SN Bus Econ (2023) 3:70
https://doi.org/10.1007/s43546-023-00447-y

ORIGINAL ARTICLE

"Feeling richer and happier? The effect of self-perceived economic welfare on life satisfaction: longitudinal evidence from a transition economy"

Olivia S. Jin[1] · **Phanindra V. Wunnava**[2]

Received: 26 January 2022 / Accepted: 31 January 2023

Abstract

Do you feel more satisfied with life when you think you are richer? How does the perception of your own economic welfare affect your life satisfaction? This study draws from the Russia Longitudinal Monitoring Survey (RLMS) from years 1994 to 2018 to investigate the effects of self-perceived economic welfare on subjective well-being (SWB). Moreover, we aim to better understand why life satisfaction follows the trends in income in transition economies, contradicting the Easterlin paradox. The paradox posits that an increase in income does not increase life satisfaction over time, which extant literatures have found to not hold in transition economies (Easterlin Easterlin, J Econ Behav Organiz 71:130–145, 2009; Gruen and Klasen 2012; Selezneva Selezneva, Econ Syst 35:139–157, 2011). Our results suggest that the way one perceives their own economic welfare is a significant determinant of life satisfaction. We suggest that the general increase in life satisfaction in Russia since the 1990s, which follows the increase in income during the time-period, is partially driven by the overall changes in perceived economic welfare as a result of the transition, as well as the vast economic and political reforms that followed.

Keywords Life satisfaction · Self-perceived economic welfare · Subjective well-being · Russian longitudinal data · Ordered probit · Transition economies

JEL Classification D60 (Welfare Economics: General) · D63 (Equity · Justice · Inequality · And Other Normative Criteria and Measurement) · I31 (General Welfare: Well-Being)

✉ Phanindra V. Wunnava
wunnava@middlebury.edu

Olivia S. Jin
oliviajin@stanford.edu

[1] Department of Sociology, Stanford University, Stanford, USA

[2] David K. Smith `42 Chair in Applied Economics, Research Fellow at IZA, Fellow at GLO, Middlebury College, Middlebury, USA

Published online: 15 February 2023

Introduction

What determines life satisfaction? Can money buy happiness? There are studies that examine the effects of income on subjective well-being (SWB) (Easterlin 1974, 1995, 2003, 2017; Oswald 1997; Diener and Oishi 2003; McBride 2001; Frey and Stutzer 2000; Hagerty and Veenhoven 2003; Veenhoven and Hagerty 2006; Frijters et al. 2004; Kahneman and Deaton 2010; Angeles 2011), as well as studies that examine subjective measures of the economic welfare of individuals and societies (Ravallion and Lokshin 2001, 2002; Lokshin and Ravallion 2005; Mangahas 1995; Pradhan and Ravallion 2000; Lokshin, Umapathi and Paternostro 2006). We aim to bridge the gap between these two groups of literature and ask a similar question with a slight twist: does the perception of your own economic welfare affect your SWB? In this study, we empirically examine the effects of perceived economic welfare on SWB.[1]We hypothesize that an improvement in one's perception of their own economic welfare will increase their life satisfaction.

To examine this hypothesis, we draw from the Russia Longitudinal Monitoring Survey (RLMS), which are longitudinal survey data that are nationally representative of the Russian population in both individual- and household-level. We specifically focus on Phase II of the survey that has taken place almost every year from 1994 to 2018.

Russia experienced an economic transition from communism to a free market economy in the early 1990s after the collapse of the Soviet Union, and it underwent various economic liberalization reforms (Kozyreva, Kosolapov, and Popkin 2016). By the late 1990s and throughout the 2000s, Russia experienced large economic growth (Gimpelson and Kapeliushnikov 2011).

In addition to increases in the gross domestic product (GDP) throughout this time period, Fig. 1 and Fig. 2 show that individuals in Russia have, on average, experienced a slight decline in both life satisfaction and self-perceived economic welfare between 1994 and 1998, then a general increase in both measures between 1998 and 2018. In both figures, we find that the trend remains consistent across different age groups and income levels. Those who were 45 years or older at the time of the survey were less satisfied with life and ranked themselves lower on the economic rank than those who were younger than 45 years old. Those whose income was above the average income of the year at the time of the survey were both consistently more satisfied with life and ranked themselves higher on the economic rank than those whose income were below the year's average. Despite the differences across different demographic groups, the trend remains consistent throughout time. We find this to hold true when we disaggregate mean life satisfaction and mean self-perceived economic welfare across sex and attitudes about the future (if one expects to live better or worse in the upcoming year, or if they believe in neither), although we do not show these findings on the figures. The consistent trend across different groups

[1] More specifically, we examine life satisfaction, an evaluative dimension of SWB, which is one of the three dimensions of SWB; the other dimensions are hedonic and eudaimonic (Graham and Nikolova 2015; Frijters 2020).

