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This is the peer reviewed version of the following article:

*Original:*

Bartolini, S., Mikucka, M., Sarracino, F. (2017). Money, Trust and Happiness in Transition Countries: Evidence from Time Series. SOCIAL INDICATORS RESEARCH, 130, 87-106 [10.1007/s11205-015-1130-3].

*Availability:*

This version is available <http://hdl.handle.net/11365/977050> since 2017-07-10T10:31:58Z

*Published:*

DOI:10.1007/s11205-015-1130-3

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# Money, Trust and Happiness in Transition Countries: Evidence from Time Series

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February 15, 2012

## Abstract

The evolution over time of subjective well-being (SWB) in transition countries exhibit some peculiarities: greater variations which are more strongly correlated with the trends of GDP relative to other countries. What is the possible role of social trust in predicting such variations? We compare the capacity of the trends of GDP and of social trust to predict the trends of SWB. We find that the strength of the relationship between social trust and SWB over the medium-term is comparable to that of GDP. Our conclusion is that in the medium-term, even in countries considered as an extreme case of relevance of material concerns for well-being, social trust is a powerful predictor of the evolution over time of SWB. However, in the short run the relationship between social trust and SWB does not hold and GDP stands out as the only significant correlate of SWB.

*Keywords:* Easterlin paradox; GDP; economic growth; subjective well-being; happiness; life satisfaction; social capital; time-series; short run; medium run; transition countries; ESS.

*JEL classification codes:* D03; D60; I31; O10; P27; P05

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\*Stefano Bartolini acknowledges CEPS/INSTEAD for financial support to this research.

†Małgorzata Mikucka is supported by an AFR grant (contract PDR-2010-1) by the National Research Fund, Luxembourg cofunded under the Marie Curie Actions of the European Commission (FP7-COFUND).

‡Francesco Sarracino is supported by an AFR grant (contract PDR-09-075) by the National Research Fund, Luxembourg cofunded under the Marie Curie Actions of the European Commission (FP7-COFUND).

# 1 Introduction

The main aim of this paper is to compare the capacity of the trends of GDP and of social capital to predict the trends of subjective well-being (SWB) in transition countries .

The trends of SWB have been a fundamental reason for raising interest in studies on well-being. In particular, the Easterlin paradox - the evidence showing that in the long-term the trends of GDP do not predict the trends of SWB - largely contributed to the popularity of such studies. Notice that the Easterlin paradox holds only in the long run: GDP fluctuations over the short term are correlated to changes in SWB.<sup>1</sup> Hence, we know that in the long run economic growth is not correlated with the trends of SWB. However, the research on the determinants of well-being over time is still in its infancy. Papers systematically analyzing the correlation over time between SWB and its possible predictors using large samples of countries are scarce. The existing literature suggests that social capital is an excellent predictor of SWB over time, as we will discuss below.

The reason why we focus on transition countries is that they are a possible exception to this picture: economic conditions in these countries are known to strongly impact SWB; at the same time, years of communist regime deeply affected the creation and maintenance of social capital. Therefore, our central question is whether the analysis of transition countries is able to alter the general findings described above. Does the relatively greater importance of money for well-being in transition countries weaken the robust relationship over time between social capital and well-being found by previous studies?

From the point of view of SWB, transition countries are a special case: they exhibit peculiarities concerning both levels and trends of SWB. First, they report relatively low levels of happiness. In many international rankings they stand out with strikingly low levels of happiness and life satisfaction (Abbott and Sapsford, 2006, Deaton, 2008, Sanfey and Teksoz, 2007).

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<sup>1</sup>Recently the existence of the paradox has been questioned. A couple of influential papers by Stevenson and Wolfers (2008) and Sacks et al. (2010) claim that GDP is a good predictor of the trends of SWB. Using a large sample of countries, they estimate a positive and significant relation over time between GDP and SWB. At any rate, Easterlin and Angelescu (2009) and Easterlin et al. (2010) criticized these results because they fail to distinguish between the long and the short run. They show that the positive and significant relation estimated by Wolfers and his collaborators is generated by the inclusion in the sample of countries with short time series. Easterlin et al. (2010) document that GDP matters for SWB in the short run, but that this correlation vanishes in the long-term. The tendency of SWB and GDP to vary together during contractions and expansions has been documented also by Di Tella et al. (2001) and Bartolini and Sarracino (2011).

The gap between Eastern post-communist and Western Europe countries is so pronounced that it has been called the “iron curtain” of unhappiness (Lelkes, 2006). This evidence is so surprising that Veenhoven (2001) decided to verify whether the outstandingly low well-being of Russians is not an artifact, but a real phenomenon.

Concerning the evolution over time of SWB transition countries exhibit other peculiarities: the variations over time are greater than in other countries and more strongly correlated with the trends of GDP (Easterlin, 2009). After the fall of communism, the trends of SWB show a typical (although not universal) “V-shaped” curve (Sanfey and Teksoz, 2007, Easterlin, 2009, Inglehart et al., 2008, Guriev and Zhuravskaya, 2009): the transition process brought a spectacular drop of well-being, followed by a steady recovery after the mid-90s. However, whether the recovery is complete, remains a disputed question (Sanfey and Teksoz, 2007, Grün and Klasen, 2001, Easterlin, 2009).

