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# Corruption and Life Satisfaction: Evidence from a Transition Survey.

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## Abstract

Fighting corruption cannot lie exclusively on appropriate formal institutions. It also requires social support and public engagement. Particularly in countries under institutional and economic transition. We embrace the recent perspective arguing that higher quality of life conditions makes people better citizens, more civically committed and more conformed to institutional rules. Accordingly, we study whether life satisfaction is a predictor of individuals' corruption aversion across 28 former socialist countries from Eastern Europe and Central Asia. We use data from the third wave of the Life in Transition Survey (2015-2016). 2SLS estimations suggest that individuals reporting higher scores of life satisfaction are more averse to corruption. Our results are robust to a series of sensitivity analyses. Additionally, we estimate predicted values of corruption aversion for different levels of institutional trust across low and high life satisfaction groups. We find that when institutional trust is very low, its impact on corruption aversion does not differ between life satisfaction groups. As institutional trust increases so does corruption aversion and this occurs even more amongst the group of respondents with high life satisfaction.

Keywords: Corruption, Life Satisfaction, Well-Being, Transition Economies, Institutions

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## I. INTRODUCTION

Corruption and bribery are still highly diffused within the former socialist countries despite a series of anti-corruption reforms introduced since the end of the Cold War to facilitate the institutional transition towards more market-oriented economies (Dimitrova 2010). This is partly explained by the fact that the rapid and radical institutional changes of formal rules in such contexts have not been followed by simultaneous and equivalent adjustments on individuals' behaviour and attitudes (Rose-Ackerman 2001). New formal rules co-live with old and persistent informal practices of bribery and informal payments commonly employed within citizens' interaction and between citizens and public officials during the period of central planning economy (Ledeneva 2006). Indeed, fighting corruption cannot lie exclusively on appropriate formal institutions. It requires social support and public engagement (Gong and Xiao 2017). Particularly in countries subject to institutional and economic transition. Hence, increasing our knowledge about individuals' attitudes towards corruption in such contexts is insightful for policymakers and public institutions in view of more effective institutional and anti-corruption reforms (Machado et al. 2011).

To this purpose, we analyse the link between the individuals' attitude towards corruption and the individual's cognitive evaluation of her live condition, i.e. life satisfaction.

Looking at corruption as a collective action problem, individuals' behaviour is the result of their choice of whether to cooperate according to prosocial values for the benefit of the collective where, non-corruption is a form of compliance and cooperation (Tavits 2010). Therefore, individuals' conditions and factors that help sustain cooperation, also promote compliance (Scholz 1998).

We embrace this line of research perspective, and, within the transition economies of Eastern Europe and Central Asia, we investigate whether citizens' life satisfaction is the key predictor of individuals' aversion against corruption. Individuals' aversion against corruption reflects their negative reaction to corrupt exchange. This is built upon individuals' willingness of acting against corruption including reporting a corrupt exchange if witnessed it and upon individual's belief that others' people actions against corruption can make a difference.

We consider life satisfaction the cognitive dimension reflecting the individual's overall satisfaction with her life (Esaiasson et al. 2019; Maccagnam et al. 2019; Nikolova and Graham 2020).

In transition economies, evidence shows that individuals' attitude towards corruption is influenced by whether this behaviour is perceived as wrong and widespread among fellow citizens and within the public institutions (Ivlevs and Hinks 2018; Tavits 2010; Rose and Mishler 2010). However, to our knowledge, we are the first to analyse the impact of life satisfaction on individuals' corruption aversion.

Our claim lays upon an emerging literature arguing that life satisfaction is conducive to desirable outcomes at the individual and societal levels (Güven 2011). Social psychology studies argue that people more satisfied with their life tend to pursue a more virtuous life by engaging in actions that contribute to a better social and institutional environment (Peterson et al. 2005). Individuals more satisfied with their life tend to be more civically committed (Flavin and Keane 2012), and supportive of public authorities than their unhappy co-citizens through the compliance with formal rules and laws (Sulemana et al. 2017). On the contrary, individuals in poverty, adverse life conditions and unsatisfied with their life, tend to engage more with corrupt exchange (Hunt 2007), withhold their support (Esaïasson et al. 2019) and adopt more risk-taking and illegal behaviour than who are satisfied with their life (Goudie 2014).

