is positively correlated with his or her subjective well-being, and posits that individuals view their reference group income as a reflection of what the future holds for them.[44] An alternate explanation is that an individual's reference group income actually reflects that individual's current economic situation, in part because the period for which respondents were asked to report their income (the previous month) is short enough that we expect significant sampling error. For example, a trained dentist may have a high reference group income but a low reported income for the previous month because he took a vacation or had a low number of patients. His reported well-being is likely to be positively correlated with the income of other dentists, not so much because he takes their higher incomes as a signal that one day his income will be higher, but rather because his average monthly income is closer to what his peers reported than to what he reported for the previous month.

3.3.3 *Other possible explanations*

One possible explanation for the pattern that high-unemployment subsamples appear to be more positively affected by higher regional unemployment rates more is that unemployed members of the sample are driving the results. Our split-sample regressions demonstrated that unemployed people reacted more positively to higher unemployment rates than did employed people. We hypothesized that this could be because more unemployment means more companionship and lower stigma for the unemployed. To test whether the unemployed in the sample were driving the results, we repeated all of our regressions using only employed people, and our results are substantially the same as our full-sample findings (Table 9).

Another explanation for our finding that unemployment rates and well-being were positively related is that we may have mis-specified income. The correlation may be a spurious result of a

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[44] She refers to this as the "tunnel effect," employing Hirschman's analogy of a driver stuck in tunnel traffic who interprets movement in an adjacent lane as a sign that his or her own lane will move soon.

failure to properly capture the changing value of the ruble over the course of the survey and across regions. We perform all of our regressions without the income variable included and again find essentially the same results (Table 10).

It is also possible that official local unemployment rates are not the right measure of macroeconomic health. One reason for this may be that, since the RLMS are not regionally representative, the official unemployment rate may not capture reality for our respondents. As a test, we used the incidence of unemployment for each region based on the RLMS data in all of the regressions. This time our results are quite a bit different (Table 11). We no longer find an unambiguously positive relationship between unemployment rates and well-being. The full-sample coefficient is insignificant, and significant coefficients appear in only a few cases. Young people appear to dislike unemployment rates while older people (above 40) have a positive and insignificant reaction; the difference is highly statistically significant. The same pattern follows in a breakdown by age and gender: both young men and young women have a negative coefficient and older men have a positive coefficient. One somewhat-heroic interpretation of this result is that since the incidence of unemployment more closely reflects the relevant peer group for our respondents, the negative information channel was stronger, and thus the results are more mixed.

Another reason why unemployment rates may not be a good measure of the economic vitality of a region is the prevalance of the informal economy in Russia, as discussed above. In some cases, one could imagine that a higher unemployment rate was associated with a larger informal economy; if the externalities from participation in the informal economy are more positive than those of being strictly unemployed, it might appear that higher unemployment rates add to happiness. (Although this could only be true to an extent, since being unemployed was still a strongly negative experience in our regressions.)

4. Conclusions

Our study of Russian well-being and regional unemployment rates highlights the fact that people's happiness depends on comparison with others and, in certain circumstances, increases when others do more poorly. We find a positive relationship between well-being and unemployment rates. We estimate that during the period of our study each percentage point increase in the local unemployment rate raised average well-being of people in the region by an amount equivalent to moving 2% of the population up one level in life satisfaction measured on a five-point scale. Our intuition is that the comparison effect drives this result: individuals revise downwards their standards of what is good enough when they observe their peers suffering in a troubled economy. These results, based on regression analysis of thousands of survey responses, appear to confirm what has been documented in experiments in psychology and behavioral economics.

If this is indeed what is going on, what are the policy implications? Should policy-makers sometimes increase unemployment so that citizens will appreciate what they have more and provide more cheerful responses on happiness surveys? Of course not. Not only are the results we find here possibly unique to the Russian economic situation of the late-1990s, but they are a poor guide to policy because they rely so heavily on changing expectations.