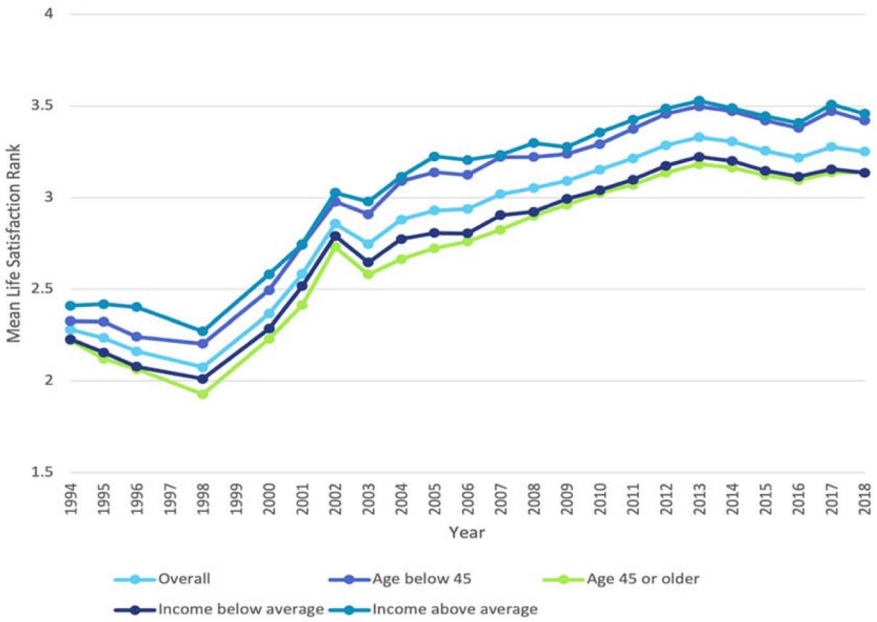

Fig. 1 Trends in Mean Life Satisfaction Rank from 1994 to 2018

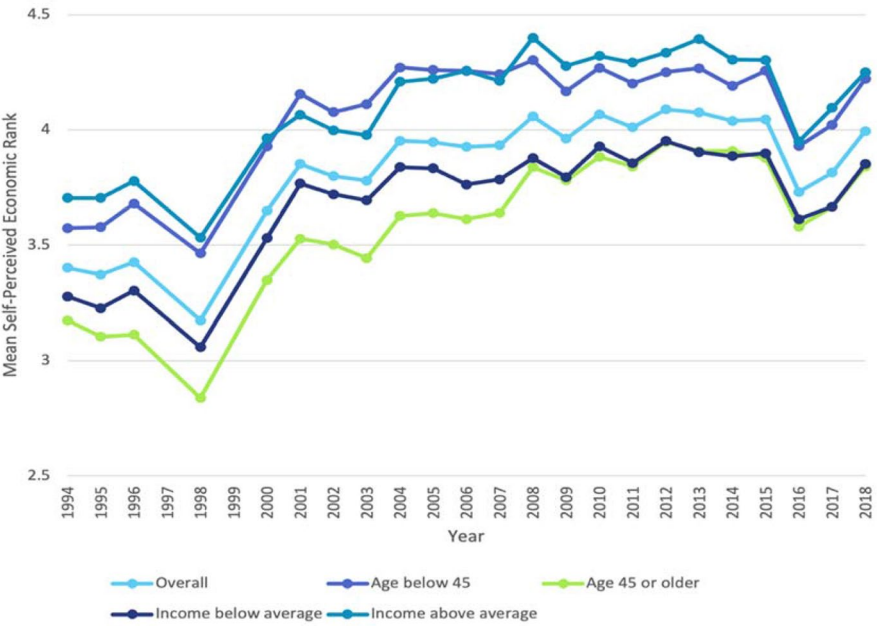

Fig. 2 Trends in Mean Self-Perceived Economic Welfare Rank from 1994 to 2018

suggests to us there is some force that is affecting everyone consistently throughout time, which may be the effects of the economic transition in Russia during this time.

The Easterlin paradox describes a phenomenon in which at a point in time, those who are richer are also happier, yet an increase in income does not increase happiness over time (Easterlin 1974 1995, 2003, 2017). Following the Easterlin paradox, life satisfaction should have stagnated in Russia despite the increase in GDP over time, yet we find otherwise in Fig. 1. Interestingly, Easterlin finds that the paradox does not seem to hold in transition economies, including Russia (2009). This study aims to better understand the gap between the paradox and the contradictory findings in transition economies, and more specifically, examine whether the increase in average life satisfaction has been led by the overall changes in perceived economic welfare throughout the transition in Russia. The advantage of studying Russia is that the country went through vast economic and political reforms during this time period as it transitioned into a market economy. The reforms included privatization, freely fluctuating market prices, private land ownership, and labor market changes (Kozyreva, Kosolapov, and Popkin 2016), which are factors that are likely to change one's perception of their own economic welfare. Figure 2 shows that the average self-perceived economic welfare has changed throughout the transition. By examining our hypothesis on Russia using this longitudinal data, we aim to empirically examine how the changes in perception over time affect life satisfaction.

The implications of the results of this study are two-fold. First, since there are few existing studies that empirically examine self-perceived economic welfare as a determinant of individual's SWB, this study adds to the existing literature on the determinants of SWB, specifically life satisfaction. Secondly, this study aims to better understand how the overall life satisfaction changes in a transition country, as they experience vast political and economic changes that may impact how one views their own economic welfare.

The rest of the paper is organized as follows. We discuss existing literature in Sect. 2. Methodology is in Sect. 3, and empirics is in Sect. 4. In Sect. 5, we summarize our findings and discuss possible extensions.

Insights from the literature

The following section examines existing literature on topics related to subjective measures of economic welfare and SWB. We first focus on existing literature that examines the effects of economic welfare on SWB. Next, we discuss previous studies that examine subjective measures of economic welfare. Finally, we give a brief overview of Russia during the transition, and we discuss the studies that examine SWB in transition economies.

Economic welfare on subjective well-being (SWB)

There are various studies that examine how economic welfare affects SWB. One prominent concept is the Easterlin paradox, in which Easterlin finds that while a higher income means higher happiness on average at a point in time, an increase in

income does not increase happiness over the long term (1974, 1995, 2003, 2017). Easterlin's findings have been influential in studying SWB, and there are various studies that test the paradox (Oswald 1997; Hagerty and Veenhoven 2003; Frijters et al. 2004; Veenhoven and Hagerty 2006). Some studies find that there is a diminishing marginal gain in SWB with an increase in income (Deaton 2008; Stevenson and Wolfers 2008, 2013), while some studies find that there is a satiation point in which a rise in income no longer increases SWB (Frey and Stutzer 2002; Clark, Frijters and Shields 2008; Di Tella and MacCulloch 2010). Kahneman and Deaton find that there is a 75,000 USD threshold for short-term happiness, in which happiness plateaus after the threshold, but finds that long-term life satisfaction continues linearly with increase in income (2010). As their study suggests, the relationship between income and SWB differs in the different dimensions of SWB (Graham and Nikolova 2015; Nikolova and Graham 2020). Some studies also examine the heterogeneity in the relationship between income and SWB in different societies, including different roles of social ties (Böckerman et al. 2015), welfare regimes (Dominko and Verbič 2020) and societal values (Lim et al. 2020).

Following Easterlin's line of research, there has been an increase in numbers of studies that examine the importance of studying relative economic welfare and society's well-being (McBride 2001; Clark, Frijters and Shields 2008; Di Tella and MacCulloch 2008; Easterlin and Plagnol 2008; Zhang and Wang, 2020). Despite the growing literature on relative economic welfare and its effects on SWB, there is a lack of research that examine the effects of self-perceived economic welfare on SWB. This paper aims to contribute to this literature by empirically examining the effects of subjective economic welfare on life satisfaction.

Self-Perceived economic welfare

We aim to examine whether a subjective measure of economic welfare, specifically self-perceived economic welfare, is a determinant of one's SWB. To better understand self-perceived economic welfare and to provide insight into the importance of studying it, this subsection explores previous studies that use subjective measures of economic welfare.

Importance of studying self-perceived economic welfare

Some studies examine economic welfare using subjective measures rather than more common and objective measures, such as income and find importance in using subjective measures (Mangahas 1995; Pradhan and Ravallion 2000; Lokshin, Umapathi and Paternostro 2006). Mangahas (1995) examines poverty in the Philippines between 1981 and 1992 using self-rated poverty, and the author emphasizes the importance of examining poverty from a bottom-up perspective, rather than a more common top-down perspective. They argue that using a self-rating approach allows one to better study time trends in poverty, as it allows poverty to be surveyed more frequently than if it were to be measured using income or expenditures, given that collecting the necessary data to measure poverty using the more common measures

such as income is more expensive. They also argue that self-rating is advantageous because it cannot be institutionally manipulated, unlike official poverty lines. The other two studies find that subjective poverty measures align well with objective poverty measures (Pradhan and Ravallion 2000; Lokshin, Umapathi and Paternostro 2006).

