

Does happiness pay? An exploration based on panel data from Russia

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Abstract

Well-being research has supported the common sense view that income, health, and other factors affect happiness. We use panel data from Russia to assess the reverse causation — that happiness itself affects income, health, and other factors. We find that people who had higher “residual happiness” in 1995 – people who were happier after correcting for the usual determinants of well-being – made more money and were in better health in a survey 5 years later. Psychologists attribute a large part of well-being to factors such as self-esteem and optimism. The same factors appear to influence individuals’ wealth and health.

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The study of happiness, or subjective well-being, and its implications for economic behavior is a fairly new area for economists, although psychologists have been studying it for years. The findings of this research highlight the non-income determinants of economic behavior. For example, cross-country studies of happiness consistently demonstrate that after certain minimum levels of per capita income, average happiness levels do not increase

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as countries grow wealthier.¹ Within societies, most studies find that wealthier individuals are on average happier than poor ones, but after a minimum level of income, more money does not make people much happier.² Because income plays such an important role in standard definitions and measures of well-being, these findings have theoretical, empirical, and policy implications.

Some of the earliest economists (such as Jeremy Bentham) were concerned with the pursuit of individual happiness. As the field became more rigorous and quantitative, however, much narrower definitions of individual welfare, or utility, became the norm, even though economics was still concerned with public welfare in the broader sense. In addition, economists have traditionally shied away from the use of survey data because of justifiable concerns that answers to surveys are subject to bias from factors such as respondents' mood at the time of the survey and minor changes in the phrasing of survey questions.³ Thus, traditional economic analysis focuses on actual behavior, such as revealed preferences in consumption, savings, and labor market participation, under the assumption that individuals rationally process all the information at their disposal to maximize their utility.⁴ More recently, behavioral economics has begun to have influence at the margin, as an increasing number of economists supplement the methods and research questions more common to economists with those more common to psychologists.⁵

Most research on subjective well-being relies heavily but not exclusively on surveys and combines methods from both professions. Typically, the questions are very simple ones about how happy or satisfied respondents are with their lives, with responses ranging from not very or not at all to very or fully satisfied.⁶ While there are justified criticisms of how accurate such questions are in assessing life satisfaction at the individual level, there is remarkable consistency in the patterns generated by the answers to these questions aggregated across populations and over time. In addition, a number of psychologists have been able to "validate" the use of these questions through other measures, for example, by showing that individuals who answer happiness questions positively also demonstrate other measures of positive affect, such as smiling more frequently.⁷

¹ Easterlin (1974).

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

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

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

⁵ A particularly important sign of support for this line of work was the granting of the 2002 Nobel Prize in economic science to Daniel Kahneman, a psychologist.

⁶ Most surveys use a 4-point scale, although more recently psychologists have begun to advocate the use of either 7- or 10-point scales as more accurate.

⁷ See, for example, Diener and Biswas-Diener (1999). More recently, Kahneman has been conducting studies to determine differences in the determinants of positive affect from those of life satisfaction at the Center for the

Recent work on subjective well-being by both economists and psychologists contributes to our understanding of seemingly non-rational economic behavior. Examples of such behavior are the contrast between predicted and experienced utility, such as individuals valuing economic losses disproportionately more than gains; conspicuous consumption to demonstrate wealth at the margin; and/or the contrast between observed time preferences and the standard economic analyses of discounting.⁸ Better understanding of such behavior helps explain unusual patterns in consumption and savings, in voting, in the structure of redistributive policies, in attitudes about insecurity and social insurance, and in support for particular economic policies, among others.⁹

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

One of the primary difficulties in establishing this direction of causality is the lack of adequate data. Most of the happiness research is based on cross-section data, while to answer these questions, we need panel data (i.e. surveys that follow the same people over time. Such data are particularly rare for developing countries). A few isolated studies by psychologists in the US and Australia indicate that happier people earn more income in later periods than do their less happy cohorts,¹⁰ yet for the most part, research on subjective well-being has not addressed these questions.

We take advantage of a large panel for Russia, the Russia Longitudinal Monitoring Survey (RLMS), that covers an average of almost 13,000 Russians per year from 1992 to 2001 and from which we create a panel dataset containing data in 1995 and 2000.¹¹

Study of Well-Being at Princeton. He presented preliminary findings at a Center on Social and Economic Dynamics seminar at Brookings, February 2002 (Kahneman et al., 2002). Psychologists tend to make a distinction between happiness and life satisfaction, while economists tend to use the terms satisfaction and happiness interchangeably (as we do in this paper). The correlation between responses to life satisfaction and happiness questions, meanwhile, tends to be on the order of 0.95.

⁸ See Kahneman and Tversky (2000) and Thaler (2000).

⁹ Another of the many important insights from the happiness research is the important role of adaptation and rising expectations. As individuals (and those in their reference group) earn more income, their expectations also rise or adapt. Thus, higher levels of income are needed to achieve the same levels of well-being (the so-called “hedonic treadmill”). This literature is summarized in Graham and Pettinato (2002a). Adaptations can also adjust downwards, as in the case of health and aging. Several studies show that individuals adapt to changes in health status such as the onset of a serious disease by changing their reference point for “good” health, and, after a temporary drop, continue to evaluate their well-being at the same or similar levels as before. See Groot (2000).

¹⁰ These effects seem to be more important for those at the higher end of the income ladder. See Diener and Biswas-Diener (1999).

¹¹ The RLMS is a nationally representative panel study for Russia, carried out in collaboration with the University of North Carolina at Chapel Hill and with funding from US AID among others. More information on the survey

(Summary statistics are given in Table 1.) Among many other questions, there is a standard happiness question in the RLMS that asks “to what extent are you satisfied with your life at the present time,” with possible answers being “not at all satisfied,” “less than satisfied,” “both yes and no,” “rather satisfied,” and “fully satisfied.”¹²

Data such as these, containing observations on both happiness and income for the same respondents at more than one point in time, are extremely rare. One drawback of the dataset, however, is that it covers a time period in Russia when there was a tremendous amount of economic and structural change that affected many people’s livelihood and economic well-being. This is a context which is much more typical of economies in transition, therefore, than of more established market economies. On the other hand, the instability in economic conditions provides us with a better than average reference point for assessing stability in subjective well-being levels that is independent of changes in economic conditions.

We depart in this study from earlier analysis by Graham and Pettinato which compares happiness in Latin America and Russia. In contrast, we analyze happiness data on the same individuals for two points in time and examine a number of questions in which the direction of causality is not clear from cross-section data alone.¹³ Our central goal is to test whether people who reported higher happiness in 1995 than would be expected based on their socioeconomic and demographic characteristics fared differently in 2000 than others. Presumably, these differences are due to psychological or other non-economic or demographic factors. The purpose of this exercise is to determine whether these differences, appearing in people’s reported happiness levels in the first period, have effects on outcomes such as income, marriage status, and employment in the second.