The widely acknowledged “big factor” behind these changes in SWB is GDP (Guriev and Zhuravskaya, 2009, Easterlin, 2009). The revolutions that led to the collapse of communism in 1989 were largely driven by the scarcity of consumer’s goods. Indeed, although there were several reasons underlying these revolutions, as the lack of political freedom and civil rights, it is widely recognized that the desire for a greater access to consumer’s goods played a central role. Evidence on SWB confirms the “special relationship” between consumer’s goods and happiness in transition countries. Indeed, findings from the literature are consistent with the view that in the region economic growth is the main driver of changes over time in SWB. Easterlin - the most authoritative supporter of the thesis that in the long run economic growth does not improve the human lot - considers transition countries as an exception: only in these countries economic growth predicts changes of SWB also in the long-term (about 10 years) (Easterlin, 2009). Indeed, the time-trend of GDP is “V-shaped” for transition countries: the initial collapse followed by stabilization and growth closely resembles the trend of SWB.

However, not even in transition countries GDP tells the whole story. Despite economic success, well-being steadily drops in Hungary (Guriev and Zhuravskaya, 2009, Inglehart et al., 2008) and China (Brockmann et al., 2009); neither can GDP explain the downward trend of well-being in the former Soviet Union (Helliwell, 2003, Inglehart et al., 2008, Guriev and Zhuravskaya, 2009).

After the period of worst economic crisis other determinants of well-being seem to gain

importance: empirical results show that levels and time-trends of well-being can be attributed to GDP only in a small part (Frijters et al., 2006, Abbott and Sapsford, 2006). This is consistent with the literature showing that the importance of economic factors for well-being is lower in stronger and more stable economies (Zagórski, 2011, Frijters et al., 2006, Guriev and Zhuravskaya, 2009, Abbott and Sapsford, 2006).

Beyond GDP, what else did affect the trends of well-being in transition countries? There are several plausible candidates. The economic, cultural, social and institutional transformation initiated with the fall of communism was so dramatic that, arguably, affected well-being deeply, far beyond the evolution over time of GDP.

Transition lowered well-being through the trauma of rapid political change (Inglehart et al., 2008), loss of employment security and social provisions (Easterlin, 2009, Guriev and Zhuravskaya, 2009), and growing income inequalities (Sanfey and Teksoz, 2007 reports higher life satisfaction in egalitarian transition countries). On the other hand, well-being increased due to greater social and political (Inglehart et al., 2008, Frijters et al., 2004), as well as economic freedom (Sanfey and Teksoz, 2007).

Another plausible candidate to explain the trends of SWB in transition countries is social capital. The OECD (2001, p. 41) gives a definition of social capital (SC), consistent with that of Putnam (2000), as “networks together with shared norms, values and understandings that facilitate co-operation within or among groups”. It is now established that country-specific social capital is positively related to SWB (Helliwell, 2003). Moreover, individuals with higher levels of social capital are happier [see the pioneering studies by Helliwell (2001, 2006) and Helliwell and Putnam (2004); Bruni and Stanca (see also 2008); Becchetti et al. (2008)], which has been confirmed also for transition countries (Andr en and Martinsson, 2006, Abbott et al., 2011). Moreover, social capital proved to be a powerful predictor of the trends of SWB in the long- and medium-term both within [see Bartolini et al. (2010) for the US, Bartolini et al. (2010) for Germany] and across countries Bartolini and Sarracino (2011).

The East-West SWB gap is currently accompanied by a “social capital gap” (Kaasa and Parts, 2008, Abbott and Sapsford, 2006, Sissenich, 2010). Collapse of communist states left behind weak civil societies, bad governance and ineffective states (Sissenich, 2010). There are also signs of social anomie: low consensus on norms, high values-uncertainty, strong feeling of injustice (Arts et al., 1995), which allowed eruptions of ethnic intolerance and political

conflicts directly after the transition (Zhao and Cao, 2010). The transformation was also the period of outburst of the “negative social capital” (Fidrmuc and Gërkhani, 2008).<sup>2</sup>

Although the relationship between social capital and well-being is established, and although low social capital of transition countries is in line with their low well-being, still very little is known about social capital trends in the region. Speculations express optimism: economic freedom, smooth functioning of state institutions, and anti-corruption actions imposed on the new members by the European Union may support building social capital (Fidrmuc and Gërkhani, 2008). Indeed, it has been shown that trust grows in favorable institutional environment, such as fair judicial system (Raiser et al., 2003), efficient legal structures and secure property rights (Berggren and Jordahl, 2005).

However, preliminary empirical evidence (Sarracino, 2011) suggests a less optimistic picture: since the fall of communism Eastern Europe experienced a decline in membership in voluntary associations, social trust and trust in judicial system. The only growing indicator is trust in democratic institutions. Moreover, very little is known about the relationship over time between social capital and well-being in the region. To the best of our knowledge, there is no study testing the relationship between the time series of SWB and internationally comparable time series of social capital.

Summarizing, money matters more for well-being in transition countries relative to other countries, to the point that they are the sole exception to the general finding that GDP and SWB are unrelated in the long run. Does the relatively greater importance of money for well-being in transition countries reduce the role of social capital in predicting well-being? In other words, does the strong relationship which has been found between social capital and well-being over time still hold in a context where the importance of economic factors for SWB is relatively greater? And what is the relative importance of the changes over time of GDP and social capital in predicting the trend of SWB? Moreover, we know that generally the relationship between GDP and SWB is stronger as the time span analyzed shortens. Does this general finding hold also for transition countries?