To the extent that expectations shape well-being responses and change over time, they make the application of these data to policy problems difficult. In more stable economies such as those studied by Di Tella et al (2001) and Alesina et al (2003), expectations may be fairly resistant to

macroeconomic fluctuations – one's idea of success is not fundamentally altered by what happens in the labor or stock markets, for example. In those cases, it may be possible to draw macroeconomic policy lessons from happiness regressions. But in the tumultuous environment of post-Soviet Russia, expectations were shaken by the dramatic fluctuations of the economy, and changing expectations appear to have driven our econometric results. Policy-makers cannot be in the business of shaping people's expectations. Our results must be viewed primarily as a window into human psychology rather than as a guide to maximizing social welfare.

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Table 1: To what extent are you satisfied with your life in general at the present time?

	Round 6	Round 7	Round 8	Round 9	Round 10	Total
Date	Oct - Dec 1995	Oct - Dec 1996	Oct 1998 - Jan 1999	Sept - Dec 2000	Sept - Dec 2001	
Not at all satisfied	2,394	2397	2974	2013	1617	11395
%	*28.7%*	*30.4%*	*35.1%*	*22.6%*	*16.3%*	*26.2%*
Rather unsatisfied	3014	2907	2885	3228	3481	15515
%	*36.2%*	*36.9%*	*34.1%*	*36.2%*	*35.1%*	*35.7%*
Both yes and no	1751	1604	1570	2007	2440	9372
%	*21.0%*	*20.4%*	*18.5%*	*22.5%*	*24.6%*	*21.5%*
Rather satisfied	887	756	845	1303	1816	5607
%	*10.6%*	*9.6%*	*10.0%*	*14.6%*	*18.3%*	*12.9%*
Fully satisfied	289	210	193	360	561	1613
%	*3.5%*	*2.7%*	*2.3%*	*4.0%*	*5.7%*	*3.7%*
Total	8335	7874	8467	8911	9915	43502

Table 2: Stability of happiness responses (response at time t at left, t+1 at top)

time = t		Not at all satisfied	Less than satisfied	Both yes and no	Rather satisfied	Fully satisfied	Total %	Total observ-ations
	Not at all satisfied	**48.18%**	32.48%	12.57%	5.24%	1.53%	*29.05%*	*7,993*
	Less than satisfied	22.19%	**45.18%**	20.64%	10.25%	1.74%	*36.60%*	*10,072*
	Both yes and no	15.98%	33.80%	**31.62%**	15.73%	2.87%	*20.49%*	*5,639*
	Rather satisfied	9.40%	26.17%	25.37%	**31.76%**	7.30%	*10.86%*	*2,988*
	Fully satisfied	12.73%	20.00%	19.03%	25.82%	**22.42%**	*3.00%*	*825*
	Total %	*26.79%*	*36.34%*	*21.01%*	*12.72%*	*3.13%*		
	Total observations	*7,373*	*10,000*	*5,782*	*3,500*	*862*		*27,517*

Table 3: Summary statistics for Russian regional unemployment rates, with US and European figures for comparison

Series	Period	Geographical units	Observations	Mean		Std. Dev.	Min.	Max.	Source
Russia	1995-2001 (except 1997, 1999)	regions	Total = 190 n = 38 t = 5	0.107	Overall Between Within	0.032 0.023 0.023	0.021 0.048 0.061	0.239 0.177 0.169	RLMS, authors' calculations
US	1981-1996	states	Total = 491 n = 44 t = 11.2	0.067	Overall Between Within	0.023 0.016 0.017	0.024 0.033 0.026	0.180 0.119 0.132	Alesina et al (2003), Table B-US
Europe	1975-1992	countries	Total = 69 n = 12 t = 5.75	0.083	Overall Between Within	0.042 0.043 0.023	0.002 0.011 0.029	0.220 0.190 0.134	Alesina et al (2003), Table B-EUR
Russia	1995-2001 (except 1997, 1999)	regions, weighted by representation in RLMS	Total = 78285 n = 12657 t = 5	0.103	Overall Between Within	0.035 0.027 0.022	0.021 0.048 0.057	0.239 0.177 0.165	RLMS, authors' calculations

Table 4: How concerned are you that you might lose your job?