Psychologists find that there is a remarkable degree of consistency in people’s level of well-being over time. They attribute this stability in happiness levels to homeostasis, in which happiness levels are not only under the influence of experience, but also controlled by positive cognitive bias such as self-esteem, control, and optimism.¹⁴ We use our panel data to create a “residual” or unexplained happiness variable, which is an attempt to capture or proxy this psychological element of happiness. We can then test whether it has causal properties in addition to the observed demographic and socioeconomic variables on future income. Of course, some of what is captured by our residual term could well be other unobservable socioeconomic, demographic, or stochastic characteristics that are unrelated to cognitive bias. It remains to be seen to what extent the causal properties of unexplained happiness depend on cognitive bias as opposed to other unobserved factors.

can be found at www.cpc.unc.edu/projects/rlms/. Critics of the survey question its degree of representativeness. Accepting that some of these criticisms may have validity, we believe it is an extremely valuable dataset.

¹² Two possible problems with the question, however, that need to be taken into account, are that the question allows respondents to have a neutral option, skewing responses to the middle of the distribution, and the ordering of the question in the survey. Rather than asking the happiness question first in the survey, before respondents are given a chance to evaluate other aspects of their life, the RLMS happiness question is in the middle of the survey, after a series of questions about occupational and income status, possibly skewing the responses negatively.

¹³ The 2000 results were not available at the time of that analysis. See Graham and Pettinato (2002b). In addition, the *Journal of Happiness Studies* had a special issue on happiness in Russia (vol. 2, no. 2, 2001) that was based on the analysis of a separate panel of households, the Russet panel, which ran from 1993 to 1995. The articles in that volume tracked changes in happiness over time, but did not attempt to evaluate the effects of happiness on other variables such as income. See, for example, Veenhoven (2001).

¹⁴ See, for example, Cummins and Nistico (2002).

Table 1
Variable means, standard deviations (in parentheses) and definitions

Variable	1995	2000	Definition
Happiness	2.209 (1.06)	2.355 (1.08)	To what extent are you satisfied with your life in general at the present time? (1 = not at all, 5 = fully)
Age	40.673 (19.17)	45.677 (19.17)	Age of respondent at time of survey in years
Age-squared	2104.208 (1674.04)	2453.682 (1822.74)	Age in years squared
Log equivalence income	7.873 (0.86)	7.826 (0.81)	Real household income in 1992 rubles/square root of the number of people in the household
Education level	8.684 (2.17)	8.741 (2.15)	School grade level completed (0–12)
Amount of drinking	2.329 (1.21)	2.353 (1.25)	How often have you used alcoholic beverages in the last 30 days? (1 = once, 6 = every day)
Male	0.422 (0.49)	0.422 (0.49)	Gender dummy (1 = male)
Minority	0.164 (0.37)	0.164 (0.37)	Minority dummy (1 = minority; non-Russian)
Married	0.599 (0.49)	0.542 (0.50)	Marital status dummy (1 = married)
Student	0.169 (0.37)	0.116 (0.32)	Employment status dummy (1 = student ^a)
Retired	0.236 (0.42)	0.305 (0.46)	Employment status dummy (1 = retired)
Housewife	0.043 (0.20)	0.033 (0.18)	Employment status dummy (1 = housewife)
Unemployed	0.064 (0.24)	0.085 (0.28)	Employment status dummy (1 = unemployed)
Self-employed	0.011 (0.11)	0.012 (0.11)	Employment status dummy (1 = self-employed)
Health index	0.838 (0.22)	0.82 (0.22)	Index of three equally weighted questions (0.33 = yes for each question): Have you in the last 30 days had any health problems? Have you been in the hospital in the last 3 months? In the last 30 days did you miss any work or study days due to illness?
Smoker	0.247 (0.43)	0.28 (0.45)	Smoker dummy (1 = yes answer to question “Do you now smoke?”)
Observations	5269	5269	

In a paired *t*-test, the difference between the 1995 and 2000 means was significant for all variables except male and minority (unchanging), self-employment, education level, and amount of drinking. *Source*: RLMS Round 6 and Round 9 data, authors’ calculations.

^a The drop in the percentage of respondents who were students is a result of the aging of the respondent pool. Our dataset consists of 5269 people who responded to the survey in both 1995 and 2000. Since our youngest respondents are 10 years old in 1995 and 15 by 2000, there is a greater student population in the first round of the survey.

Our analysis, a first attempt to examine these questions in detail with this kind of data, has an exploratory element. We first use the standard variables to explain as much as we can about happiness levels at a given point in time. We take advantage of having two observations on the same people to see whether there are any changes in the relative weights of these variables over time. We then correct for the effects of individual traits or characteristics (for example, happier people may be more likely to get married rather than marriage enhancing happiness) by using panel fixed effects to see if changes in individual status make a difference to the results. We then turn to the effects of unexplained or residual happiness on our key variables, such as income, health, and marital status.

1. Russia in the 1990s

Any attempts to generalize from analysis based on Russia in the 1990s must take into account the far reaching nature of the changes in that country's economy and polity over the course of the decade. During that period, Russia underwent a transition from a centrally planned economy and communist government to a free market, presidential–parliamentary democracy.¹⁵ At the same time, much of its large federation (which was part and parcel of its status as a superpower) was parceled into a number of newly independent states.

The transition had high social costs, with some of the worst losers being pensioners and others on fixed incomes. Poverty and inequality increased markedly. Depending on the data sources, the prevalence of poverty in Russia was between 22 and 33 percent in 2001, while the Gini coefficient increased from 0.29 to 0.40 between 1992 and 1998, with some estimates as high as 0.48, a level comparable to some of the most unequal countries in Latin America.¹⁶ An additional shock, particularly to those on fixed incomes, came from a financial crisis and sharp devaluation of the ruble in August 1998. The devaluation, in which the ruble fell to 25 percent of its previous rate against the US dollar, was accompanied by fiscal austerity.¹⁷

Since the crisis and devaluation, Russia's economy has experienced positive growth rates for several years in a row. However, a large part of Russia's economy remains "virtual," outside the monetary, market economy. Numerous city-sized factories throughout Russia conduct a large share of their transactions on a non-monetary basis. Their workers in turn receive their wages and benefits in kind. To survive, Russians engage in extensive self-subsistence activity, beginning with food production. Russians (and this includes not only rural residents but also middle-class urban professionals such as scientists, doctors, and military officers) produce an astounding 50 percent of the nation's meat supply and 80 percent of all vegetables and fruits on their family garden plots.¹⁸ Russia's "virtual" economy acts as a de facto safety net, limiting the impact of devaluation-induced price changes on the average consumer at the time of devaluation, for example.

¹⁵ This is Freedom House's classification of the government in Russia in 2002.

¹⁶ There is considerable debate over these figures, in part due to problems with accurate over-time data. These figures are from the World Bank (www.worldbank.org.ru). For a more detailed discussion, see, for example, Ferrer-i-Carbonell and Van Praag (2001) and Klugman and Braithwaite (1998).

¹⁷ See Gaddy and Graham (2002).

¹⁸ For detail on this, see Gaddy and Ickes (2002).

There is considerable debate over the extent to which Russia's transition to the market has been a success and whether the pace and sequencing of reform was appropriate. This is a debate that is well beyond the scope of this paper.¹⁹ However, it is important to recognize that our panel data cover a period of extensive economic and political change, and the effects of those changes have not been even across individuals and across economic sectors. These, in turn, could affect the relationship between income and well-being.