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<sup>2</sup>Opinions about social capital under communism differ. The “dictatorship theory of social capital” states that dictatorship destroys trust and cooperation among citizens (Fidrmuc and Gërkhani, 2008, Paldam and Svendsen, 2001). On the other hand, Paldam and Svendsen (2001) claims that inefficient planned economy forced creation of “negative social capital”, i.e. informal networks (gray zone, corruption) that “fixed” the economic system and allowed its functioning despite inefficiencies.

This paper builds on available evidence to assess to what extent the trends of social capital and GDP correlate with the trends of well-being. Our results are the first ones to provide evidence that in transition countries the importance of social capital in predicting SWB in the medium-term (4 - 6 years) is comparable to the importance of GDP. Moreover, we show that over the short run (2 years) GDP stands out as the only significant correlate of SWB. This evidence documents that even in the most extreme cases - such as transition countries where material concerns are pivotal - the trends of social capital and SWB are, in the medium-term, strongly and significantly related.

Present paper is organized as follows: the following section introduces the data and the main variables used in our analysis. Section 3 describes our empirical strategy and econometric tools. Section 4 presents the main results of our work. Discussion of the results and conclusions close the paper and are the subject of the last section.

## **2 Data**

We use data from the European Social Survey (ESS) (ESS, 2008), one of the few data-sets providing comparative time series information about social capital and SWB in transition countries.<sup>3</sup>

The ESS started in 2002 and, since then, has been run regularly every two years. At the moment of writing this paper four waves have been released: 2002, 2004, 2006 and 2008. The ESS is an interesting source of data for observing the interaction between institutions and people's attitudes, beliefs and behaviors across Europe. The main limitation of the ESS is that it does not provide long time series. Therefore, the longest time span available for our analysis is 4-6 years.

Nine transition countries are surveyed in the ESS: Estonia, Hungary, Poland, Slovenia, Czech Republic, Slovakia, Bulgaria, Ukraine and Russian Federation. Data for these countries sum up to a total sample of more than 50 thousands individuals. Table 1 provides an overview of the data availability for each country across years.

In principle we could also use data from the World Values Survey/European Values Study integrated data-set. However, despite the large number of countries available and the long

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<sup>3</sup><http://www.europeansocialsurvey.org>

Table 1: Availability of SWB and social trust variables across countries and waves.

Countries	Years				Total
	2002	2004	2006	2008	
BG	.	.	1400	2230	3632
CZ	1360	3026	.	2018	6405
EE	.	1989	1517	1661	5168
HU	1685	1498	1518	1544	6245
PL	2110	1716	1721	1619	7166
RU	.	.	2437	2512	4951
SI	1519	1442	1476	1286	5723
SK	.	1512	1766	1810	5089
UA	.	2031	2002	1845	5879
Total	6679	13216	13838	16525	50258
Observations	50258				

time series provided, this data-set is not suitable for our analysis for two reasons: the poor measurement of social trust<sup>4</sup> and the impossibility to attribute precise time horizons to the intervals among subsequent waves.<sup>5</sup>

## 2.1 Measurement

**Subjective well-being** Two proxies of SWB are available in the ESS. The first one, happiness, is captured by answers to the question “*Taking all things together, how happy would you say you are?*” measured on an 11-point scale (from 0 - “extremely unhappy” to 10 – “extremely happy”). The second proxy, life satisfaction, rests on the question: “*All things considered, how satisfied are you with your life as a whole these days?*”, also coded on an 11-point scale (from 0 – “extremely dissatisfied” to 10 – “extremely satisfied”).

**Social trust** We focus on social trust, the only proxy of SC available across all waves of the ESS. Social trust is observed through answers to the following three questions:

<sup>4</sup>Social trust in the WVS/EVS is measured as a dichotomous variable providing a less differentiated information than the one provided by the eleven points scale variable in ESS. Moreover, the dichotomous variable is more prone to measurement errors (Donner and Eliasziw, 1994).

<sup>5</sup>In the WVS/EVS the distances between two consecutive waves are not regular, ranging from 1 to 8 years. It is therefore impossible to attribute the variations between contiguous surveys to the long, the medium and the short-term. Having data that are regularly surveyed in time is fundamental to define which time horizon is measured by such intervals.



- i. *“Generally speaking, would you say that most people can be trusted, or that you can’t be too careful in dealing with people?”*
- ii. *“Do you think that most people would try to take advantage of you if they got the chance, or would they try to be fair?”*
- iii. *“Would you say that most of the time people try to be helpful or that they are mostly looking out for themselves?”*

Answers are coded on an 11-point scale, where higher values correspond to higher levels of trust.

Factor analysis performed on these three variables demonstrated that, consistently with the literature, they may be considered three indicators of a single latent concept, namely social trust (factor loadings for the pooled sample are shown in tab.6 and, for separate waves, in tab.7, Appendix B, page 18). Accordingly, we use the index built by means of factor analysis as a measure of social trust.

**Gross domestic product** We merge ESS data-set with data concerning GDP per capita (constant 2000 US\$) from the World Development Indicators database.<sup>6</sup> Consistently with previous studies, we use the logarithmic form to take into account the non-linear relationship between subjective well-being and GDP (Easterlin et al., 2010, Sacks et al., 2010).