The transition economies of the former socialist countries in Eastern Europe and Central Asia is a non-trivial context of analysis. Particularly, given the persistent so called "Eastern European Happiness Gap". This refers to the individuals of the former Soviet bloc being less satisfied with their life than their neighbours of the Western Europe even after the end of the Cold War (Guriev and Zhuravskaya 2009). Following the organisational collapse of the Soviet Bloc, former communist countries have implemented a series of institutional reforms towards a more market-oriented economy and a democratic system of governance (Douarin and Mickiewicz 2017). This has inevitably included anti-corruption reforms to facilitate the development and the function of these principles without, however, producing the results expected (Rose-Ackerman 2001).

Our analysis is developed by using the third wave of the Life in Transition Survey, which is jointly conducted in 2015-2016 by the European Bank for Reconstruction and Development (EBRD) and World Bank (WB). Survey is administered in 29 former socialist countries from Central and Eastern Europe and Central Asian countries (except Turkmenistan). We find that life satisfaction is a positive and statistically significant predictor of individuals' corruption aversion.

There could be concerns over endogeneity issues. There might be latent individuals' cognitive trait determinants of both individuals' life conditions and their attitude towards corruption. Furthermore, there might be reverse causality issues according to which the direction of

causation could be from the variable of corruption towards those of life conditions as recently analysed in recent empirical studies (e.g. see Amini and Douarin, 2020; Ciziceno and Travaglino, 2019). To mitigate these issues, we employ a two stage least squares instrumental variable (2SLS IV) estimation method and we also conduct a Heckman correction estimation following (Ivlevs and Hinks 2015). Additionally, our 2SLS results are also robust to a series of further sensitivity analyses.

The motivations and the importance of this research focus rely upon different instances and contributions that this work may provide.

Firstly, our work is at the frontline in analysing citizens' reaction to corruption and their willingness to report it as little attention has been devoted to this research perspective so far (Peiffer and Alvarez 2016). This is an important contribution given the lack of literature in this research perspective. The data we use is ideal in this respect. Corruption aversion is a cognitive aspect aligned with values of fairness and social justice endorsing individuals' views about democratic values and human rights (Rothstein and Torsell 2014). Analysing these aspects is crucial within a complex process of institutional reforms towards a more sustainable democratic regime and market-oriented economy (Bahur 2017). The effect of anti-corruption policies would vanish if people accept corruption and do not report it.

Secondly, so far, the inter-play between corruption and life satisfaction has been analysed predominantly by considering life satisfaction as the dependent variable of the functional form, modelled as a function of perceived corruption, institutional quality and a series of other socio-economic characteristics (Ciziceno and Travaglino 2019). To our knowledge, this is the first work that reverse this causal direction investigating the impact that different aspects of life conditions have on attitudes towards corruption. On a broader perspective, in the last decades, the literature has been consistently focusing on studying the socio-economic determinants of life satisfaction and subjective well-being. Only recently, a reverse causal direction has been adopted. For instance, O'Connor (2020) reverses the functional form by analysing the impact of subjective well-being on unemployment. Our work provides a key contribution on this research approach advocating the key importance that quality-of-life aspects such as life satisfaction have on individuals' preferences and socio-economic aspects.

This line of research is also of paramount importance both in terms of research perspectives and policy recommendations, beyond the specific geopolitical context of post-communist countries.

As far as the research perspective is concerned, our work contributes on bridging the economic literature of institutional conformity and compliance with the one of happiness and corruption.

Despite an increasing number of studies, the relationship between happiness and risk preferences remains inconclusive (Lane 2017). Individuals' attitudes might not be limited to the outcome of a pure calculative approach. Undoubtedly the illegal nature of the corrupt exchange might influence individuals' attitude towards this practice (Batory 2012). However, the perception of an unfair socio-economic condition could provide incentive to rationalise cheating (Torgler 2005). For instance, it has been argued that the legacy of the communism and the process of transition has increased citizens' expectations on the responsibilities of the public institutions. These include the guarantee of a better quality of life, social security and lower income inequality (Hadarics 2016). In fact, empirical evidence suggests stronger individuals' preferences towards low-income inequality and measures of welfare redistribution more among citizens of the former socialist countries than among citizens of the Western European neighbours (Alesina & Fuchs-Schündeln, 2007). Institutional compliance might increase when citizens perceive that these preferences have been fulfilled (Hadarics 2016). On the contrary, recent empirical evidence reports that low life satisfaction increases individuals' engagement in social uprisings (Witte et al. 2020).