Legend:
- Not at all concerned
- Not very concerned
- Yes and no
- A little concerned
- Very concerned
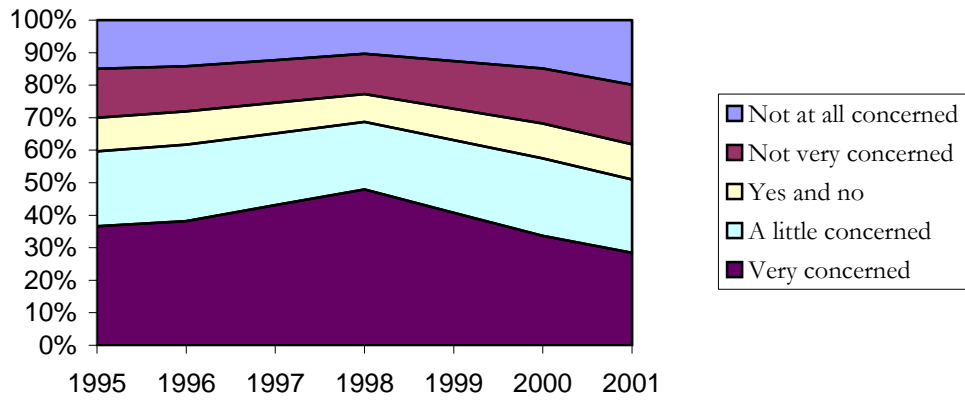
Table 5: Complete regression results

Ordered logit regression; dependent variable **reported life satisfaction (1, 2, 3, 4, 5)**	**Marginal effect:** change in probability of scoring 1 out of 5 in life-satisfaction (fn 0)	Coefficient estimate	SEs corrected for auto-correlation w/i individuals		SEs corrected for correlation of residuals w/i regions	
			Signif (fn 1)	z	Signif	z
Lagged satisfaction	-0.115	0.600	***	41.18	***	25.95
Age	0.170	-0.047	***	-10.08	***	-7.48
Age squared	-0.138	0.000	***	8.65	***	7.21
Male	-0.030	0.172	***	6.86	***	6.75
Real household equivalence income (fn 2)	-0.023	0.260	***	6.9	***	3.27
Regional unemployment rate	-0.026	4.239	***	4.88	**	2.25
Income quartile within region (fn 3)						
Second quartile	-0.010	0.058	*	1.76		1.41
Third quartile	-0.045	0.263	***	7.67	***	5.36
Fourth quartile	-0.078	0.470	***	11.1	***	5.81
Educational attainment (fn 4)						
Finished high school	0.011	-0.060	*	-1.7		-1.58
Attended some university	-0.014	0.080	**	2.43	**	2.49
Marriage status (fn 5)						
Married	-0.010	0.055		1.54		1.21
Divorced	0.024	-0.130	**	-2.42	**	-2.37
Widowed	0.010	-0.055		-0.96		-0.79
Employment categories (fn 6)						
Self-employed	-0.073	0.474	***	4.94	***	3.9
Retired	0.035	-0.193	***	-4.4	***	-5.04
Student	-0.026	0.152	**	2.59	**	2.44
Housewife	-0.028	0.165	***	2.91	***	3.31
Unemployed	0.108	-0.547	***	-12.02	***	-9.3
Round dummies (fn 5)						
Round 7 (Oct - Dec 1996)	-0.053	0.314	***	6.25	***	3.58
Round 8 (Oct 1998 - Jan 1999)		dropped				
Round 9 (Sept - Dec 2000)	-0.127	0.809	***	17.85	***	12.91
Round 10 (Sept - Dec 2001)	-0.160	1.035	***	19.87	***	11.58
Regional dummies		38 included				
Cut points				**Standard errors of cut points**		
_cut1		0.268		0.184		0.372
_cut2		2.130		0.185		0.339
_cut3		3.474		0.186		0.344
_cut4		5.412		0.189		0.357

Regression statistics				
Number of observations			27517	27517
Wald chi2(58)			5689.1	. (fn 8)
Prob > chi2			0	.(fn 8)
Pseudo R2			0.0928	0.0928
Log likelihood			-35429.2	-35429.2

(fn 0) Marginal effects reflect the change in the probability of scoring "Not at all satisfied" on the RLMS with a given change in the independent variable -- a one standard deviation change in the continuous variables and a change from 0 to 1 in the dummy variables. See Table 6 for standard deviations.