Tables 4 and 5 in Appendix A on page 17 report descriptive statistics and percentages of missing data for the considered variables. The percentages of missing data are small enough to rule out the risk of biased estimates.

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<sup>6</sup>World Development Indicators and Global Development Finance, <http://databank.worldbank.org/ddp/home.do?Step=12&id=4&CNO=2>.

### 3 Empirical strategy

Previous empirical works concerning the relationship between economic growth and SWB over time are based on bivariate regressions of changes over time of aggregate measures of SWB and per capita income (Stevenson and Wolfers, 2008, Sacks et al., 2010, Easterlin and Angelescu, 2009, Easterlin et al., 2010). Since our primary scope is to investigate the relationship between social trust and SWB over time, we adopt the same bivariate approach substituting social trust for GDP in our baseline regression model (see eq. 2). However, we also test the relationship between GDP and SWB over time, thus replicating the previous work on our sample (see eq. 3). This approach allows also to compare the sizes of the correlations of the trends of social capital and of GDP with the trends of SWB.

More specifically our empirical strategy consists of three steps:

1. we first estimate the time-trends of social trust, GDP and SWB;
2. subsequently, we run bivariate regressions of the trends of SWB on the trends of social trust and GDP, separately. Regressing SWB trends on trends of GDP is meant to check whether previous results provided by the literature (Stevenson and Wolfers, 2008, Sacks et al., 2010, Easterlin and Angelescu, 2009, Easterlin et al., 2010) are replicated on our sample of transition countries;
3. finally, we estimate the trivariate regressions of trends of SWB on both trends of GDP and social trust to account for eventual spurious correlations.

The risk of spurious correlations in present analysis should not be underestimated. The literature points out that economic growth and social capital may be related in many ways (Knack and Keefer, 1997, Roth, 2009, Zak and Knack, 2001). For instance, Putnam et al. (1993) showed that there are paths through which social capital fosters economic growth. On the other hand, there is also a long standing tradition emphasizing that economic growth can erode the stocks of social capital (Polanyi, 1968, Hirsch, 1976; see also: Bartolini and Bonatti, 2008). Therefore, given the possible correlation between the trends of GDP and social capital, focusing on bivariate correlations may lead to omitted variable bias. However, our findings seem to rule out this possibility, because the trivariate analysis gives results consistent with those of the bivariate models.

### 3.1 Estimating trends

We analyze the relationship between the trends of social capital, GDP and SWB using two distinct time horizons: medium- and short-term.

**Medium-term trends** To estimate the medium-term trends of social trust and SWB, we regress the individual trust and SWB variables on a time variable containing the years when the dependent variable has been observed (Easterlin and Angelescu, 2009, Easterlin et al., 2010). We estimate the trends for each country separately, using OLS regression with robust standard errors. The trends are expressed as the (country-specific) coefficient of the time variable and can be interpreted as the estimated average yearly change of the specific dependent variable. Although SWB variables are measured on an ordinal scale, thus requiring ordered probit or logit estimation models, available evidence shows that in such cases the OLS regression gives results that are consistent with those provided by ordered probit or logit models (Ferrer-i Carbonell and Frijters, 2004, Blanchflower, 2008). For this reason, and to allow a direct comparison between the results from various models, we adopt an OLS model also for ordinal variables. Our simple model can be formalized as follows:

$$Proxy_i^j = \alpha^j + \beta^j \cdot YEAR_i^j + \mu_i^j \quad (1)$$

where the index  $j$  refers to various proxies of SC and SWB (i.e. social trust, happiness and life satisfaction), whereas index  $i$  stands for individuals. In this way, the estimation of trends (corresponding to  $\beta$  in eq. 1) allows us to produce country-level data on the basis of individual-level information.

The same method (resting on country level rather than individual data) is used to calculate the trends of GDP. We stress that this estimation method differs from those used previously in the literature. Stevenson and Wolfers (2008) and Sacks et al. (2010) used the difference between the logarithm of GDP at the beginning and at the end of the analyzed period, while Easterlin and Angelescu (2009) and Easterlin et al. (2010) – the growth rate, i.e. the same difference expressed as a percentage of the initial value. Both specifications overlook what happened to GDP between the initial and the final year of observation, thus increasing the risk that the estimated GDP growth is affected by year-specific biases due to shocks and measurement errors. Instead, our method reduces this risk by considering the information from several

points in time.

Medium-term trends are computed over the whole period of observation for all those countries with at least 4 years long time series (i.e. minimum three waves of the ESS); this limits the sample to seven countries. Bulgaria and the Russian Federation have been observed only in 2006 and 2008 and, as such, have been excluded.

**Short-term variations** To compute the short-term variations we split our period of observation into the shortest possible ones, i.e. two-year sub-periods, corresponding to the distance between two subsequent waves of the ESS. Short-term variations of variables of interest are calculated as the difference of the averages between two consecutive waves.

Short-term analysis rests on 18 observations for nine countries. The number of available observations less than triple the medium-term ones because not all the countries have been surveyed in all waves (see tab. 1). In contrast to medium-term, the short-term analysis includes also Bulgaria and the Russian Federation where only two subsequent waves are available.