There are some peculiarities in the data that seem to reflect the reality of the Russian situation, both in terms of a large black market and a large barter or virtual economy.²⁰ For example, we had 54 observations from respondents that reported zero household income, yet the results of our econometric analysis including these respondents produced results that were quite counter-intuitive, such as a consistently positive and significant sign on the zero income dummies in relation to both future happiness and future income. About half of the zero income respondents reported that they were employed. It is quite plausible that they are earning substantial income on the black market that they are reluctant to report and/or have earnings in kind. These earnings still have effects on their well-being, but do not show up as reported income.²¹

Another caveat is that all panel data suffer from attrition bias. Those on the extreme tails of the distribution are the most likely to drop out of the panel, as the wealthiest may move to better neighborhoods and the poorest who "don't make it" may move in with other family members or opt for other kinds of coping strategies. Thus, panels can be biased in their representation of all income groups. In the case of Russia, with extreme levels of economic and political turmoil, it is plausible that this attrition occurs more than it would under more stable circumstances. Our analysis of the data, however, finds no difference between the characteristics of those respondents in the panel and the entire group of respondents in the original 1995 survey, at least as measured by age, education, income, gender, marital status, and happiness.²²

A second problem, measurement error, involves possible error stemming from the difficulty of accurately measuring the incomes of those individuals who work in the informal economy or in the agricultural sector. As noted earlier, this informal sector is disproportionately large in Russia.²³

¹⁹ For a critical view, see, for example, Stiglitz (2002). For a more optimistic view, see Åslund (1995).

²⁰ For a description of Russia's "virtual economy," see Gaddy and Ickes (2002).

²¹ We initially attempted to include these respondents by adding 1 to each of the 54 observations that reported zero household income in order to take a log and include them. We also created a dummy variable for these respondents in order to control for any effects that were specific to them and/or that result from our arbitrary specification of their income level (adding 1). We also substituted this specification with a Box-Cox income variable transformation, but found that it did not have a (statistically significant) better fit than did the zero-plus-one logarithmic specification with zero income dummies. Including them produces skewed results (for example, log income in 1995 was negatively correlated with log income in 2000). Since they comprise only 54 observations in a sample of over 5000, we chose to drop them and to use a simple log equivalence specification throughout the analysis. Results of this econometric analysis are available from the authors on request.

²² Results available from the authors on request.

²³ We attempted to deal with this error in our sample by creating dummy variables for the 54 respondents that report zero income. Rather ironically, at least half of these respondents display other traits that suggest they have substantial assets if not monetary income (discussed further). Because of this, including them often skewed our econometric results and thus we did not include them in most of our analysis.

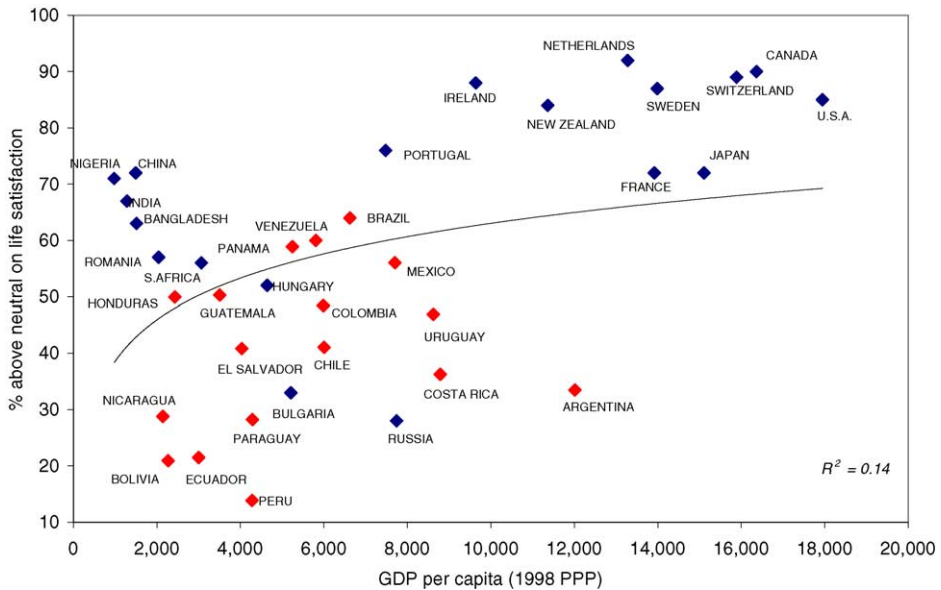


Fig. 1. Happiness and income per capita, 1990s.

There are also concerns that because of Russia's political legacy, respondents might view survey questions with suspicion and answer them less honestly than they would in other contexts. Thus, the unusually low levels of happiness in Russia could be due to such suspicions, to unfavorable comparisons with the West, and/or to a culture of negativism. However, research by Veenhoven finds that the unusually low levels of happiness in Russia have more to do with the troublesome transitions than with Russian national character or other biases in responses (see Fig. 1).

2. Measurable and unexplained determinants of happiness

A fairly wide body of literature has found consistent links between a number of demographic and socioeconomic variables and reported happiness. These include income, health, marital status, gender, race, and life cycle effects. In this section, our objective is to explain happiness in Russia as accurately as possible based on these standard measures. Our first step was to examine the effects of the usual socioeconomic and demographic determinants of happiness, such as age, education, income, gender, and marriage, on happiness levels in Russia.

These variables have fairly consistent effects on happiness across societies and across time in both the developed and developing economies for which there is data.²⁴ However,

²⁴ For studies in the US and Europe see, among others, Blanchflower and Oswald (1999) and Frey and Stutzer (2002). For happiness in Latin America, see Graham and Pettinato (2002a).

Table 2
The correlates of happiness, 1995 and 2000

Independent variable	1995		2000		<i>t</i> -statistics for equivalence
	Coefficient	<i>z</i>	Coefficient	<i>z</i>	
Age	−0.0742	−6.27	−0.0668	−7.42	0.498
Age-squared	0.0008	6.35	0.0007	7.15	−0.498
Male	0.1419	2.41	0.1521	2.80	0.128
Married	0.1490	2.15	0.0875	1.40	−0.659
Log equivalence income	0.4777	13.97	0.3892	11.48	− 1.839
Education level	0.0305	1.87	0.0150	0.96	−0.688
Minority	0.3835	5.21	0.1721	2.46	− 2.082
Student	0.4561	2.91	0.1991	1.59	−1.281
Retired	−0.3029	−3.05	−0.3783	−3.97	−0.548
Housewife	0.1814	1.34	0.0490	0.33	−0.661
Unemployed	− 0.2434	−2.19	− 0.6568	−6.51	− 2.756
Self-employed	0.7676	3.00	0.5375	2.23	−0.654
Health index	0.2744	2.22	0.4462	3.82	1.010
Observations	4524		5134		
Pseudo- <i>R</i> -squared	0.0330		0.0331		

Dependent variable: happiness (ordered logit regression).

there are a number of plausible reasons why these effects might not hold in Russia, including the dramatic nature of economic and political change in Russia during the period under study as well as cultural differences in answering this kind of survey question.²⁵

We ran standard happiness regressions for both 1995 and 2000 and then conducted a *t*-test for equivalence to see if there was any significant difference in the results between the 2 years. As in many other countries, there is a quadratic relationship between age and happiness, a U-shaped curve with the lowest point on the curve being 47 years of age. (This is slightly older than the turning point for most OECD countries and the US, which is typically in the early 40s.) Men were happier than women in Russia, both in 1995 and in 2000 (Table 2). Higher levels of education are correlated with higher levels of happiness in Russia, as they are in most countries.²⁶ Retirees are less happy than others, which reflects the oft-described plight of pensioners in Russia.