Self-perceived economic welfare of individuals using the RLMS

There are studies that examine self-perceived economic welfare using the RLMS data, such as a study by Ravallion and Lokshin (2002). They use the self-perceived economic welfare question asked in the RLMS to find that while there is a positive correlation between subjective economic welfare and income, there are also large discrepancies between the two measures of economic welfare. They further find that in many cases, where people placed themselves on the welfare ladder did not necessarily match where they would be placed using an objective measure. Ravallion and Lokshin's earlier study (2001) examines the different factors that affect individual's subjective economic welfare, which includes income, as well as ill-health and unemployment. In Lokshin and Ravallion's later study (2005), they examine the effects of income and subjective economic welfare on self-rated power, in which they find a positive correlation between the two. In all three studies, they use the self-perceived economic welfare measure, as well as other self-ranked measures that are available in the RLMS.

Rationale for studying subjective measures of economic welfare

Some studies have found that subjective measures of economic welfare affect individuals' policy preferences (Ravallion and Lokshin 2000; Alesina and La Ferrara 2005; Cruces, Perez-Truglia and Tetaz 2013). Alesina and La Ferrara (2005) explore the different determinants of preferences for redistribution in the US, and they find that preferences depend on future income prospects, using both subjective and objective measures of future mobility. Similarly, Cruces, Perez-Truglia and Tetaz (2013) examine how biased perceptions affect preferences for policies, specifically how biased self-perceived economic welfare affects preferences for redistribution policies. They find that those who overestimate their economic ranking and are then informed of their true lower ranking prefer higher levels of redistribution. An earlier study by Ravallion and Lokshin (2000) uses the RLMS to examine the determinants of individuals' preference to redistribute in Russia, and they find that those who expect their economic welfare to fall in the future tend to support redistribution policies.

Another subjective measure of economic welfare includes perceived economic inequality. Some studies have suggested that perceived economic inequality may have an impact on life satisfaction (Alesina, Di Tella and MacCulloch 2004; Schneider 2011). A study by Schalembier (2018) empirically examines the effects of perceived income on SWB. They find that although the effects of perceived income inequality on SWB are not significant on average on a national level, they find a negative effect for those with lower income and those with lower perceived mobility.

These studies show that it is important to investigate subjective measures of economic welfare, but more research is needed to better understand their relationship with SWB. A few studies have used the RLMS to explore self-perceived economic welfare, and we aim to add to the existing literature by examining how self-perceived economic welfare affects life satisfaction, and its possible policy implications.

Russia in transition

In 1992, after the collapse of the Soviet Union, Russia underwent rapid economic and political reform, including liberalization of prices and privatization of state enterprises, which was followed by significant labor market changes. The market liberalization led to a rapid increase in the private sector in the 1990s, which meant reallocation of labor from the public sector to the private sector (Gimpelson and Treisman 2002; Estrin, Svejnar and Hanousek 2009). However, the transition also meant labor market adjustment to the declining economy. GDP fell significantly by the end of 1990s, which led to an increase in unemployment, decrease in working hours and real wages, as well as wage arrears (Desai and Idson 2000; Gimpelson and Kapeliushnikov 2011). However, starting in 1999, the Russian economy started a steady recovery, with the Russian GDP almost doubling from 1998 to 2008. The economic recovery also brought improvements in labor market performance (Gimpelson and Kapeliushnikov 2011).

Such big changes in the economy also brought changes in Russians' SWB. Studies find that the decline in income in the 1990s led to a decline in SWB, and this phenomenon was not only unique to Russia but in other transition economies as well (Sanfey and Teksoz 2007; Easterlin 2009; Guriev and Zhuravskaya 2009; Nikolova 2016). Interestingly, with economic recovery starting in the late 1990s, studies find that SWB eventually recovered to the level at the beginning of the transition. More broadly, studies find that there is a large gap in life satisfaction between transition countries and non-transition countries and that SWB generally follows the trends in income over time in transition economies, which is at odds with the Easterlin paradox found in higher-income countries (Easterlin 2009; Gruen and Klasen 2012; Selezneva 2011). A recent working paper demonstrates that there are persistent effects of having connections to the communist regime on life satisfaction (Otrachshenko, Nikolova, and Popova 2021). Another study suggests that the uncertainty and changes in expectations that come with labor market shocks during the transition lead to increase in dissatisfaction and people's perception of being poorer than when classified using income measures in Western Balkans (Koczan 2016). The deviation from the Easterlin paradox in transition economies may be due to changes in life experiences during the transition affecting SWB.

Transition economies provide an interesting case to study as they have not only experienced changes in income over time, but also many other life experiences that may affect one's perception of themselves as well as society. This study takes advantage of the life changes experienced by Russians during the transition following the fall of the Soviet Union to empirically examine how changes in self-perceived economic welfare affect SWB. The study contributes to the current literature by

providing evidence of the effects of perception on SWB, specifically life satisfaction, as well as an attempt to better understand changing life satisfaction in transition economies. Moreover, we aim to better understand the gap between the Easterlin paradox and the contradictory phenomenon in transition countries. The following section outlines the methodology of this study.

Methodology

To learn more about the effects of subjective economic welfare on life satisfaction, we use the RLMS, Russian longitudinal data that span from 1994 to 2018. We anchor our methodology on multiple studies that employ ordered probit models to examine the self-perceived economic welfare measure and other self-ranked measures in RLMS, specifically, Ravallion and Lokshin (2001, 2002) and Lokshin and Ravallion (2005). Ordered probit models allow us to account for both the categorical and ordinal aspects of the 'life satisfaction' variable as we aim to identify the effects of self-perceived economic welfare on life satisfaction.

For simplicity, we first focus on the relationship between the latent variable and the main explanatory variable, $perception_i$ (self-perceived economic welfare). All other control variables will be denoted as the error term, ε_i, for now. The model is given in the following Eq. (1):

$$y_i^* = \beta perception_i + \varepsilon_i \tag{1}$$

To account for omitted variable bias, we also control for other factors that may affect life satisfaction. We control for income and unemployment since much of the existing literature has found that they are important contributing determinants (Easterlin 1974, 1995; Clark and Oswald 1994; Gerlach and Stephan 1996; Korpi 1997; Oswald 1997; Theodossiou 1998; Winkelmann and Winkelmann 1998; Diener and Oishi 2003; Clark, Frijters and Shields 2008; Di Tella and MacCulloch 2008; Hagler, Hamby, Grych and 2016). We use the natural logarithm of monthly income to account for the right-skewed nature of the monthly income variable. We also include other determinants of life satisfaction, such as gender, age, marital status, self-rated health, education, and Russian ethnicity. Household size and different household assets are also included. We also control for different attitudinal variables, including one's expectations for the future, self-perceived power and respect, job insecurity, as well as their confidence in being reemployed if unemployed.