Notice that our method is different from the one applied by Easterlin and colleagues, who measure short-term variations of SWB and GDP as the “deviation at each date of the actual value from the trend value” (Easterlin et al., 2010, p. 3), thus defining the short-term variation as a departure from the medium-term trend. Conversely, our method offers the possibility to directly compare coefficients (from eqs. 2, 3 and 4) for the medium- and short-term trends.

Both the medium and the short-term trends have been computed applying the original weights provided in the ESS.

## 3.2 Bivariate and trivariate analysis

To check the correlation between time-trends of SWB and social trust or GDP we run bivariate linear regressions with robust standard errors. Formally, we estimate the two following models:

$$\Delta SWB_j = \alpha + \beta \cdot \Delta SC_j + \mu_j \quad (2)$$

$$\Delta SWB_j = \alpha + \beta \cdot \Delta \ln GDP_j + \mu_j \quad (3)$$

where  $\Delta SWB$ ,  $\Delta SC$  and  $\Delta \ln GDP$  represent the standardized estimated time-trends of SWB, social trust and GDP (they correspond to  $\beta^j$  in eq. 1);  $\mu$  is the error term and the index  $j$  refers to countries. Each estimation is performed for medium-term and short-term time-trends separately.

As a subsequent step of the analysis, in order to exclude the risk of spurious correlations, we run a set of trivariate regressions correlating the time-trends of SWB with both the trends of social trust and of GDP. Formally, we test the following OLS model with robust standard errors:

$$\Delta SWB_j = \alpha + \beta_1 \cdot \Delta SC_j + \beta_2 \cdot \Delta \ln GDP_j + \mu_j \quad (4)$$

where the only difference compared to eq. 2 is that a third term - the trend of GDP - has been added.

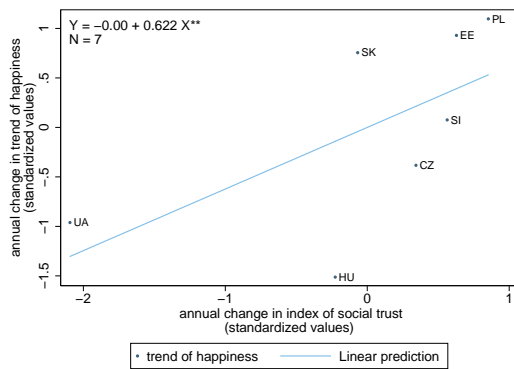
## 4 Results

### 4.1 The medium-term trends (4 - 6 years)

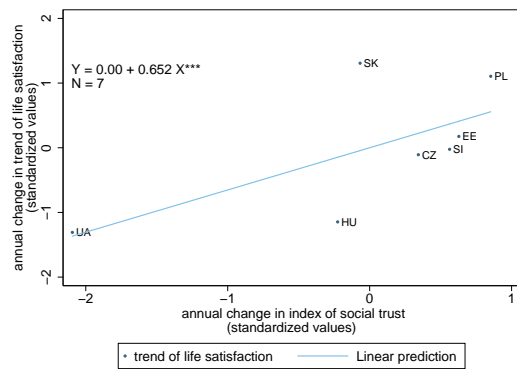
Figure 1 shows the relationships between the medium-term trend of social trust and the trends of the two proxies of SWB. The equations on the graphs inform about the results of bivariate OLS regressions (eq. 2) performed on standardized variables. In both cases, the coefficients are positive, large, and statistically significant: an increase in the trend of social trust by one standard deviation results in the trend of happiness increasing by 0.62 standard deviation; for life satisfaction the respective value is 0.65.

Results about the relationship between the trends of GDP and SWB are presented in figure 2 (eq. 3). Also this relationship is positive, strong and statistically significant. An increase in the trend of GDP by one standard deviation results in an increase of the happiness (as well as of the life satisfaction) trend by 0.60 standard deviations.

Trivariate regressions (tab. 2, eq. 4) confirm the results of bivariate analysis. In the medium-term the trend of SWB is strongly and positively correlated to both trends of GDP and social trust. All coefficients are statistically significant at the 95% level. The magnitude of all coefficients slightly increases and takes values around 0.7. Notice that the magnitude of

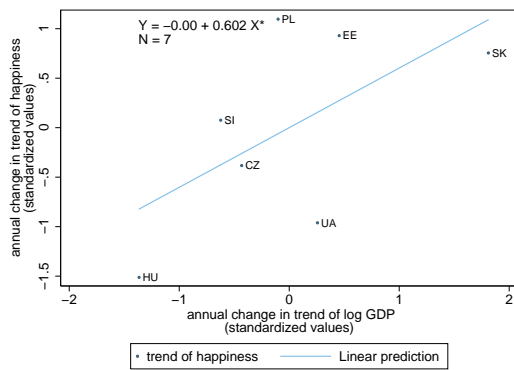


(a) *Happiness and the index of social trust.*

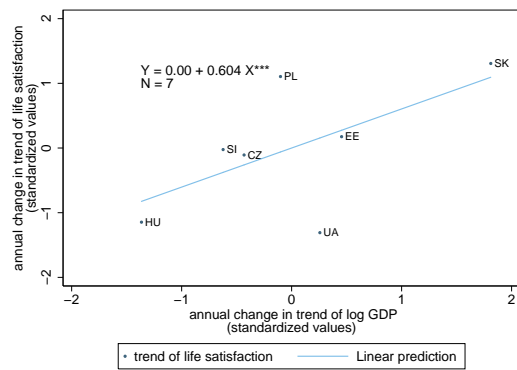


(b) *Life satisfaction and the index of social trust.*

Figure 1: Correlations among medium-term trends of subjective well-being and the changes in the index of social capital in transition countries. Each dot on the scatterplots associates the medium-term trend of SWB - on the y axis - with the medium-term trends of the logarithm of GDP per capita. The regression line simply depicts the correlation between the two variables.