Minorities in Russia are, on average, happier than other respondents (16 percent are in the former group, 84 percent identify as Russian). This is distinct from trends in many other countries, where minorities tend to be less happy than other groups. In the US, blacks are, on average, less happy than other groups, and in Latin America, those who identify first as a minority rather than as the nationality of their country are less happy than other groups.²⁷ There are many plausible reasons for this, including the dramatic

²⁵ Veenhoven, for example, notes that results from Russia could be distorted by translation as well as by a culture of “negativism.” His own analysis, however, based on a different panel for Russia, the Russet panel for 1993–1995, finds that the results are not biased by these factors.

²⁶ This is true for the developed economies and for Latin America. For the latter, see Graham and Sukhtankar (2004).

²⁷ On the US, see Blanchflower and Oswald (1999), among others; for Latin America, see Graham (2002).

changes in Russia's status as a superpower and its effects on national morale, as well as longer-term cultural traits. Similarly, in a related but separate question, those that identify themselves as Muslim (8 percent of the sample) were, on average, happier than others in 2000, although the coefficient was just short of significant at the 5 percent level. More generally, having faith or a religious affiliation is positively associated with happiness in most countries.²⁸

Happiness research finds general patterns in the relationship between socioeconomic variables and happiness across countries and across time, but with subtle variations. Given the extent of economic change and mobility in Russia during the period under study, we expected there to be more than the usual variation across time. The 1990s crisis hit retirees, the unemployed, and lenders in particular very hard. Rather remarkably, there was very little change in the relationship among the standard variables and happiness during this time period. When we tested the difference between the 2 years' results, however, the only two coefficients in our basic happiness model that experienced a significant change in value were being a minority and being unemployed; even then there was not a change in direction in the sign of either coefficient (see Table 2, column 3).

In 2000, while minorities were still, on average, happier than other respondents, they were far less happy than they were in 1995. The war in Chechnya, which started at about the time the first survey was conducted, has changed the image of Muslims and minorities in general in Russia, and a number of surveys find that the majority of Russians support the efforts of their military against a mainly Islamic population.²⁹ Thus, respondents who are Muslim or minorities have, on average, higher happiness levels than Russians, but have experienced a transitory (hopefully) decline in happiness due to the change in the status of Muslims related to the war.

The second coefficient that experienced a change in value was being unemployed. While unemployed people were less happy on average than others in both years, the negative effects of being unemployed were significantly greater in 2000 than they were in 1995 (see Table 2, column 3). This probably reflects the effects of the financial crisis and the devaluation on the fixed and/or very meager incomes of the unemployed.

If our simple cross-sectional model completely captured the determinants of happiness, then conducting a panel fixed effects regression (essentially measuring the effect of *changes* in the determinants on *changes* in happiness) would produce identical coefficient results. However, we have good reason to believe that the fixed effects regression will yield different and better estimates.

Most importantly, panel fixed effects analysis corrects some of the bias associated with unobserved characteristics of the survey respondents in cross-sectional analysis. Although we observe a great many characteristics of each respondent, these factors leave much of the variation in happiness unexplained (the *R*-squared in our happiness models is in the neighborhood of 0.03, suggesting that about 97 percent of the variation in happiness responses is due to factors we do not observe). For example, a person's disposition or personality is assuredly one of the determinants of his/her level of reported happiness, so we would expect a person with a generally sunnier disposition to report a higher level of happiness than a

²⁸ For empirical evidence on this for Latin America and the US, see Graham (2002).

²⁹ See Gerber and Mendelson (2002).

person who is identical in every other respect but has a gloomier outlook. Disposition, of course, is not captured in survey data.

These unobserved determinants of happiness will bias our coefficient estimates in cross-sectional analysis if they are correlated with the observed determinants. For example, if a person's disposition affects both his income and his happiness results in the same way, then our estimate of the effect of income on happiness will be biased upwards since disposition is unobserved. Using panel data allows us to filter out the set of unobserved determinants of happiness that are unchanging over time, which should remove this bias and improve upon our coefficient estimates from cross-sectional analysis.

One potential problem with conducting panel fixed effects analysis with this dataset comes from the volatility of Russian society in the period for which we have data. The relationship between observed characteristics and happiness changed between 1995 and 2000, which we believe reflects an adjustment of Russians' priorities and concerns in the course of dramatic social change. Accordingly, some of the respondents' change in happiness that we analyze in this exercise will be attributable to this change in priorities rather than to a change in their observable circumstances. These developments, while interesting, will tend to dilute the effectiveness of panel analysis for determining what causes happiness.

On the other hand, the volatility in the late-1990s Russia can be seen as a unique opportunity for analysis. Panel studies rely on changes in the observed variables to detect causal effects, so panel studies on populations that change very little tend to be unrevealing. However, in this instance, most likely due to the extensive economic changes in Russia during the period, the data reveal a high degree of mobility. There was significantly more movement among income quintiles in the second half of the 1990s (1995–2000) in Russia than there was during the entire 1980s in the US, for example. Happiness levels also fluctuated a great deal during the period, with downward shifts more common than upward ones (see Table 3a–c). While this is certainly an exceptional period in Russia, which suggests that caution is necessary in drawing some conclusions, there are also some very clear analytical advantages to the extent of change in the key variables.

The results are reported in Table 4. We find that the only variables that have significant effects on changes in happiness are changes in income (which has positive effects), getting divorced (which has negative effects), and leaving school (which also has negative effects). The effects of income and divorce are both unsurprising and would probably hold in any context. The effects of leaving school, which may or may not hold in other contexts, are intuitive in the Russian context, where the labor market is very precarious and highly educated people are often unable to find satisfactory jobs.

Finally, it is quite interesting that while both unemployment and retirement are negatively correlated with happiness in our standard regression, neither retiring nor becoming unemployed had significant effects in the panel regression. This may reflect the rather mixed fate of pensioners and the unemployed in Russia. Recent retirees are probably much better prepared to cope with the current economic environment than are those who retired

Table 3

Income mobility (in percentage) in Russia, 1995–2000 (a) in the US, 1979–1989 (b), and happiness mobility in Russia, 1995–2000 (c)

Quintile 1995	Quintile 2000					Total
	1	2	3	4	5	
(a) ^a						
1	33	27	16	13	12	100
2	25	28	20	16	10	100
3	19	19	25	21	15	100
4	14	15	23	25	23	100
5	9	11	16	25	40	100
Total	100	100	100	100	100	
Quintile 1979	Quintile 1989					Total
	1	2	3	4	5	
(b) ^b						
1	61	24	9	5	1	100
2	23	33	28	14	3	100
3	8	25	30	26	11	100
4	5	13	23	33	26	100
5	3	5	11	23	59	100
Total	100	100	100	100	100	
Happiness score 1995	Happiness score 2000					Total
	1	2	3	4	5	
(c) ^c						
1	534 (37)	429 (37)	173 (16)	59 (8)	23 (2)	1218 (100)
2	528 (22)	850 (44)	373 (20)	135 (12)	58 (2)	1944 (100)
3	233 (13)	383 (36)	314 (30)	115 (15)	37 (3)	1082 (100)
4	115 (13)	221 (29)	158 (25)	118 (26)	30 (14)	642 (100)
5	25 (13)	34 (38)	31 (22)	32 (17)	24 (14)	146 (100)
Total	1435 (102)	1917 (180)	1049 (113)	459 (78)	172 (27)	

Happiness scores: 1 = not at all satisfied; 2 = less than satisfied; 3 = both yes and no; 4 = rather satisfied; 5 = fully satisfied.