The following is the model given in Eq. (1) with other controls and fixed effects:

$$y_{ijt}^* = \beta_1 perception_{ijt} + \beta_2 lnincome_{ijt} + \beta_3 unemployed_{ijt} + \alpha_{ijt} + \lambda_t + \lambda_j + \varepsilon_{it} \tag{2}$$

where the variable $lnincome_{ijt}$ is monthly income in natural logarithm (rubles) for individual i in region j at time t, and $unemployed_{ijt}$ is whether the individual i is unemployed in region j at time t. The variable α_{ijt} represents a matrix of control variables included in the model. We include year fixed effects λ_t to account for other time-variant factors that are not controlled for in the model, such as the Russian economy and changes in income inequality. We also include regional fixed effects

λ_j to account for differences across different regions. We include eight different federal districts in Russia, including Central, Northwestern, Southern, North Caucasian, Volga, Ural, Siberian and Far Eastern Federal Districts. Standard errors are clustered at the individual level to account for heteroskedasticity across individuals. We hypothesize that there will be a positive correlation between self-perceived economic welfare and life satisfaction; specifically, that the probability of an individual's life satisfaction rank increases with self-perceived economic welfare.

Empirics

The RLMS Phase II is an unbalanced panel dataset that is nationally representative of Russia starting in 1994[2]. Phase II started in 1994 with a target sample of around 4000 households with the goal of providing data on a nationally representative sample in Russia. In each of the interviews, interviewers visited each selected dwelling up to three times to conduct the interview. Following the first round in Phase II (round V) in 1994, interviewers attempted to return to the same dwellings of the selected households. Starting in round VII (1998), the RLMS attempted to follow individuals and households when they moved out of the household units and attempted to find households who moved between rounds V and VII (Kozyreva, Kosolapov, and Popkin 2016).

The individual-level survey includes a question on SWB, specifically on the life satisfaction of individuals. Individuals are asked to rank their life satisfaction on a scale ranging from 1 to 5, with 1 being fully satisfied and 5 being the least satisfied. The life satisfaction question is phrased as follows: "To what extent are you satisfied with your life in general at the present time?" Originally, the responses were coded as 1 being fully satisfied and 5 being the least satisfied, but in order to make the coefficients in the regression more intuitive, we modified the way this variable is defined to make 5 being fully satisfied. Given the way in which the question is phrased, the answer to this question measures the evaluative element of SWB, in contrast to hedonic and eudaimonic elements of SWB (Graham and Nikolova 2015; Frijters 2020).

The self-perceived economic welfare variable is on an interval scale, based on a question that asks individuals to rank their own economic welfare on a nine-step ladder, with 1 being the poorest and 9 being the richest. The question is specifically phrased as follows for all 23 rounds:

[2] RLMS Phase II was conducted by Higher School of Economics and ZAO "Demoscope" together with Carolina Population Center, University of North Carolina at Chapel Hill and the Institute of Sociology RAS. The survey was not conducted in 1997 and 1999 due to funding lapses (Kozyreva, Kosolapov, and Popkin, 2016). The survey's Phase I initially began in 1992 as a way to obtain accessible and objective data on the social, medical and economic aspects of the Russian state of affairs after the major economic liberalization reforms in 1992. The RLMS Phase I data did not provide a representative profile of the Russian population (UNC Carolina Population Center).

Table 1 Summary statistics

	# of observations	Means	SD	Min	Max
Life satisfaction	169,291	2.96	1.15	1.00	5.00
Self-perceived economic rank	169,291	3.87	1.48	1.00	9.00
Monthly income in rubles	169,291	6,063.84	12,322.33	1.00	430,000.00
Monthly income in natural log	169,291	3.99	4.48	0.00	12.97
Unemployed	169,291	0.06	0.24	0.00	1.00
Male	169,291	0.41	0.49	0.00	1.00
Age	169,291	45.93	18.57	13.00	102.00
Marital status					
Single	169,291	0.27	0.44	0.00	1.00
Married	169,291	0.46	0.50	0.00	1.00
Divorced	169,291	0.08	0.27	0.00	1.00
Widowed	169,291	0.13	0.34	0.00	1.00
Non-Russian	169,291	0.17	0.38	0.00	1.00

There are 55,660 distinct individuals that participated in the 23 rounds of the RLMS with 353,827 observations total. This means that an individual on average participated in approximately six rounds of the survey, although in reality, the participation of individuals spanned the entire range. In our analysis, we limit the individuals to those who have participated in at least five rounds. The data also includes post-stratification weights on both household and individual-levels, which adjust for both design factors of the survey as well as deviations from the census characteristics. Our final weighted sample contained 169,291 individual-year observations with 21,109 distinct individuals.

> "*Please imagine a 9-step ladder where on the bottom, the first step, stand the poorest people, and on the highest step, the ninth, stand the rich. On which step are you today?*"

The data also includes an extensive list of household and individual-level survey questions, which we use as demographic controls in our models. These controls are further discussed in the following section. (Appendix A).

Summary statistics

Table 1 shows the summary statistics for some key variables in our model. There are 23 different rounds and representation from all 8 federal districts of Russia in the dataset. There are 169,291 observations from 21,109 distinct individuals. The mean value of life satisfaction is approximately 2.96 on a scale of 1 to 5, and the mean value of the self-perceived economic welfare rank is approximately 3.87 on a scale of 1 to 9. Please refer to Appendix B for all other variables that are included in our model.

We also include individuals' monthly income using the natural logarithm.[3] In the survey, those that are unemployed are not asked for their monthly income, so we assume that they have a monthly income of zero. However, since the logarithm of

[3] Russia had a monetary reform in 1998, in which starting January 1, 1998, 1000 rubles became worth 1 ruble. In order to account for this, we divided the income value by 1000 for responses before 1998.

zero is undefined, simply taking a natural logarithm of monthly income removes individuals with no income from the sample, which leads to selection bias in our results. To include unemployed individuals and those with no income in our analysis, we assign them a monthly income value of 1 ruble so that the natural logarithm of their income becomes 0. We also include an unemployment dummy variable to control for whether they are unemployed at the time of the survey. We also include different occupations for those that are currently employed.

Other demographic controls, such as self-assessed health, gender, age, marital status, education, whether one is an ethnic minority, household size, ownership of household assets, and other attitudinal variables are included in the model. Only a small proportion of the sample, around 17%, are not ethnically Russian, but we include the dummy variable in the model to account for the effects of being an ethnic minority on life satisfaction (Utsey, Payne, Jackson and Jones 2002; Verkuyten 2008). In addition, only a small proportion of the sample is divorced (8%) or widowed (13%), but we include these individuals in the model separately to account for the difference in the effects of the two marital statuses (Chen 2001; Lucas, Clark, Georgellis and Diener 2003; Lucas 2007).

Empirical results and analysis

Table 2 shows the empirics, where column (1) is the first baseline model without any controls or fixed effects, shown in Eq. (1). Columns (2) to (5) include year and regional fixed effects. Column (2) is the baseline model with the fixed effects, and Columns (3) and (4) are baseline models that include other measures of economic welfare as control variables. Column (3) includes monthly income in natural logarithm and Column (4) includes both income and unemployment status. Column (5) is the result of estimating Eq. (2), which includes the rest of the control variables as well as a year and regional fixed effects. All standard errors are clustered at the individual level.