(fn 1) Here and in all tables, * indicates significant at 10%, ** at 5%, and *** at 1%.

(fn 2) The RLMS asks each individual to report his or her income for the previous month. We created a measure of household equivalence income by summing the income reported by all members of a single household in the RLMS survey (which measures income in the past month) and dividing it by the square-root of the number of people in that household. To convert this value into a real figure, we used a CPI measure from the International Monetary Fund's International Financial Statistics. The calculation was complicated by the fact that Russia dropped three zeros from the ruble denomination on January 1, 1998. To improve the comparability of scale in the coefficients, we multiplied the coefficient on real household euqivalence income by 1000 on this table.

(fn 3) Omitted group is the lowest income quartile. We calculate the income quartiles region by region using household equivalence income.
(fn 4) Omitted group did not finish high school.
(fn 5) Omitted group is single.

(fn 6) Omitted group is employed outside of the home.

(fn 7) The regression makes use of lagged satisfaction responses from Round 6, Oct - Dec 1995. Since lagged responses were missing for every respondent in Round 6, the regression makes use of responses from rounds 7-10 and drops a round for multicollinearity.
(fn 8) It is not possible to calculate these statistics when errors are assumed to correlated by a variable that is in the model (in this case, region dummies).

Table 6: Summary statistics

Variable	All rounds Mean	All rounds SD	Round 6 (10/98-12/95) Mean	Round 7 (10/96-12/96) Mean	Round 8 (10/98-1/99) Mean	Round 9 (9/00-12/00) Mean	Round 10 (9/01-12/01) Mean
Life-satisfaction (1-5)	2.323	1.106	2.240	2.171	2.102	2.413	2.619
Lagged satisfaction (1-5)	2.235	1.084	na	2.240	2.171	2.102	2.413
Age	39.931	20.503	36.197	35.980	42.918	42.709	42.826
Age squared	2014.9	1782.7	1796.2	1777.1	2189.0	2179.0	2190.2
Male	0.439	0.496	0.452	0.450	0.434	0.431	0.426
Real household equivalence income	392.445	494.770	420.917	400.784	280.883	360.689	477.552
Regional unemployment rate	0.103	0.035	0.093	0.096	0.135	0.102	0.089
Second quartile	0.237	0.425	0.243	0.207	0.236	0.250	0.250
Third quartile	0.249	0.433	0.252	0.243	0.250	0.250	0.251
Fourth quartile	0.244	0.429	0.243	0.243	0.243	0.245	0.244
Finished high school	0.263	0.440	0.237	0.227	0.282	0.282	0.296
Attended some university	0.383	0.486	0.319	0.327	0.419	0.426	0.440
Married	0.521	0.500	0.498	0.493	0.560	0.540	0.521
Divorced	0.080	0.271	0.096	0.093	0.067	0.067	0.071
Widowed	0.119	0.324	na	na	0.117	0.119	0.122
Self-employed	0.016	0.126	0.014	0.013	0.017	0.018	0.020
Retired	0.234	0.424	0.208	0.205	0.258	0.255	0.254
Student	0.089	0.285	0.059	0.067	0.105	0.112	0.108
Housewife	0.045	0.207	0.040	0.037	0.047	0.048	0.053
Unemployed	0.086	0.280	0.067	0.076	0.109	0.096	0.088

Table 7: National unemployment rates and mean reported well-being, Russia 1995-2001

Legend:
- National unemployment rate
- Mean happiness response
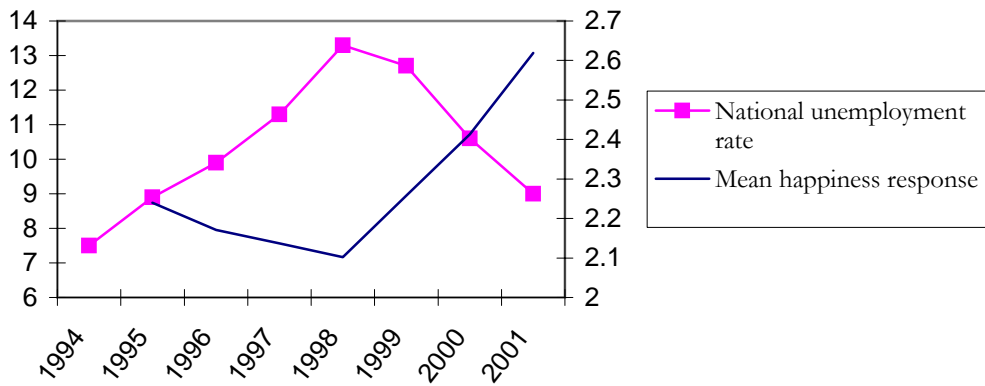
Table 8: Split-sample regression estimates of the effect of unemployment rates and being unemployed on well being