^a Source: RLMS Round 6 and Round 9 data, authors' calculations using household equivalence income.

^b Numbers in bold indicate percentage of respondents who were in the same income quintile in 1995 and 2000. Source: Mishel et al. (1999) (using family income).

^c The values in parentheses are percentages indicating likelihood of obtaining a given happiness score in 2000, given 1995 happiness score. Source: RLMS Round 6 and Round 9 data, authors' calculations.

many years ago on fixed incomes.³⁰ In addition many jobs in Russia pay unstable if any wages, while many highly educated workers are often overqualified for what they are doing, possibly mitigating the usual effects of becoming unemployed on happiness.

³⁰ This contrasts with findings for the US, for example, where workers are least happy in anticipation of retirement, but then happier, on average, after they retire. See Lowenstein et al. (1999).

Table 4
First difference regression

	Coefficient	z
Static variables		
Age	−0.0400	−1.70
Age-squared	0.0004	1.54
Male	0.0390	0.35
Minority	−0.0632	−0.51
Changes in continuous variables		
Change in log equivalence income	0.1875	4.21
Change in education level	0.0312	0.62
Change in health index	0.0757	0.47
Change in level of drinking	−0.0102	−0.31
Changes in status variables		
Marriage (omitted group: remained single)		
Got married	−0.3802	−1.20
Got divorced	−0.5681	−3.20
Stayed married	−0.1905	−1.57
Employment (omitted: remained unemployed)		
Got employed	0.0608	0.19
Got unemployed	−0.2054	−0.65
Stayed employed	0.3554	1.35
Smoking (omitted: remained a non-smoker)		
Quit smoking	0.1451	0.58
Started smoking	0.2488	1.19
Kept smoking	−0.0356	−0.31
Schooling (omitted: remained a non-student)		
Entered school	^a	^a
Left school	−0.8415	−2.38
Stayed in school	−0.7139	−1.29
Retirement (omitted: remained a non-retiree)		
Became retired	−0.0699	−0.38
Came out of retirement	0.2638	0.55
Stayed retired	−0.0731	−0.35
Observations	1673	
Pseudo- <i>R</i> -squared	0.0089	

Dependent variable: change in happiness, 1995–2000 (ordered logit regression).

^a Dropped because of multicollinearity.

3. How income affects happiness and how happiness affects income

One issue that we have still not resolved is the direction of causality. In other words, do happier people earn more money, or does earning money make them happier? Are happier people more likely to get married, or does marriage make them happier? We turn to these questions in the following sections. While we attempted to correct for the unobserved or unexplained differences in happiness among our respondents in the earlier estimations, we

will now use this unexplained happiness to see how happiness affects behavior pertaining to earnings activities, health, and social relations.

Only part of what we are able to observe and measure as “happiness” can be explained by the demographic and socioeconomic variables available to us. Certain psychological traits that persist regardless of variations in demographic and socioeconomic variables seem to account for consistency in happiness levels. We took advantage of having over-time observations on happiness in the Russia data to attempt to capture this unmeasured or psychological component of happiness. We began with the standard regressions estimating the effect of the standard socioeconomic variables on happiness in Russia. Based on the residual from this regression we created a variable for each respondent’s unexplained happiness. We then test whether this element of happiness has any additional causal properties.

What do we know about residual happiness? First, it is very close in value to happiness itself, since the pseudo-*R*-squared statistics on our standard happiness regressions are quite low (in the neighborhood of 0.03). In other words, a great deal of happiness is “unexplained happiness.” Second, while unexplained happiness is not correlated (by definition) with the observable socioeconomic variables that we believe affect happiness, it is positively correlated across time for individuals: people with high unexplained happiness in 1995 were likely to have high unexplained happiness in 2000. (The simple correlation between the two is 0.2198.) This result is consistent with the view that unexplained happiness includes stable factors that affect happiness and that might include cognitive bias.

The research on subjective well-being has focused a great deal on the relationship between income and happiness. Here, we focus on the classic direction of causality question. While we know that, on average wealthier people are happier, the reverse may also be true: that happier people, on average, earn more income. We attempt to shed some light on these questions in this section.

We began by exploring whether happier people earn more income than less happy people. In order to do this, we first calculated the residual or unexplained happiness levels for each respondent from our standard happiness regression. We then regressed log equivalence income in 2000 on unexplained happiness in 1995, log equivalence income in 1995, and the usual socio-demographic variables.³¹ We find that unexplained or residual happiness has positive and significant effects on second period income. The result is significant at the 1 percent level, and the coefficient implies that a one point increase of unexplained happiness in 1995 would yield an approximate 3 percent increase in income in 2000 (Table 5). To date, most analyses have focused on the effects of income on happiness. This result suggests that there is an additional causal effect of happiness on income.

We also separated the unexplained happiness residual variable by quintiles to see if the effects of happiness varied according to respondents’ position in the income distribution. In comparison to those respondents in the lowest quintile, happiness matters less to future income for those in wealthier quintiles, although the difference is just short of significant. In other words, happiness matters more to future income to those at lower levels of income (see Table 5).

³¹ Our basic measure, the log of equivalence household income, is real household income in 1992 rubles divided by the square root of the number of people in the household. While there are a number of other household equivalence scales, this is the most commonly used at the international level. For detail, see Fignini (1998).