For the baseline model in Column (1), the coefficient for self-perceived economic welfare is approximately 0.306 and it is statistically significant at the 1% level. The coefficient is positive, indicating that the probability of ranking higher on the life satisfaction rank increases when self-perceived economic welfare increases.

Figure 3 visualizes the predicted probabilities of each life satisfaction rank for each self-perceived economic welfare rank for the baseline model in Column (1). The figure is limited in that it does not account for other control variables or fixed effects, but it provides a simple visualization of the predicted probabilities. As self-perceived economic welfare increases, the predicted probability of life satisfaction being ranked between 1 and 3 (“not at all satisfied”, “less than satisfied”, and “both yes and no”, respectively) generally decreases. The probability of life satisfaction being ranked at 4 (“rather satisfied”) generally increases with an increase in self-perceived economic welfare rank, peaking at the economic rank of 7, then slightly decreasing at ranks 8 and 9. Lastly, the probability of life satisfaction being ranked at 5 (“fully satisfied”) increases steeply with an increase in self-perceived economic welfare rank. The findings support our hypothesis that

Table 2 Ordered probit regression results

	(1)	(2)	(3)	(4)	(5)
	Baseline	(1) with FE	(2) with income	(3) with unemployed	(4) with additional controls
Perception	0.306***	0.299***	0.293***	0.292***	0.179***
	(0.00295)	(0.00298)	(0.00299)	(0.00299)	(0.00329)
Lnincome			0.0161***	0.0115***	0.0191***
			(0.000955)	(0.000990)	(0.00152)
Unemployed				− 0.398***	− 0.459***
				(0.0142)	(0.0152)
Cutoffs					
μ_1	− 0.133***	0.192***	0.212***	0.170***	0.382***
	(0.0131)	(0.0203)	(0.0204)	(0.0205)	(0.0533)
μ_2	0.827***	1.218***	1.242***	1.206***	1.485***
	(0.0133)	(0.0204)	(0.0206)	(0.0207)	(0.0533)
μ_3	1.471***	1.907***	1.933***	1.900***	2.231***
	(0.0140)	(0.0209)	(0.0211)	(0.0212)	(0.0534)
μ_4	2.806***	3.294***	3.321***	3.292***	3.722***
	(0.0166)	(0.0230)	(0.0232)	(0.0233)	(0.0548)
# of observations	169,291	169,291	169,291	169,291	169,291
Pseudo R2	0.0568	0.0901	0.0916	0.0941	0.134
Year FE	No	Yes	Yes	Yes	Yes
Region FE	No	Yes	Yes	Yes	Yes
Individual controls	No	No	No	No	Yes

Columns (5) include occupation, gender, household size, ownership of household assets, and other attitudinal variables that are not reported in the table above. Refer to Appendix B for a full list of variables and their definitions. Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

there is a strong positive correlation between self-perceived economic welfare and life satisfaction.

It should be noted that the coefficients for self-perceived economic welfare remain stable even with the inclusion of year and regional fixed effects in Table 2 Columns (2) through (5), and other control variables in Columns (3) to (5). In Column (2), the coefficient remains stable at around 0.299 with region and year fixed effects. Column (3) includes individual's monthly income using natural logarithm, and Column (4) includes both income and unemployment status. Even with the inclusion of these economic welfare measures, the coefficient for self-perceived economic welfare remains stable at around 0.293 in Column (3) and around 0.292 in Column (2). In Column (5), the inclusion of other control variables shifts the coefficient to around 0.179, but it remains positive and statistically significant at the 1% level.

The consistently significant coefficients for self-perceived economic welfare rank across all 5 columns suggest the robustness of the results. The stability of the coefficients across different models suggests that the effects of omitted variable bias in

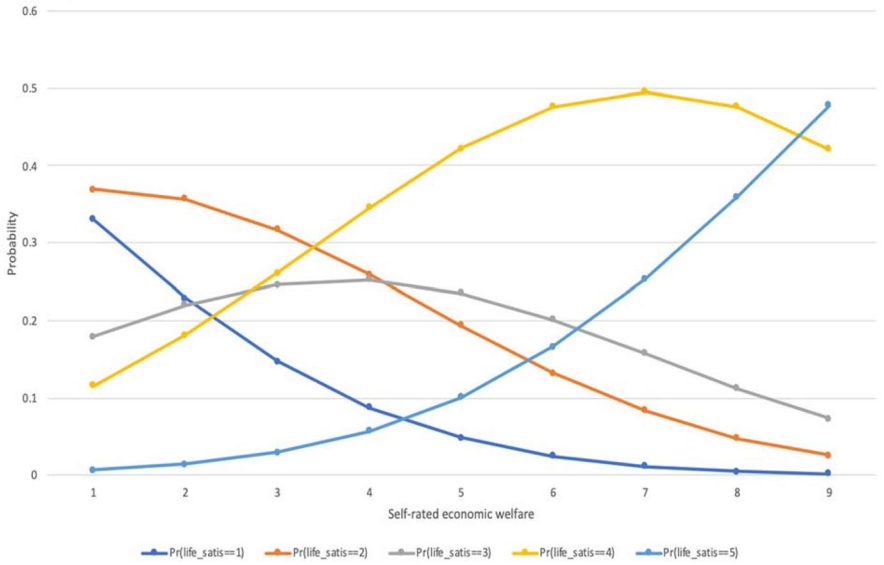

Fig. 3 Visualization of the Predicted Probabilities based on the Baseline Model

our results may be limited. Although the addition of control variables in Column (5) slightly shifts the coefficient, the coefficient remains positive and statistically significant, suggesting that the effects of unobservable factors may be limited in our results. This further strengthens the finding that life satisfaction rank increases with an increase in self-perceived economic welfare.

In addition, using a cardinal scale of the dependent variable, we estimated a linear model with individual fixed effects to examine within-individual variations in life satisfaction with a change in self-perceived economic welfare. The results are reported in Appendix C. We find statistically significant results that is consistent with our main analysis, which suggests robustness of our results. These regressions provide credence to our main ordered probit results reported in this paper.

Table 2 also shows the cutoffs of each of the models. In the final model in Column (5), the cutoffs are approximately 0.382, 1.485, 2.231, and 3.722, from μ_1 to μ_4, respectively. If the latent variable, the unobservable true life satisfaction of an individual, is $y_i^* \leq 0.382$, then the individual will rank their life satisfaction as 1. If $1.485 \leq y_i^* \leq -2.231$ then the individual will rank their life satisfaction as 2, and so on until $y_i^* \geq 3.722$, where life satisfaction will be ranked as 5. For each of the models, the cutoffs are used to calculate the marginal effects of self-perceived economic welfare on the probability of each of the life satisfaction rank outcomes.