(a) *Happiness and the logarithm of GDP per capita.*



(b) *Life satisfaction and the logarithm of GDP per capita.*

Figure 2: Correlations among medium-term trends of subjective well-being and of the logarithm of GDP per capita in transition countries. Each dot on the scatterplots associates the medium-term trend of SWB - on the y axis - with the medium-term trends of the logarithm of GDP per capita. The regression line simply depicts the correlation between the two variables.

the coefficients is very similar in both happiness and life satisfaction regressions.<sup>7</sup>

Table 2: Trivariate regressions of trends of subjective well-being over changes of the index of social trust and trends of GDP (standardized values).

	(1) happiness	(2) life satisfaction
index of social trust	0.696** (3.64)	0.727** (5.24)
trend of log GDP	0.678** (3.08)	0.683** (7.98)
Constant	$-6.83e - 09$ (-0.00)	$1.22e - 08$ (0.00)
Observations	7	7
Adjusted $R^2$	0.763	0.830

*t* statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.001$

The small number of countries in our sample raises the question of the stability of our results. To examine this issue we performed an analysis of dfbetas statistics.<sup>8</sup> The results confirm the stability of our findings: after excluding influential countries the results of the trivariate regressions are still holding: although the size of coefficients changes, the positive and statistically significant relationship remains (see tab. 11 in Appendix E on page 21).

## 4.2 The short-term trends (2 years)

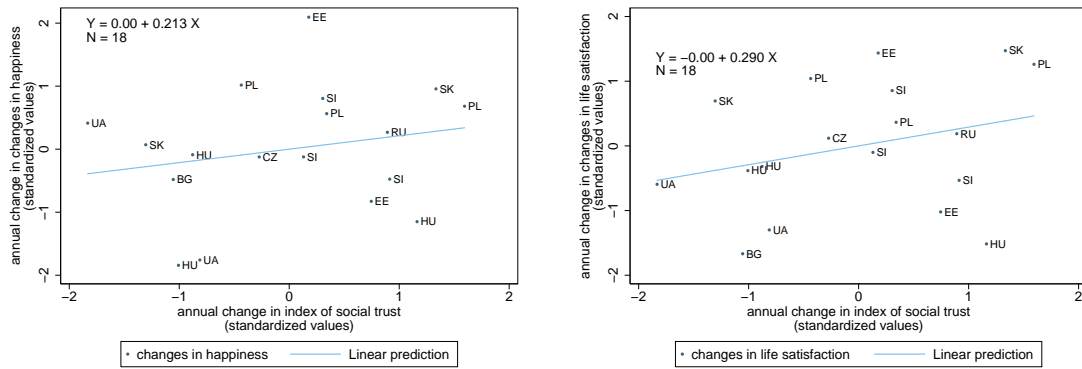
What does happen if we move from the medium to the short-term? We are now considering changes in our relevant variables observed over a time span of two years.

The picture provided by our medium-term analysis is remarkably altered by the analysis of short-term trends. As fig. 3 shows, in the short run both changes of happiness and of life satisfaction over two years are positively, but not significantly correlated with the changes of social trust. Moreover, regression coefficients are much smaller (0.21 and 0.29 respectively)

<sup>7</sup>This result is confirmed also for models with non standardized variables, see Appendix C.

<sup>8</sup>Dfbetas measure how much a given coefficient changes after excluding a specific country from the sample.  $dfbeta(j)_i = (\beta(j) - \beta(j)_i) / se(j)_i$ , where  $\beta$  is the baseline coefficient for variable  $j$ ,  $b_i$  – coefficient for the same variable  $j$  after excluding country  $i$ , and  $se_i$  – standard error of coefficient  $j$  after excluding country  $i$ . Since for dfbetas no formal statistical test exists, there is no strict cut-off value. As a rule, values above  $2/\sqrt{n}$  or  $3/\sqrt{n}$  are considered influential, and above 1 – strongly so. In case of this analysis, cut-off values are  $0.75 (2/\sqrt{7})$  and  $1.1 (3/\sqrt{7})$ .

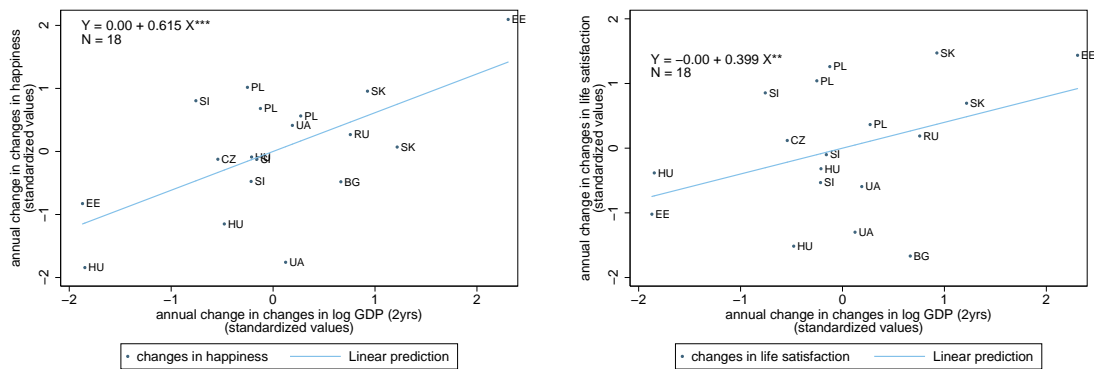
compared to the medium-term.