Table 5
The effects of happiness on income

Independent variables	Regression a		Regression b		Regression c	
	Coefficient	<i>t</i>	Coefficient	<i>t</i>	Coefficient	<i>t</i>
Age	−0.0133	−3.00	−0.0132	−2.97	−0.0146	−3.25
Age-squared	0.0001	3.18	0.0001	3.15	0.0002	3.52
Male	0.0102	0.42	0.0102	0.42	−0.0004	−0.02
Married	0.2053	7.84	0.2054	7.84	0.2050	7.84
Education level	0.0301	4.51	0.0301	4.51	0.0296	4.44
Minority	0.1213	3.98	0.1227	4.03	0.1216	4.00
Student	−0.0336	−0.34	−0.0301	−0.31	−0.0367	−0.38
Retired	−0.1906	−4.85	−0.1899	−4.83	−0.1659	−4.18
Housewife	−0.2488	−3.90	−0.2492	−3.90	−0.2388	−3.73
Unemployed	−0.3450	−8.16	−0.3435	−8.12	−0.3426	−8.07
Self-employed	0.1415	1.46	0.1411	1.46	0.1284	1.33
Health index	0.0601	1.11	0.0588	1.09	0.0559	1.04
Log equivalence income, 1995	0.2420	18.11	0.2429	18.12	0.2244	15.69
Log equivalence income, 1995, poor ^a	b	b	b	b	0.0094	2.60
Log equivalence income, 1995, rich ^a	b	b	b	b	0.0180	4.36
Unexplained happiness, 1995 ^c	0.0298	2.64	0.0634	2.32	0.0269	2.38
Unexplained happiness, 1995 ^c , second quintile	b	b	−0.0436	−1.14	b	b
Unexplained happiness, 1995 ^c , third quintile	b	b	−0.0361	−0.95	b	b
Unexplained happiness, 1995 ^c , fourth quintile	b	b	−0.0626	−1.71	b	b
Unexplained happiness, 1995 ^c , fifth quintile	b	b	−0.0229	−0.65	b	b
Constant	5.8325	36.35	5.8234	36.19	5.9365	34.62
Number of observations		4457		4457		4457
Adjusted <i>R</i> -squared		0.1335		0.1333		0.1518

Dependent variable: log equivalence income, 2000 (OLS). Regression a: no income quintile distinctions. Regression b: testing for a difference in the effect of unexplained happiness on 2000 income, by 1995 income quintile. Regression c: testing for a difference in the effect of 1995 income on 2000 income, by 1995 income quintile. Independent variables are from 2000 unless otherwise noted.

^a “Poor” is defined as bottom 40 percent of the income distribution in 1995; “rich” is the top 20 percent.

^b Omitted.

^c The residual of basic happiness 1995 regression (Table 2).

Having established that happiness has effects on income, we wanted to make sure that the usual effects of income on income still hold. We regressed second period income (log equivalence income) on initial period income and unexplained happiness, using dummies for the poorest (40 percent) and wealthiest (20 percent) of the respondents in the sample.³² We found that the effects of unexplained happiness were still positive and significant on second period income. In addition, initial income was more important (significant) to second period income for the poor and the rich compared to the omitted, middle income category, with the effect being strongest for the rich. Initial period income seems to matter most for those at higher levels of income. It also matters more for the poor compared to those in the middle (see Table 5).

This suggests that initial period income provides advantages in earning even more income in the future for the wealthy, who can use their income as an asset in addition to consumption. Initial period income also matters more for the poor than for those in the middle, suggesting that some minimal amount of income (basic needs?) is necessary for people to increase their income in the future. Meanwhile happiness seems to matter to future incomes across the board, but more for those at lower levels of income. In other words, in the absence of income, a good attitude can make a difference to one's future earnings. At higher levels of income, income matters more than happiness, at least in relative terms.

Given that happiness has positive effects on income in Russia, does income still lead to happiness? We examined the effects of initial period income, controlling for residual happiness in 1995 and the usual socioeconomic and demographic variables, on happiness in 2000. We included income in both periods in order to control for the effects of income in 2000 on happiness in 2000. We found that income was indeed positively and significantly correlated with happiness, in addition to the positive and significant effects of unexplained happiness. Thus, income clearly does matter to happiness, even for happy people (see Table 6).

We broke this down by income levels, using our dummies for poor and rich categories as the independent income variables and controlling for initial period happiness. We found again that income matters for happiness and evidence to suggest that the effect increases as people's income levels increase (the result is significant at the 10 percent level)³³ (see Table 6). Thus, initial period income seems to matter more for happiness for those at the top of the distribution.

It seems that income needs to be sufficiently above a minimum level to have effects on happiness, a sort of "greed" effect where additional income increases happiness more for the very wealthy than for others. Some of the findings in the literature on happiness suggest that the relative importance of income as both a motivating force for behavior and in determining well-being is greater at very low levels of income, where basic needs are

³² In contrast to happiness, which probably varies almost as much within each income quintile as it does over the whole sample, partitioning income by income quintiles loses much of the variation that occurs within the quintiles, particularly the higher ones. Therefore, we opted to split the sample in a way that better captured at least some of this variation. The omitted category (middle) is the middle 40 percent of the distribution.

³³ The coefficient on the top quintile is short of significance at the 10 percent level, but the point estimate suggests our result. When we include the quintiles without the income variable, the coefficient becomes significant.

Table 6
The effect of income on happiness

Independent variables	Regression a		Regression b	
	Coefficient	z	Coefficient	z
Age	−0.0781	−7.06	−0.0830	−7.41
Age-squared	0.0008	6.97	0.0008	7.20
Male	0.1572	2.65	0.1430	2.39
Married	0.0698	1.08	0.0717	1.11
Education level	0.0211	1.27	0.0175	1.05
Minority	0.2088	2.80	0.2195	2.94
Student	−0.3473	−1.48	−0.2912	−1.24
Retired	−0.3972	−4.08	−0.3694	−3.75
Housewife	−0.0803	−0.53	−0.0446	−0.29
Unemployed	−0.6742	−6.34	−0.6434	−6.02
Self-employed	0.4541	1.89	0.4439	1.84
Health index	0.4000	3.05	0.3966	3.02
Log equivalent income 2000	0.2438	7.21	0.3176	8.38
Log equivalent income 1995	0.3199	8.46	0.2128	5.94
Log equivalent income 1995, rich ^a	b	b	0.0163	1.62
Log equivalent income 1995, poor ^a	b	b	−0.0146	−1.65
Unexplained happiness, 1995 ^c	0.4158	14.50	0.4096	14.24
Number of observations	4414		4414	
Pseudo-R-squared	0.0474		0.0481	

Dependent variable: happiness in 2000 (ordered logit). Regression a: no income quintile distinctions. Regression b: testing for a difference in the effect of 1995 income on 2000 income by 1995 income quintile. Independent variables are from 2000 unless otherwise noted.

^a “Poor” is defined as bottom 40 percent of the income distribution in 1995; “rich” is the top 20 percent.

^b Omitted.

^c The residual of basic happiness 1995 regression (Table 2).

not yet met, while at higher levels of income, other variables have more importance.³⁴ In contrast, our findings suggest that when people reach a certain high level of income, money begins to matter more to them.

These findings are complementary to our findings for the effects of happiness on income, where residual happiness matters more for second period income for those at the lower end of the income ladder, while income matters most for second period income for those at the higher end of the income ladder. These findings suggest that income matters more for happiness to wealthy people. They may also reflect the peculiarities of the Russian situation, in which large numbers of people operate in the non-monetary economy, and therefore reported income plays much less of a role in evaluating their well-being than it might in other contexts.

We also tried to capture the effects of changes in income on happiness to determine whether income mobility itself has additional effects. When we use percentage change in equivalence income (1995–2000), controlling for initial (1995) levels of income, we find

³⁴ The studies by psychologists that find that happiness has positive effects on future income also find that these effects are stronger at the higher end of the income scale. See Diener and Biswas-Diener (1999).