Reg #	Sample (Ordered logit regressions, as in Table 5)	Unemployed			Local unemp rate			# observations	Pseudo R^2	Sample unemprt	Significance of differences between coefficients (fn 1)		
		Coef	z1	z2	Coef	z1	z2				Unemp	Unemp rt, z1	Unemp rt, z2
1	Whole	-0.547	***	***	4.239	***	**	27517	0.093	8.6%			
	Employment status and attitudes												
2	Employed	na	na	na	3.645	***	**	24982	0.093	0.0%		*	
3	Unemployed	na	na	na	9.814	***	**	2535	0.074	100.0%			
4	Not retired	-0.556	***	***	4.860	***	**	19834	0.097	11.2%			
5	Retired	na	na	na	2.573			7683	0.075	0.0%			
6	High fear of unemployment	na	na	na	3.831	*	*	5299	0.090	0.0%			
7	Low fear of unemployment	na	na	na	3.360	**	*	8928	0.086	0.0%			
	Income status and attitudes												
8	Local bottom half	-0.486	***	***	6.927	***	***	13741	0.084	11.3%		**	*
9	Local upper half	-0.639	***	***	1.143			13776	0.089	5.8%			
10	Below subsistence	-0.504	***	***	5.216	***	**	14419	0.080	11.8%		*	
11	Above subsistence	-0.625	***	***	2.174	*		13037	0.082	5.3%			
12	High concern about providing essentials	-0.554	***	***	2.989	**		14673	0.080	11.6%	*		
13	Low concern about providing essentials	-0.376	***	***	4.150	***	*	12601	0.065	7.2%			
	Urban and rural												
14	Born in a village	-0.436	**	**	-1.667			2457	0.074	8.2%			
15	Born in a city	-0.559	***	***	6.532			1567	0.079	10.9%			
16	Lives in a region in which the majority of respondents were not born in a city	-0.499	***	***	3.950	***	*	22146	0.092	9.1%	**		
17	Lives in a region in which the majority of respondents were born in a city	-0.790	***	***	1.685			5371	0.092	6.9%			
	Education												
18	Did not attend any post-secondary school	-0.480	***	***	5.581	***	**	15688	0.085	9.3%	**	*	
19	Attended some post-secondary school	-0.676	***	***	2.295	*		11829	0.098	7.5%			
	Ethnicity												
20	Identifies self as Russian	-0.509	***	***	3.259	***	***	21365	0.098	8.5%		***	
21	Does not identify self as Russian	-0.517	***	***	10.453	***	*	4243	0.081	12.5%			
	Gender												
22	Female	-0.348	***	***	5.103	***	***	15924	0.095	6.8%	***		
23	Male	-0.737	***	***	3.025	**		11593	0.090	10.9%			
	Age												
24	Under 40	-0.483	***	***	4.290	***		11560	0.091	11.3%			
25	Over 40	-0.612	***	***	4.137	***	**	15380	0.087	5.5%			