(a) Happiness and the index of social trust.

(b) Life satisfaction and the index of social trust.

Figure 3: Correlations among short-term trends of subjective well-being and of the index of social capital in transition economies. Each dot on the scatterplots associates the short-term trend of SWB - on the y axis - with the short-term trend of the index of social trust for each country. The regression line simply depicts the correlation between the two variables.



(a) Happiness and the logarithm of GDP per capita.

(b) Life satisfaction and the logarithm of GDP per capita.

Figure 4: Correlations among short-term trends of subjective well-being and of the the logarithm of GDP per capita in transition economies. Each dot on the scatterplots associates the short-term trend of SWB - on the y axis - with the short-term trends of the logarithm of GDP per capita for each country. The regression line simply depicts the correlation between the two variables.

Conversely (fig. 4), the short-term correlation between SWB and GDP is positive and significant at 95% for both happiness and life satisfaction. The standardized coefficients of bivariate regressions have values of 0.61 and 0.4, respectively.

These results are confirmed also by short-term trivariate regressions (tab. 3): in the case of both happiness and life satisfaction, the positive and small coefficient of social trust remains non-significant, whereas GDP strongly and significantly correlates with SWB. Summarizing,



Table 3: Trivariate regressions of trends of subjective well-being over changes of the index of social trust and trends of GDP (standardized values).

	(1) happiness	(2) life satisfaction
index of social trust	0.235 (1.34)	0.305 (1.36)
changes in log GDP (2yrs)	0.624*** (4.53)	0.410** (2.42)
Constant	$6.48e - 09$ (0.00)	$-1.39e - 08$ (-0.00)
Observations	18	18
Adjusted $R^2$	0.358	0.153

*t* statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.001$

while in the medium-term both trust and GDP are positively, significantly and comparably related to SWB, in the short run only GDP is significantly correlated with SWB.

In other words, we find evidence that the medium-term trends of trust are strong correlates of the trends of SWB. When considering time spans of more than 2 years, the coefficients of social trust are as large as the coefficients of GDP and more significant. However, this relationship vanishes when moving from the medium to the short run. Indeed, when considering time spans of two years, the correlation between trust and SWB - though positive - is not statistically significant.

The size of the coefficients and their significance levels show a remarkable pattern: moving from the medium to the short-term relationships, the coefficients of social trust becomes about 2.5 times smaller and lose their significance. By the same token, coefficient of GDP remains constant for happiness and becomes substantially smaller in the case of life satisfaction. Our results suggest that in the short run GDP fluctuations are closely related with the variation of well-being. However, in the medium-term GDP is no longer the main correlate of SWB: social trust appears at least as important as GDP (see Appendix C).

## 5 Conclusions

GDP is a strong predictor of SWB in transition countries; so strong that in this case the Easterlin paradox does not hold: in the long run economic growth predicts the trends of SWB. The

aim of our paper is to provide an answer to the following question: does the relatively greater importance of money for well-being in transition countries weaken the robust relationship over time between social capital and well-being found by previous studies?

We answer this question using internationally comparable data from the ESS. This data-set allows to analyze the correlation of the trends of SWB with the trends of social trust and of GDP over the medium (4-6 years) and the short-term (2 years).

Our findings confirm that the trends of GDP are very important predictors of the trends of SWB in transition countries, but debunk the belief that they are the main ones. Indeed, the strength of the relationship between social trust and SWB over the medium-term is comparable to that of GDP. Thus, even in countries considered as an extreme case of relevance of material concerns for well-being, social trust is a powerful predictor of the evolution over time of SWB.

However, in the short run the relationship between social trust and SWB does not hold and GDP stands out as the only significant correlate of SWB. Moreover, we find no evidence confirming previous results about the strengthening of the role of GDP in predicting SWB as the time span of the analysis shortens. Our results show that, over the short-term, GDP does not predict a larger portion of SWB compared to the medium-term.

However, we should be cautious in drawing policy conclusions from our evidence. Given the subject of our paper, present results rest on a rather small sample size. Moreover, internationally comparable data on social trust and SWB have only recently entered the questionnaires of available surveys thus resulting in short time series. This limits our analysis forcing us to focus on time spans reaching at most 6 years. Finally, we can not provide a causal interpretation of our results, but only evidence of correlations. All these points limit the possibility to draw policy conclusions, but - at the same time - they also set the lines for future research. Hopefully, the availability of new waves of data in the future will allow to test the robustness of present results using longer time spans and various proxies of social capital.

## A Appendix: Data missingness in the ESS data-set

The sixth column of tab.4 informs that the percentage of missing data is on average less than 1%. Only in the case of the index of social trust the percentage of missingness raises to 1.4%. However, such a small percentage does not raise any particular worry for the reliability of our estimates (Allison, 2001). Data missingness is further analysed across waves in tab.5. Figures inform that also in this case percentages of missingness are negligible and, according to the literature on data missingness, they are not likely to affect estimates (Schafer, 1997, 1999, Allison, 2001).