Table 7
The effect of changes in income on happiness

Independent variables	Coefficient	<i>z</i>
Age	−0.0781	−7.06
Age-squared	0.0008	6.97
Male	0.1572	2.65
Married	0.0698	1.08
Education level	0.0211	1.27
Minority	0.2088	2.80
Student	−0.3473	−1.48
Retired	−0.3972	−4.08
Housewife	−0.0803	−0.53
Unemployed	−0.6742	−6.34
Self-employed	0.4541	1.89
Health index	0.4000	3.05
Unexplained happiness, 1995 ^a	0.4158	14.50
Log equivalence income, 1995	0.5637	12.83
Change in log income, 1995–2000	0.3199	8.46
Number of observations	4414	
Pseudo- <i>R</i> -squared	0.0474	

Dependent variable: happiness in 2000 (ordered logit). Independent variables are from 2000 unless otherwise noted.

^a The residual of basic happiness 1995 regression (Table 2).

a positive and significant effect on happiness. In other words, when one compares people who start out at the same level of income, a higher percentage change in income has positive effects on happiness (Table 7).

In summary, unexplained happiness levels had positive and significant effects on future earnings.³⁵ This analysis supports the evidence from the psychology literature that happier people earn more income or, more broadly speaking, perform better economically. It is certainly plausible that the same positive cognitive biases such as self-esteem, control, and optimism that affect normal happiness levels may also have positive effects on people's performance in the labor market.

An additional finding is that the effects of unexplained happiness on future income and on future happiness seem to be more consistent across all income groups than are the effects of income on future income and future happiness. The effects of initial period income seem most important for those at higher levels of income, at least in the Russian context.

In related findings, psychologists and economists have established links between aspirations and expectations (which are closely linked to subjective well-being) and economic behavior. Several studies document the effects of individuals' perceived prospects of upward mobility on their savings and investment behavior, on their views about redistribution, and on their attitudes about market policies.³⁶ It is quite plausible that the same psychological

³⁵ An alternative exploration would be to use a Kernel estimation of income. Unfortunately, we do not have a statistical package in house that is able to do so.

³⁶ Graham and Pettinato (2002a) find that happiness is correlated with more positive perceptions about a whole set of economic and political variables. These include perceived prospects of upward mobility, perceived past

factors that determine unexplained happiness, and the positive traits that seem to be associated with it, also affect people's perceptions, which in turn affect economic behavior in the way that unexplained happiness does. A detailed exploration of those linkages, however, is the subject of a separate paper.³⁷

4. Marriage, employment, health, smoking and drinking

Our central most important finding is the positive effect of unexplained or residual happiness on future income. An additional question, which we explore in this section, is whether unexplained happiness also has effects on other socioeconomic variables, such as on the probability of getting married or divorced, of being healthy, of being unemployed, and on behaviors such as smoking and drinking.

As expected, married people are, on average, happier than non-married people in Russia in 2000.³⁸ We created dummy variables for changes in marital status during the 1995–2000 period. Forty-five percent of the sample (2935 respondents) stayed married, while others experienced a change in status: 226 respondents or 3 percent of the sample married and 529 respondents, or 8 percent of the sample divorced. Our first set of regressions explored whether residual or unexplained happiness was a predictor of change in marital status. Rather surprisingly, given the strong relationship between marriage and happiness, there

progress, satisfaction with current financial situation, satisfaction with democracy, support for free market policies, support for redistribution (it is negatively correlated with happiness in both Latin America and the US) and position on a notional societal economic ladder, the Economic Ladder Question (ELQ). Controlling for income, they find that happier people tend to place themselves higher on the notional ladder. See also Benabou and Ok (1998) and Piketty (1995). Others explore the links between aspirations and well-being fairly extensively and find that aspirations temper the effects of other variables such as increases in incomes on well-being. See Cummins and Nistico (2002).

³⁷ In an initial exploratory exercise, we examined the effects of such perceptions on future economic behavior. As a starting point, we found that all of our perceptions variables (perceived past mobility, prospects of upward mobility, ELQ, and preferring democracy to pre-perestroika times) were positively correlated with happiness. Fear of unemployment was negatively correlated with happiness. We examined the effects of perceptions scores in 1995 on income in 2000. In separate regressions, we find that having a positive POUM and ELQ in the initial period has significant and positive effects on income in the second period, controlling for residual happiness. Indeed, we find that including the perceptions variables in the equation renders the effects of residual happiness insignificant. It is likely that our perceptions and residual happiness variable are capturing similar traits, which is the element of happiness or optimism that is not captured by the standard demographic variables. This supports our earlier findings that this element of happiness or well-being has positive effects on people's performance in the labor market. We also find a negative (though insignificant) correlation between fear of unemployment in the initial period and income in the second period. Thus, like residual happiness, perceptions (both positive and negative) seem to have effects on future economic behavior and outcomes (although at this point we do not know if the outcomes are due to greater effort or to other variables such as better social skills). While wealthier people and those with positive expectations are happier, we also find that being happier and having higher expectations affects future economic performance. Results are available from the authors.

³⁸ One interesting finding is that in 1995, married people were not significantly happier than others, a finding that supports our intuition that overall happiness levels increased from 1995 to 2000. For happiness in 1995, see Graham and Pettinato (2002b). This is supported by the fact that 35 percent of the sample had positive changes in happiness levels, while 28 percent had decreases, perhaps due in part to the general improvements on the economic and governance fronts in Russia during the period.

was no significant relationship between residual happiness and marriage. In other words, happier people are not more likely than others to get married (Table 8).

Divorce is a marital status variable that has notable effects on happiness in most studies: divorced individuals are, on average, less happy than others. This is also the case in our Russia dataset. Becoming divorced had negative and significant effects on both happiness levels in 2000 and changes in happiness levels from 1995 to 2000 in Russia, yet we found that residual happiness (or more accurately put unhappiness) had no significant effect on the probability of getting divorced³⁹ (see Table 8). Thus, while unhappiness does not cause divorce, divorce clearly causes unhappiness. In contrast, when we looked at the effects of getting married on happiness and HAPPYCHANGE, the sign on the coefficient was positive, but it was (rather surprisingly) insignificant for both happiness levels and for changes in happiness (see Table 4).

Not surprisingly given the consistent negative effects of unemployment on happiness across countries and time, those who became unemployed in our sample were significantly less happy than other respondents (see Table 2). Unexplained happiness, however, had no effects on the probability of being employed. While the sign on the coefficient is negative, it is short of significant (see Table 8). Interestingly enough, education levels also had no effects on the probability of being employed. This most likely reflects the dramatic nature of the economic transition in Russia, and the fact that many highly educated people are either overqualified for what they are doing and/or are unable to find jobs.⁴⁰

Health is one of the most important variables affecting subjective well-being. In our first exploration on the determinants of happiness (discussed earlier), we find that health, as measured by a neutral index based on a number of questions about days missed due to illness, hospitalization, and so on, is positively and significantly correlated with happiness (see Table 2). (The three questions that made up the index were the following: In the last 30 days did you miss any work or study days due to illness? Have you been in the hospital in the last 3 months? Have you in the last 30 days had any health problems?)