#		Coef						N	R^2	%	fn1		
	Marriage status												
26	Unmarried	-0.450	***	***	2.774	**		11202	0.097	8.6%	*		
27	Married	-0.618	***	***	5.108	***	**	16315	0.092	8.5%			
	Gender and age												
28	Female under 40	-0.277	***	***	5.533	***	**	6242	0.095	9.9%	***		
29	Male under 40	-0.671	***	***	3.019			5318	0.091	12.9%			
30	Female over 40	-0.388	***	***	4.434	***	**	9377	0.087	3.9%			
31	Male over 40	-0.821	***	***	3.492	*		6003	0.087	8.0%	**		
	Gender and marital status												
32	Female, unmarried	-0.272	***	***	3.698	**	*	7563	0.095	6.1%	**		
33	Male, unmarried	-0.634	***	***	0.709			3639	0.100	12.8%			
34	Female, married	-0.404	***	***	6.262	***	***	8361	0.099	7.7%			
35	Male, married	-0.816	***	***	3.781	**	*	7954	0.087	9.5%	***		

fn 1: This column reports the level of significance of a test that the coefficient estimates in the two regressions are the same. For the four-part split sample tests (regressions 26-33), we test the hypothesis that each coefficient estimate is equal to the full sample estimate.

Table 9: As in Table 8, without unemployed respondents

Reg #	Sample	Local unemployment rate			# observations	Pseudo R^2	Sample unemprt	Significance of differences between coefficients (fn 1)	
	Regressions are ordered logit and omit unemployed respondents.	Coef	z1	z2				Unemp rt, z1	Unemp rt, z2
1	Whole	3.535	***	**	24266	0.094	0.0%		
	Employment status and attitudes								
2	Employed	3.535	**	**	24266	0.094	0.0%		
3	Unemployed	na	na	na	na	na	na		
3.1	Not retired	3.924	***	**	16657	0.096	0.0%		
3.2	Retired	2.607			7609	0.075	0.0%		
4	High fear of unemployment	3.880	*	*	5090	0.092	0.0%		
5	Low fear of unemployment	3.662	**	*	8640	0.086	0.0%		
	Income status and attitudes								
6	Local bottom half	6.746	***	***	11681	0.085	0.0%	***	**
7	Local upper half	0.220			12585	0.090	0.0%		
8	Below subsistence	4.932	***	**	12172	0.082	0.0%	*	
9	Above subsistence	1.249			12037	0.084	0.0%		
10	High concern about providing essentials	2.565	*		12672	0.079	0.0%		
11	Low concern about providing essentials	3.252	**		11369	0.065	0.0%		
	Urban and rural								
12	Born in a village	-16.604			2249	0.071	0.0%		*
13	Born in a city	12.018			1379	0.080	0.0%		
14	Lives in a region in which the majority of respondents were not born in a city	3.112	***	*	19410	0.092	0.0%		
15	Lives in a region in which the majority of respondents were born in a city	1.376			4856	0.096	0.0%		
	Education								
16	Did not attend any post-secondary school	5.131	***	***	13518	0.087	0.0%	**	
17	Attended some post-secondary school	1.338			10748	0.098	0.0%		
	Ethnicity								
18	Identifies self as Russian	3.208	***	***	19037	0.098	0.0%	*	
19	Does not identify self as Russian	7.643	***		3558	0.081	0.0%		
	Gender								
20	Female	4.409	***	***	14439	0.097	0.0%		
21	Male	2.230			9827	0.086	0.0%		

	Age								
22	Under 40	3.344	**		9434	0.090	0.0%		
23	Over 40	3.502	***	**	14338	0.085	0.0%		
	Marriage status								
24	Unmarried	1.813			9725	0.099	0.0%		
25	Married	4.478	***	**	14541	0.093	0.0%		
	Gender and age								
26	Female under 40	4.276	**		5255	0.098	0.0%		
27	Male under 40	2.226			4179	0.084	0.0%		
28	Female over 40	3.830	**	**	8915	0.086	0.0%		
29	Male over 40	2.892			5423	0.082	0.0%		
	Gender and marital status								
30	Female, unmarried	2.912		*	6883	0.097	0.0%		
31	Male, unmarried	-1.121			2842	0.092	0.0%		
32	Female, married	5.565	***	**	7556	0.101	0.0%		
33	Male, married	3.227	*		6985	0.085	0.0%		

fn 1: This column reports the level of significance of a test that the coefficient estimates in the two regressions are the same. For the four-part split sample tests (regressions 26-33), we test the hypothesis that each coefficient estimate is equal to the full-sample estimate.