Table 3 shows the marginal effects of the mean self-perceived economic welfare for the five models above. The results reveal similar findings to those in Table 2. It further shows how an increase in self-perceived economic rank by 1 unit affects the probability of an individual choosing each of the 5 life satisfaction ranks. In Column (5) of Table 3, which includes controls and fixed effects, when the self-perceived economic welfare rank increases by 1 from its mean of 3.87 while controlling for all other variables at

Table 3 Marginal effects of a one-unit change in self-perceived economic welfare rank on the probability of the life satisfaction rank outcome

	(1)	(2)	(3)	(4)	(5)
Model	Baseline	(1) with FE	(2) with income	(3) with unemployed	(4) with additional controls
$\frac{\partial P(y=1)}{\partial perception_i}$	− 0.0506***	− 0.0430***	− 0.0425***	− 0.0225***	− 0.0506***
	(0.000646)	(0.000603)	(0.000600)	(0.000472)	(0.000646)
$\frac{\partial P(y=2)}{\partial perception_i}$	− 0.0635***	− 0.0656***	− 0.0658***	− 0.0429***	− 0.0635***
	(0.000734)	(0.000775)	(0.000779)	(0.000827)	(0.000734)
$\frac{\partial P(y=3)}{\partial perception_i}$	− 0.00332***	− 0.00291***	− 0.00287***	− 0.00213***	− 0.00332***
	(0.000402)	(0.000395)	(0.000395)	(0.000244)	(0.000402)
$\frac{\partial P(y=4)}{\partial perception_i}$	0.0842***	0.0837***	0.0837***	0.0540***	0.0842***
	(0.00101)	(0.000997)	(0.000999)	(0.00103)	(0.00101)
$\frac{\partial P(y=5)}{\partial perception_i}$	0.0332***	0.0278***	0.0274***	0.0136***	0.0332***
	(0.000460)	(0.000432)	(0.000427)	(0.000316)	(0.000460)
# of Observations	169,291	169,291	169,291	169,291	169,291

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

their mean, the probability of the individual choosing the life satisfaction rank of 1 decrease by 5.06%. The probability decreases by 6.35% for rank 2, while it decreases only slightly by 0.332% for rank 3. The probability increases by 8.42% for rank 4, and finally, increases 3.32% for rank 5, the highest life satisfaction rank.

These results support the hypothesis that an increase in self-perceived economic welfare increases life satisfaction. In other words, for an average individual in our sample, an increase in a unit of self-perceived economic welfare increases the probability that the individual would choose a higher life satisfaction rank (rank 4 or 5) while decreasing the probability of choosing a lower rank (rank 1 or 2). Interestingly, the probability of choosing a life satisfaction rank of 2 decreases more than it does for rank 1, and similarly, the probability increases more for rank 4 and rank 5. This suggests the sensitivity of life satisfaction rank to a change in self-perceived economic welfare; the probability of choosing the extreme ends of the rank, either 1 or 5, are less sensitive to a change in self-perceived economic welfare.

Conclusions, policy implications, and possible extensions

Using a transition economy as a case study, our analysis provides evidence that is consistent with our hypothesis that self-perceived economic welfare is an important determinant of life satisfaction. Our results suggest that for an average individual, an increase in self-perceived economic welfare increases the life satisfaction of the individual, holding other control variables constant. This is especially

underscored by the robustness of our results. In other words, our findings suggest that *how* people perceive their own economic welfare matters for their life satisfaction. The findings from this paper are consistent with previous literature, which suggests that better economic welfare is in fact correlated with higher life satisfaction in general. More importantly, the findings from this paper contribute to the limited existing literature that examines subjective economic welfare as a determinant of life satisfaction.

Life satisfaction generally seems to follow the trend in income in Russia since the 1990s, which contradicts the Easterlin paradox as also suggested by earlier studies that examine the phenomenon in transition economies (Easterlin 2009; Selezneva 2011). Our findings help better understand why the Easterlin paradox may not have held up in transition economies. Figure 2 shows that the overall self-perceived economic welfare has generally increased over time since 1998, perhaps due to a collective change in Russians' perception of their own economic welfare throughout the transition after the fall of the Soviet Union. Our empirical findings confirm that self-perceived economic welfare was an important determinant in the overall increase in life satisfaction in Russia over time. An important extension of our study would be to determine specific policies or structural changes that improve people's self-perceived economic welfare and life satisfaction.

Given our findings, we suggest that relationships between redistributive policies, economic inequality, subjective measures of economic welfare, and SWB should be further examined. Previous studies have shown that subjective measures of economic welfare affect individuals' policy preferences, specifically that those who perceive worse economic welfare for themselves support redistribution policies (Ravallion and Lokshin 2000; Alesina and La Ferrara 2005; Cruces, Perez-Truglia and Tetaz 2013). Another line of studies has examined the effects of economic inequality on life satisfaction, some finding negative effects (Alesina, Di Tella and MacCulloch 2004; Blanchflower and Oswald 2004; Verme 2011; Lei, Xiaoyan, Shen, Smith, and Zhou 2018), some finding positive effects (Ott 2005; Berg and Veenhoven 2010), and some finding mixed effects (Zagorski, Evans, Kelley and Piotrowska 2014; Reyes-García et al. 2018; Ding, Salinas-Jiménez and Salinas-Jiménez 2020). While the effects of economic inequality on life satisfaction remain inconclusive (Schneider 2015), a few studies have suggested the importance of perceived income inequality on life satisfaction (Alesina, Di Tella and MacCulloch 2004; Schneider 2011), although not many empirical studies have been conducted yet. One recent study by Schalembier (2018) empirically examines the relationship, in which they find that although the effects of perceived income inequality on life satisfaction is not significant on average on a national level, they find a negative effect for those with lower income and those with lower perceived mobility. More happiness research should focus on better understanding the determinants of happiness to better guide policy recommendations (Frey 2019). Future research should examine objective and perceived economic inequality, as well as redistributive policies, in relation to subjective economic welfare and life satisfaction to guide policy recommendations.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s43546-023-00447-y.

Acknowledgements We would like to thank two anonymous referees and the associate editor for their candid comments, which helped strengthen the research presented in this article to appeal to a wider audience of this journal. We would like to thank Milena Nikolova, Robert Bernhardt, Geetha and Sanjay Wunnava, Farhan Haque, and Max McCulloch for their constructive suggestions and recommendations in fine-tuning this paper. Additionally, we would like to thank Will Pyle for introducing the Russia Longitudinal Monitoring Survey and providing helpful suggestions on working with the data. An earlier version of this paper was circulated as a part of the GLO Discussion Paper Series. The usual caveats apply.

Data availability We will make the data available upon a request.

Declarations

Conflict of interest The authors have no relevant financial or non-financial interests to disclose. All authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript. The authors have no financial or proprietary interests in any material discussed in this article. The authors have no conflicts of interest to declare that are relevant to the content of this article.

Informed consent No human participants were involved in this research.

References

Alesina A, La Ferrara E (2005) Preferences for redistribution in the land of opportunities. J Public Econ 89(5):897–931

Alesina A, Di Tella R, MacCulloch R (2004) Inequality and happiness: are Europeans and Americans different? J Public Econ 88(9):2009–2042

Angeles L (2011) A closer look at the easterlin paradox. J Socio-Econ 40(1):67–73

Berg, M., & Veenhoven, R. Income inequality and happiness in 119 nations. In B. Greve (Ed.), *Happiness and social policy in Europe*, 2010, pp. 174–194. Cheltenham: Edward Elgar.