Table 4: Descriptive statistics for variables in the ESS data-set

variable	mean	sd	min	max	obs	missing
How happy are you	6.361	2.286	0	10	49608	0.0129
How satisfied with life as a whole	5.764	2.560	0	10	49749	0.0101
Most people try to take advantage of you	4.822	2.471	0	10	49081	0.0234
Most people can be trusted	4.158	2.533	0	10	49858	0.00796
Most of the time people helpful	3.986	2.450	0	10	49728	0.0105
Index of social trust	-2.47e-10	1	-2.138	2.794	48586	0.0333
GDP per capita	5697	3099	745.0	13789	50258	0

Table 5: Percentage of data missingness across waves in the ESS data-set.

variable	wave 1	wave 2	wave 3	wave 4	total
How happy are you	0.00629	0.0106	0.0180	0.0133	49608
How satisfied with life as a whole	0.0109	0.00923	0.00976	0.0108	49749
Most people try to take advantage of you	0.0211	0.0204	0.0298	0.0214	49081
Most people can be trusted	0.00764	0.00810	0.0100	0.00623	49858
Most of the time people helpful	0.00838	0.0109	0.0119	0.0100	49728
Index of social trust	0.0283	0.0305	0.0408	0.0312	48586
GDP per capita	0	0	0	0	50258

## B Appendix: Factor analysis for trust questions in the ESS

Tab. 6 informs that in the pooled sample, factor loadings range from .80 to .85 thus suggesting that the three variables contribute equally to the definition of a latent concept that we call “social trust”. When observing results across waves (see tab.7), we notice that discrepancies arise mainly in the first and third wave where factor loadings range from about .79 for the helpfulness variable to .84 for the fairness variable. The slight variability among factor loadings both in the pooled sample and within waves convinced us of the opportunity to build an aggregated index of social trust resulting from the standardized weighted average of the three items.

Table 6: Factor loading and unique variances for the pooled sample

	<i>Factor1</i>	<i>Psi</i>
Most people try to take advantage of you	.8347672	.3031637
Most people can be trusted	.8280339	.3143599
Most of the time people helpful	.7901849	.3756078

Table 7: Factor loading and unique variances across waves

wave 1	<i>Factor1</i>	<i>Psi</i>
Most people try to take advantage of you	.8213006	.3254654
Most people can be trusted	.81711	.3323312
Most of the time people helpful	.7721537	.4037787
wave 2		
Most people try to take advantage of you	.8258181	.3180244
Most people can be trusted	.8232669	.3222316
Most of the time people helpful	.7721755	.4037451
wave 3		
Most people try to take advantage of you	.8293471	.3121834
Most people can be trusted	.8217379	.3247468
Most of the time people helpful	.7938916	.3697362
wave 4		
Most people try to take advantage of you	.8507626	.2762029
Most people can be trusted	.8404668	.2936155
Most of the time people helpful	.806222	.350006

## C Appendix: Non standardized trivariate regressions

Table 8: Medium-term trivariate regressions of subjective well-being over the index of social trust and GDP.

	(1) happiness	(2) life satisfaction
index of social trust	1.840** (3.64)	2.858** (5.24)
trend of log GDP	3.611** (3.08)	5.412** (7.98)
Constant	-0.347* (-2.76)	-0.531*** (-8.93)
Observations	7	7
Adjusted $R^2$	0.763	0.830

*t* statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.001$

Table 9: Short-term trivariate regressions of subjective well-being over the index of social trust and GDP.

	(1) happiness	(2) life satisfaction
index of social trust	0.594 (1.34)	1.017 (1.36)
changes in log GDP (2yrs)	2.854*** (4.53)	2.479** (2.42)
Constant	-0.224** (-2.77)	-0.183 (-1.50)
Observations	18	18
Adjusted $R^2$	0.358	0.153

*t* statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.001$

## D Appendix: long-term relationships, controlling for outliers

Table 10: Trivariate regressions of trends of subjective well-being over changes of the index of social trust and trends of GDP after excluding outliers (standardized values).

	(1) happiness	(2) life satisfaction
index of social trust	2.474** (25.98)	0.152*** (61.55)
trend of log GDP	0.653** (16.21)	0.156*** (89.13)
Constant	-0.932** (-15.47)	0.122** (29.62)
Observations	4	5
Adjusted $R^2$	0.998	0.999

*t* statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.001$

## E Appendix: short-term relationships, controlling for outliers

Table 11: Trivariate regressions of trends of subjective well-being over changes of the index of social trust and trends of GDP after excluding outliers (standardized values).

	(1) happiness	(2) life satisfaction
index of social trust	0.216 (1.28)	0.101* (2.02)
changes in log GDP (2yrs)	-0.00880 (-0.04)	0.140** (3.55)
Constant	0.240 (1.17)	0.145** (2.47)
Observations	11	14
Adjusted $R^2$	-0.081	0.311

*t* statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.001$

## **F Appendix: country acronyms in the ESS**

**BG:** Bulgaria

**CZ:** Czech Republic

**EE:** Estonia

**HU:** Hungary

**PL:** Poland

**RU:** Russian Federation

**SI:** Slovenia

**SK:** Slovakia

**UA:** Ukraina



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