Table 10: Income controls omitted

Reg #	Sample	Unemployed			Local unemp rate			# observations	Pseudo R^2	Sample unemprt	Significance of differences between coefficients (fn 1)		
	Regressions are ordered logit with all controls except income.	Coef	z1	z2	Coef	z1	z2				Unemp	Unemp rt, z1	Unemp rt, z2
1	Whole	-0.634	***	***	4.406	***	**	27517	0.086	8.6%			
	Employment status and attitudes												
2	Employed	na	na	na	3.761	***	**	24982	0.086	0.0%		**	
3	Unemployed	na	na	na	10.309	***	**	2535	0.070	100.0%			
3.1	Not retired	-0.632	***	***	5.164	***	**	19834	0.090	11.2%			
3.2	Retired	na	na	na	2.552			7683	0.069	0.0%			
4	High fear of unemployment	na	na	na	3.920	*	*	5299	0.082	0.0%			
5	Low fear of unemployment	na	na	na	3.619	**	*	8928	0.078	0.0%			
	Income status and attitudes												
6	Local bottom half	-0.507	***	***	7.259	***	***	13741	0.084	11.3%		**	
7	Local upper half	-0.648	***	***	1.595			13776	0.086	5.8%			*
8	Below subsistence	-0.529	***	***	5.184	***	**	14419	0.079	11.8%			
9	Above subsistence	-0.644	***	***	2.601	**		13037	0.078	5.3%			
10	High concern about providing essentials	-0.625	***	***	3.004	**		14673	0.074	11.6%	**		
11	Low concern about providing essentials	-0.426	***	***	4.352	***	*	12601	0.061	7.2%			
	Urban and rural												
12	Born in a village	-0.574	***	***	-3.273			2457	0.066	8.2%			
13	Born in a city	-0.681	***	***	8.770			1567	0.069	10.9%			
14	Lives in a region in which the majority of respondents were not born in a city	-0.582	***	***	3.913	***	*	22146	0.085	9.1%	**		
15	Lives in a region in which the majority of respondents were born in a city	-0.874	***	***	2.707			5371	0.086	6.9%			
	Education												
16	Did not attend any post-secondary school	-0.555	***	***	5.480	***	**	15688	0.080	9.3%	**		
17	Attended some post-secondary school	-0.772	***	***	2.837	**		11829	0.090	7.5%			
	Ethnicity												
18	Identifies self as Russian	-0.604	***	***	3.359	***	**	21365	0.091	8.5%		***	
19	Does not identify self as Russian	-0.571	***	***	10.751	***	*	4243	0.076	12.5%			
	Gender												
20	Female	-0.434	***	***	5.259	***	***	15924	0.087	6.8%	***		
21	Male	-0.823	***	***	3.195	**		11593	0.084	10.9%			
	Age												
22	Under 40	-0.551	***	***	4.377	***		11560	0.085	11.3%	*		
23	Over 40	-0.739	***	***	4.348	***	**	15380	0.080	5.5%			

#	Variable	Coef.			Coef.			N			fn 1		
	Marriage status												
24	Unmarried	-0.574	***	***	3.018	**		11202	0.090	8.6%			
25	Married	-0.692	***	***	5.286	***	**	16315	0.085	8.5%			
	Gender and age												
26	Female under 40	-0.342	***	***	5.475	***	**	6242	0.086	9.9%	***		
27	Male under 40	-0.740	***	***	3.158			5318	0.087	12.9%			
28	Female over 40	-0.521	***	***	4.646	***	***	9377	0.080	3.9%			
29	Male over 40	-0.942	***	***	3.588	**		6003	0.079	8.0%	***		
	Gender and marital status												
30	Female, unmarried	-0.411	***	***	3.959	**	**	7563	0.086	6.1%	**		
31	Male, unmarried	-0.724	***	***	0.926			3639	0.097	12.8%			
32	Female, married	-0.463	***	***	6.423	***	***	8361	0.092	7.7%	*		
33	Male, married	-0.904	***	***	3.964	**		7954	0.079	9.5%	***		

fn 1: This column reports the level of significance of a test that the coefficient estimates in the two regressions are the same. For the four-part split sample tests (regressions 26-33), we test the hypothesis that each coefficient estimate is equal to the full sample estimate.