Blanchflower DG, Oswald AJ (2004) Well-being over time in Britain and the USA. J Public Econ 88(7–8):1359–1386. https://doi.org/10.1016/s0047-2727(02)00168-8

Böckerman P, Laamanen J-P, Palosaari E (2015) The role of social ties in explaining heterogeneity in the association between economic growth and subjective well-being. J Happiness Stud 17(6):2457–2479. https://doi.org/10.1007/s10902-015-9702-0

Chen C (2001) Aging and Life Satisfaction. Soc Indic Res 54(1):57–79

Clark AE, Oswald AJ (1994) Unhappiness and unemployment. Econ J 104(424):648–659

Clark AE, Frijters P, Shields MA (2008) Relative income, happiness, and utility: an explanation for the Easterlin Paradox and other puzzles. J Econ Litere 46(1):95–144. https://doi.org/10.1257/jel.46.1.95

Cruces G, Perez-Truglia R, Tetaz M (2013) Biased perceptions of income distribution and preferences for redistribution: evidence from a survey experiment. J Public Econ 98:100–112

Deaton A (2008) Income, health, and well-being around the world: evidence from the gallup world poll. J Econ Perspect 22(2):53–72. https://doi.org/10.1257/jep.22.2.53

Desai P, Idson T (2000) Work Without Wages: Russia's Nonpayment Crisis. MIT Press, Cambridge

Diener E, Oishi S (2003) Money and happiness: Income and subjective wellbeing across nations. In: Diener E, Suh EM (eds) Culture and Subjective Well-being. The MIT Press, Cambridge, pp 185–218

Ding J, Salinas-Jiménez J, del Mar M, Salinas-Jiménez. (2020) The impact of income inequality on subjective well-being: the case of China. J Happiness Stud. https://doi.org/10.1007/s10902-020-00254-4

Dominko M, Verbič M (2020) The effect of income and wealth on subjective well-being in the context of different welfare state regimes. J Happiness Stud. https://doi.org/10.1007/s10902-020-00225-9

Easterlin RA (1995) Will raising the incomes of all increase the happiness of all? J Econ Behav Organiz 27(1):35–47

Easterlin RA (2003) Explaining Happiness. Proceed Nati Acadeour Sci 100(19):11176–11183. https://doi.org/10.1073/pnas.1633144100

Easterlin RA (2005) Feeding the illusion of growth and happiness: a reply to hagerty and veenhoven. Soc Indic Res 74(3):429–443
Easterlin RA (2009) Lost in transition: life satisfaction on the road to capitalism. J Econ Behav Organiz 71(2):130–145. https://doi.org/10.1016/j.jebo.2009.04.003
Easterlin RA (2017) Paradox lost? Rev Behav Econ 4(4):311–339. https://doi.org/10.1561/105.00000068
Easterlin RA, Plagnol AC (2008) Life satisfaction and economic conditions in East and West Germany pre- and post-unification. J Econ Behav Organ 68(3–4):433–444. https://doi.org/10.1016/j.jebo.2008.06.009
Easterlin R A. 1974 "Does Economic Growth Improve the Human Lot Some Empirical Evidence." In: P A David and Melvin W R (eds.) *Nations and Households in Economic Growth*. Academic Press, New York, pp 89–125.
Estrin S, Hanousek J, Svejnar J (2009) The effects of privatization and ownership in transition economies. J Econ Lit. https://doi.org/10.1257/jel.47.3.699
Frey BS (2020) What are the opportunities for future happiness research? Int Rev Econ 67(1):5–12. https://doi.org/10.1007/s12232-019-00318-9
Frey B, S., and Alois Stutzer. (2002) What can economists learn from happiness research? J Econ Lit 40(2):402–435
Frey BS, Stutzer A (2000) Happiness, economy and institutions. Econ J 110(466):918–938
Frijters P (2020) Measuring Subjective Wellbeing. In: Zimmermann KF (ed) Handbook of Labor. Human Resources and Population Economics, Springer International Publishing, Cham, pp 1–29
Frijters P, Haisken-DeNew JP, Shields MA (2004) Money does matter! Evidence from increasing real income and life satisfaction in East Germany following reunification. Am Econ Rev 94(3):730–740
Gerlach K, Stephan G (1996) A Paper on unhappiness and unemployment in Germany. Econ Lett 52(3):325–330
Gimpelson V, Kapeliushnikov R (2011) Labor Market Adjustment: Is Russia Different SSRN Scholarly Paper. Social Science Research Network, Rochester, NY
Gimpelson V, Treisman D (2002) Fiscal games and public employment: a theory with evidence from Russia. World Polit 54:145–183. https://doi.org/10.1353/wp.2002.0003
Graham C, Nikolova M (2015) Bentham or aristotle in the development process? An empirical investigation of capabilities and subjective well-being. World Dev. https://doi.org/10.1016/j.worlddev.2014.11.018
Greene WH, Hensher DA (2010) Modeling Ordered Choices: A Primer, 1st edn. Cambridge University Press
Gruen C, Klasen S (2012) Has transition improved well-being? Econ Syst 36(1):11–30. https://doi.org/10.1016/j.ecosys.2011.09.002
Guriev S, Zhuravskaya E (2009) (Un)Happiness in Transition. Journal of Economic Perspectives 23(2):143–168. https://doi.org/10.1257/jep.23.2.143
Hagerty MR, Veenhoven R (2003) Wealth and happiness revisited – growing national income does go with greater happiness. So Indic Res 64(1):1–27
Hagler M, Hamby S, Grych J, Banyard V (2016) Working for well-being: uncovering the protective benefits of work through mixed methods analysis. J Happiness Stud 17(4):1493–1510
Heeringa, Steven. *Sample Attrition, Replenishment, And Weighting in Rounds V-VII — Russia Longitudinal Monitoring Survey of HS* 1997, https://www.cpc.unc.edu/projects/rlms-hse/project/samprep.
Kahneman D, Deaton A (2010) High Income improves evaluation of life but not emotional well-being. Proceed Nat Acadeour Sci 107(38):16489–16493
Koczan Z (2016) Being Poor, Feeling Poorer : Inequality, Poverty and Poverty Perceptions in the Western Balkans. IMF. https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Being-Poor-Feeling-Poorer-Inequality-Poverty-and-Poverty-Perceptions-in-the-Western-Balkans-43717. Accessed 25 Apr 2021
Korpi T (1997) Is utility related to employment status? Employment, unemployment, labor market policies and subjective well-being among Swedish youth. Labour Econ 4(2):125–147
Kozyreva P, Kosolapov M, Popkin B (2016) Data resource profile: the Russia Longitudinal monitoring survey—higher school of economics (RLMS-HSE) Phase ii: monitoring the economic and health situation in Russia. Int J Epidemiol 45(2):395–401
Krugman, Paul. "The Capitalist; Viagra and the Wealth of Nations." *The New York Times*, 23 Aug. 1998. *NYTimes.com*, https://www.nytimes.com/1998/08/23/magazine/the-capitalist-viagra-and-the-wealth-of-nations.html.