We then examined the effects of residual or unexplained happiness on our health index. We found that residual happiness had positive and significant effects on health (Table 8). Thus, not only does good health make people happier, but our findings suggest that happiness may have additional positive effects on health, something that is often alluded to in the literature but is more difficult to prove empirically with most data. The same cognitive bias or other attitudinal traits that seem to have positive effects on individuals' labor market performance may also influence the manner in which they take care of their health.⁴¹

³⁹ The reverse of this was also true: residual happiness had no significant effects on the probability of staying married.

⁴⁰ Another rather interesting result on unemployment is that the health index was positively and significantly correlated with being unemployed in 2000. This may well be the result of spurious correlation, as one question on the index asks "How many days of work did you miss due to illness?" Obviously, unemployed people would answer zero.

⁴¹ In a related exercise, which we will explore in greater detail in a separate note, we examined the effects of smoking and drinking. We find that smoking in the year 2000 has a negative and significant correlation with happiness levels. In contrast, quitting smoking, which 257 respondents or 3 percent of the sample did between 1995 and 2000, was positively correlated and just short of significant at the 5 percent level with changes in happiness during the period. Our index of drinking, a variable that indexes the number of drinks per week a person

Table 8
The effects of happiness on marriage status, employment, and health

Independent variables	Divorce by 2000 ^a (given married 1995) ^b , logit ^c , regression a		Married by 2000 ^a (given unmarried 1995) ^b , logit ^c , regression b		Unemployed in 2000 ^a , logit ^c , regression c		2000 Health index ^a , OLS ^c , regression d	
	Coefficient	<i>z</i>	Coefficient	<i>z</i>	Coefficient	<i>z</i>	Coefficient	<i>t</i>
Age	−0.1061	−4.00	0.1023	2.12	0.1609	3.86	−0.0023	−1.89
Age-squared	0.0012	4.57	−0.0017	−2.71	−0.0023	−4.62	0.0000	0.97
Male	−0.8974	−7.50	0.1331	0.62	0.8566	6.85	0.0319	4.76
Married		^d		^d	−0.3410	−2.55	0.0109	1.51
Education level	−0.0134	−0.43	−0.0171	−0.21	0.0356	0.71	−0.0001	−0.04
Minority	−0.2832	−1.77	−0.01190	−0.44	0.4020	2.94	0.0129	1.54
Student		^e	−1.1540	−2.08	0.8497 ^f	3.08	−0.0638	−2.38
Retired	0.1634	0.84	−0.7226	−1.39	−0.9747 ^f	−2.15	−0.0507	−4.69
Housewife		^d		^d	0.8314 ^f	3.59	0.0345	1.96
Unemployed	0.5603	2.79	0.1352	0.50	1.7353 ^f	11.69	0.0332	2.84
Self-employed	0.1159	0.24	^e	^e	0.4387 ^f	1.10	0.0014	0.05
Log equivalent income	−0.3646	−5.45	0.4490	3.40	−0.2341	−3.96	0.0040	1.00
Health index	−0.7259	−2.88	−0.2853	−0.65	0.7837 ^g	2.70	0.1524 ^f	10.68
Unexplained happiness, 1995	−0.0365	−0.65	−0.0044	−0.04	−0.0886	−1.56	0.0127	4.09
Constant	4.0965	4.75	−6.2979	−3.78	−4.4105	−4.06	0.7368	16.09
Observations	3050		1397		4491		4457	
Pseudo- <i>R</i> -squared	0.0759		0.1541		0.2077		0.0930	

^a Dependent variable.

^b Condition.

^c Regression technique.

^d Omitted.

^e Dropped: perfect predictor.

^f 1995 values employed.

^g The unexpected sign here is a spurious artifact of one of the three questions underlying the health index: “In the last 30 days did you miss any work or study days due to illness?” We obtain the expected negative relationship between good health and unemployment when we use other measures of health.

5. Conclusions

Studies by psychologists find that most individuals have fairly stable levels of happiness or subjective well-being, but that those levels are also subject to short-term fluctuations. Our findings support the idea that there are different elements of well-being, some of which are behaviorally driven and others that are determined by socioeconomic and demographic variables. The latter are much more vulnerable to day-to-day events such as changes in employment and marital status as well as fluctuations in income.

Our study used panel data from Russia to identify “residual” happiness levels that are not explained by the usual demographic and socioeconomic determinants of happiness. We then tested whether our residual happiness variable had causal properties on future income and other variables. In other words, while we know that more income (up to a certain level) and stable marital status and more education make people happier, does happiness matter to future outcomes? Does happiness pay? Are happier people healthier and/or more likely to marry?

We find that residual happiness is associated with higher levels of income in future periods, controlling for income, education, and other socio-demographic variables. Thus, people with higher levels of happiness are more likely to increase their own income in the future. When we divided the sample by income level, we found that happiness matters more to future income to those at lower levels of income. In contrast, the effects of initial period income on both future income and future happiness seem more important for those at higher levels of income. Thus, at least in the Russian context, happiness matters more to future income for those with less income, while income matters more to both happiness and income for those with more income.

Psychologists attribute stability in happiness levels over time (analogous to the “residual” happiness levels that we identify) to positive cognitive bias such as self-esteem, control, and optimism. Our results suggest that these same factors may affect people’s performance in their earnings activities and that these traits have relatively more importance for those at lower levels of income.

We also found that residual happiness had positive effects on health. Divorce made people significantly less happy, although unhappier people were not more likely to divorce.

consumed in the year 1995, is correlated with happiness in 1995, although the result was insignificant for the same regression with 2000 variables. However, change in drinking, a variable that captures increases in the amount of drinking from 1995 to 2000, was negatively correlated with happiness levels in 2000 (significant at the 10 percent level). Thus, while drinking is positively correlated with happiness, excessive drinking does not seem to be good for well-being. We then used our residual happiness measure to see whether unexplained happiness had any effects on the likelihood of smoking or drinking or of quitting smoking. We found that residual happiness was correlated with our drinking index (significant at the 10 percent level). Happier people drank more on average than others, but most likely because of spurious correlation, as when we control for the level of drinking in 1995, the result becomes insignificant. Residual happiness is correlated with drinking in 2000, most likely because it also correlated with drinking in 1995, but drinking in 1995 is also correlated with drinking in 2000. Residual happiness was not correlated with either starting or quitting smoking, even though people who smoke are less happy, on average. Thus, while smoking seems to have negative effects on happiness and/or unhappy people are more likely to smoke, we find no causal relationship between unexplained happiness and either starting or stopping smoking. Our insignificant results may well be due to the lack of clarity in terms of causation. Unhappiness might drive people to smoke, but it also could provoke them to change their habits and quit. Results available from the authors.

Happiness seems to have greater effects on people's outcomes in the labor market and at the doctor's office than it does on marital relations: divorce affected people's happiness but unhappiness did not cause divorce.

Our findings about the effects of well-being on future economic performance (in particular that happiness seems to have positive effects on income in future periods and not only the other way around) suggest that better understanding of subjective well-being can contribute to policy questions, for example, about labor market performance and about health. The results are tempered, however, by the exceptional nature of the time period and country from which they come. An important next stage is to test the broader relevance of these results against those from similar data, to the extent it exists, from other countries.⁴²

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⁴² One author, Graham, is currently in the process of compiling second period observations on happiness and other variables with a research team in Peru.

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