Table 11: Sample unemployment rate

Reg #	Sample *Ordered logit with standard controls; instead of official regional unemployment rate we use the sample unemployment rate in regressions.*	Unemployed Coef	z1	z2	Local sample unemp rate Coef	z1	z2	# observations	Pseudo R^2	Sample unemprt	Significance of differences between coefficients (fn 1) Unemp	Unemp rt, z1	Unemp rt, z2
1	Whole	-0.469	***	***	-0.388			24930	0.074	8.6%			
	Employment status and attitudes												
2	Employed	na	na	na	-0.182			22698	0.074	0.0%			
3	Unemployed	na	na	na	-1.681			2232	0.060	100.0%			
3.1	Not retired	-0.479	***	***	-0.380			18056	0.076	11.2%			
3.2	Retired	na	na	na	-0.691			6874	0.065	0.0%			
4	High fear of unemployment	na	na	na	0.161			5044	0.070	0.0%			
5	Low fear of unemployment	na	na	na	0.539			8215	0.065	0.0%			
	Income status and attitudes												
6	Local bottom half	-0.435	***	***	0.004			12406	0.067	11.3%			
7	Local upper half	-0.519	***	***	-0.720			12524	0.069	5.8%			
8	Below subsistence	-0.419	***	***	-0.568			12854	0.066	11.8%			
9	Above subsistence	-0.546	***	***	-0.382			12033	0.060	5.3%			
10	High concern about providing essentials	-0.480	***	***	-0.500			13641	0.063	11.6%			
11	Low concern about providing essentials	-0.343	***	***	1.117			11101	0.049	7.2%			
	Urban and rural												
12	Born in a village	-0.236			1.651			2204	0.070	8.2%			
13	Born in a city	-0.432	**	**	-4.518			1553	0.079	10.9%			
14	Lives in a region in which the majority of respondents were not born in a city	-0.424	***	***	-0.136			20185	0.074	9.1%	**	*	
15	Lives in a region in which the majority of respondents were born in a city	-0.696	***	***	-3.409	**	*	4745	0.071	6.9%			
	Education												
16	Did not attend any post-secondary school	-0.423	***	***	0.316			14438	0.069	9.3%			
17	Attended some post-secondary school	-0.536	***	***	-1.558	*		10492	0.076	7.5%			
	Ethnicity												
18	Identifies self as Russian	-0.430	***	***	-1.268	*		19684	0.078	8.5%			
19	Does not identify self as Russian	-0.518	***	***	0.547			3967	0.062	12.5%			
	Gender												
20	Female	-0.327	***	***	-0.757			14593	0.075	6.8%	***		
21	Male	-0.595	***	***	0.222			10337	0.073	10.9%			
	Age												
22	Under 40	-0.377	***	***	-2.624	***	***	10413	0.071	11.3%	*	***	***
23	Over 40	-0.568	***	***	1.181			13971	0.073	5.5%			

#		Coef.			Coef.			N		%			
	Marriage status												
24	Unmarried	-0.428	***	***	-1.234			9570	0.076	8.6%			
25	Married	-0.496	***	***	0.061			15360	0.076	8.5%			
	Gender and age												
26	Female under 40	-0.251	***	**	-2.944	**	**	5723	0.074	9.9%	**	*	*
27	Male under 40	-0.481	***	***	-2.180	*	*	4690	0.073	12.9%			
28	Female over 40	-0.364	***	***	0.601			8578	0.072	3.9%			
29	Male over 40	-0.742	***	***	2.161		*	5393	0.074	8.0%	**	*	*
	Gender and marital status												
30	Female, unmarried	-0.354	***	***	-1.177			6571	0.072	6.1%			
31	Male, unmarried	-0.489	***	***	-1.166			2999	0.083	12.8%			
32	Female, married	-0.305	***	***	-0.527			8022	0.081	7.7%			
33	Male, married	-0.660	***	***	0.767			7338	0.073	9.5%	*		

fn 1: This column reports the level of significance of a test that the coefficient estimates in the two regressions are the same. For the four-part split sample tests (regressions 26-33), we test the hypothesis that each coefficient estimate is equal to the full-sample estimate.