Lei X, Shen Y, Smith JP, Zhou G (2018) Life satisfaction in China and consumption and income inequalities. Rev Econ Household 16(1):75–95. https://doi.org/10.1007/s11150-017-9386-9
Lim H-E, Shaw D, Liao P-S, Duan H (2020) The effects of income on happiness in East and South Asia: societal values matter? J Happiness Stud 21(2):391–415. https://doi.org/10.1007/s10902-019-00088-9
Lokshin M, Ravallion M (2005) Rich and powerful? Subjective power and welfare in Russia. J Econ Behav Organiz 56(2):141–172
Lokshin M, Umapathi N, Paternostro S (2006) robustness of subjective welfare analysis in a poor developing country: Madagascar 2001. J Dev Stud 42(4):559–591
Lucas RE (2007) Adaptation and the set-point model of subjective well-being: does happiness change after major life events? Curr Direct Psychol Sci 16(2):75–79
Lucas RE, Clark A, Georgellis Y, Diener E (2003) Reexamining adaptation and the set point model of happiness: reactions to changes in marital status. J Pers Soc Psychol 84(3):527–539
Mangahas M (1995) Self-Rated poverty in the Philippines, 1981–1992. Int J Public Opinion Res 7(1):40–52
McBride M (2001) Relative-income effects on subjective well-being in the cross-section. J Econ Behav Organiz 45(3):251–278
Nikolova M (2016) Minding the happiness gap: political institutions and perceived quality of life in transition. Eur J Polit Econ 45:129–148. https://doi.org/10.1016/j.ejpoleco.2016.07.008
Nikolova M, Graham C (2020) The Economics of Happiness. In: Zimmermann KF (ed) Handbook of Labor, Human Resources and Population Economics. Springer International Publishing, Cham, pp 1–33
Oswald AJ (1997) Happiness and economic performance*. Econ J 107(445):1815–1831
Otrachshenko V, Nikolova M, Popova O (2021) Double-Edged sword: persistent effects of communism on life satisfaction. IZA Discuss Paper. https://doi.org/10.2139/ssrn.3921502
Ott J (2005) Level and inequality of happiness in nations: does greater happiness of a greater number imply greater inequality in happiness? J Happiness Stud 6(4):397–420. https://doi.org/10.1007/s10902-005-8856-6
Popkin B (2019) RLMS-HSE longitudinal data files. Dataverse Unc Edu. https://doi.org/10.15139/S3/12438
Pradhan M, Ravallion M (2000) Measuring poverty using qualitative perceptions of consumption adequacy. Rev Econ Stat 82(3):462–471
Ravallion M, Lokshin M (2000) Who wants to redistribute?: The tunnel effect in 1990s russia. J Public Econ 76(1):87–104
Ravallion M, Lokshin M (2001) Identifying welfare effects from subjective questions. Economica 68(271):335–357
Ravallion M, Lokshin M (2002) Self-rated economic welfare in Russia. Europe Econ Rev 46(8):1453–1473
Reyes-García V, Angelsen A, Shively G, Minkin D (2018) Does income inequality influence subjective wellbeing? Evidence from 21 developing countries. J Happiness Stud 20(4):1197–1215. https://doi.org/10.1007/s10902-018-9992-0
Russian Longitudinal Monitoring Survey – HSE. https://www.hse.ru/en/rlms/. Accessed 17 Sept. 2019.
Sanfey P, Teksoz U (2007) Does transition make you happy? Econ Transit 15:707–731. https://doi.org/10.1111/j.1468-0351.2007.00309.x
Schalembier B (2018) An evaluation of common explanations for the impact of income inequality on life satisfaction. J Happiness Stud 20(3):777–794. https://doi.org/10.1007/s10902-018-9970-6
Schneider SM (2011) Income inequality and its consequences for life satisfaction: what role do social cognitions play? Soc Indic Res 106(3):419–438. https://doi.org/10.1007/s11205-011-9816-7
Schneider SM (2015) Income inequality and subjective wellbeing: trends, challenges, and research directions. J Happiness Stud 17(4):1719–1739. https://doi.org/10.1007/s10902-015-9655-3
Selezneva E (2011) Surveying transitional experience and subjective well-being: income, work, family. Econ Syst 35(2):139–157. https://doi.org/10.1016/j.ecosys.2010.05.002
Stevenson B, Wolfers J (2008) Economic growth and subjective well-being: reassessing the easterlin paradox. Brook Papers Econ Act. https://doi.org/10.1353/eca.0.0001
Stevenson B, Wolfers J (2013) Subjective well-being and income: is there any evidence of satiation? Am Econ Rev 103(3):598–604. https://doi.org/10.1257/aer.103.3.598
Tella Di, Rafael, and Robert MacCulloch. (2008) Gross national happiness as an answer to the Easterlin paradox? J Dev Econ 86(1):22–42

Tella Di, Rafael, and Robert MacCulloch. (2010) Happiness adaptation to income beyond basic needs chap. 8. In: Diener E, Helliwell J, Kahneman D (eds) International Differences in Well-Being. Oxford University Press, New York, pp 217–247

Theodossiou I (1998) The effects of low-pay and unemployment on psychological well-being: a logistic regression approach. J Health Econ 17(1):85–104

UNC Carolina Population Center. "About the Study: Russia Longitudinal Monitoring Survey of HSE." *UNC Carolina Population Center*, https://www.cpc.unc.edu/projects/rlms-hse/project/study. Accessed 31 Jan. 2020.

Utsey SO, Payne YA, Jackson E, Jones A (2002) Race-related stress, quality of life indicators, and life satisfaction among elderly African Americans. Cult Div Ethn Minority Psychol 8(3):224–233

Veenhoven R, Hagerty M (2006) Rising happiness in nations 1946–2004: a reply to easterlin. Soc Indic Res 79(3):421–436. https://doi.org/10.1007/s11205-005-5074-x

Verkuyten M (2008) Life satisfaction among ethnic minorities: the role of discrimination and group identification. Soc Indic Res 89(3):391–404

Verme P (2011) Life satisfaction and income inequality. Rev of Income Wealth 57(1):111–127. https://doi.org/10.1111/j.1475-4991.2010.00420.x

Winkelmann L, Winkelmann R (1998) Why are the unemployed so unhappy?Evidence from panel data. Economica 65(257):1–15

Zagorski K, Evans MDR, Kelley J, Piotrowska K (2014) Does national income inequality affect individuals' quality of life in Europe? Inequality, happiness, finances, and health. Soc Indic Research 117(3):1089–1110. https://doi.org/10.1007/s11205-013-0390-z

Zhang Z, Wang X (2020) Ambition or jealousy? It depends on whom you are compared with. J Happiness Stud. https://doi.org/10.1007/s10902-020-00269-x