In view of more effective policy interventions, our results suggest that policy decisions improving citizens' life conditions might increase their loyalty towards the public authority and their compliance with legal rules and laws. This shows that quality of life is a key channel through which boosting institutional compliance and conformity. For instance, recent studies stress on the effect that political decentralisation and regional autonomy may have on citizens subjective well-being and citizens' satisfaction (Diaz-Serrano and Rodriguez-Pose 2012; Filippetti 2020). Our results suggest that the impact of these policy interventions can be further analysed with respect to institutional conformity and law compliance.

Linked with the above point, we believe that our work advocates the need to conduct further research that considers the economic value of quality-of-life measures such as happiness and life satisfaction. Anti-social and illegal behaviours represent increasing monetary costs for the entire society. Life satisfaction, happiness and subjective well-being can be used to estimate the economic effect of non-market policies like those aiming to increase citizens' life condition. In this respect, there is a growing consensus that income-based measures are not enough to study individual's revealed choices. Particularly in contexts such as Central East European and the Former Soviet Union countries where the socio-economic, political and institutional changes of the last decades have been accompanied with a diffused self-reported un-happiness regardless the increasing income (Nikolova 2016; Nikolova and Graham 2015). Shedding further light on the role that life satisfaction can have as determinant of citizens' choice is of

paramount importance within an institutional and socio-economic transition process (Nikolova and Nikolaev, 2017).

The paper is structured as follows. Section II presents the contextual background and the relevant literature on the conceptual framework; Section III presents the data and the methodology; Section IV discusses the empirical results; Section V presents model extensions and robustness checks; Section VI concludes.

## II. CORRUPTION, LIFE CONDITIONS AND CONTEXTUAL BACKGROUND

### *II.1 Attitude towards corruption and contextual background*

From a state-citizens relation perspective, corruption is generally defined as the misuse of public power for private benefits (Kunicova and Rose-Ackerman 2005). This malpractice may affect citizens' assessment of quality of institutions and of their political representatives (Mishler and Rose 2001). However, the dysfunctionality of the institutions is only one side of the phenomenon. Corruption does not necessarily apply only in the public sphere, but it can occur between private actors and/or organisations (Hodgson and Jiang 2007). Furthermore, private benefits might not be always the main motive of a corrupt behaviour. Corruption might also be influenced by informal rules and values ruling a community and, hence, regulating the socio-economic exchanges within that community (see Hodgson et al. 2007 for an extensive criticism about the definition and concept of corruption). In other words, the more we know about the individuals' attitudes and motivations with respect to corrupt behaviour, the higher the probability of setting more effective anti-corruption (and not only) institutional reforms (Batory 2012). Lacking understanding what drives individuals corrupt behaviour might result in policy reforms failures (Tavits 2010).

Within the context of the former socialist countries, in the last decades a series of anti-corruption reforms have been introduced. For some countries this implementation was aligned with the political economic agenda aiming to become member of the European Union (EU); for some others, this was part of the institutional reforms necessary belonging to the institutional and political economic transition process (Batory 2012). Even though these indisputable efforts, the effect of this transposed anti-corruption legislation seems to be lower than expected (Dimitrova 2010). Part of this explanation looks at the legacy of the past regimes

characterised by over-centralization and supply shortage. The diffusion, and afterwards socially embedded, of informal practices of nepotism, patronage, informal payments and other rent-seeking relationship within citizens interaction and between citizens and public officials to access resources and to overcome an “economy of shortage” became the inevitable consequences of this coping strategy (Ledeneva 2006). Additionally, criticisms argue that anti-corruption western type programmes have been implemented without any consideration for the specific cultural and socio-economic context and, hence, individuals’ behaviour and reaction to these new reforms (Grødeland, 2010). In this respect, anti-corruption rules based on individuals’ behavioural constrain and punishment should be complemented with policies boosting public awareness and national “consciousness” about what is wrong-doing and its social cost for the entire society and for the next generations (Grødeland 2010). Hence, individuals’ corruption aversion becomes vital since it embraces that necessary view that corrupt activities are wrong and cannot be tolerated.

Citizens’ negative predisposition towards corruption lay on the perspective that they consider corruption unacceptable and, hence, suspected cases need to be reported (Gong and Xiao 2017). It is unquestionable that due to its “secret” nature, reported cases of corruption require to be investigated. However, individuals’ beliefs about corruption can contribute to make more effective anti-corruption reforms (Hodgson and Jiang 2007). One of the main characteristics of being averse to corruption is to recognise this wrongdoing activity as “undesirable” and inappropriate. Within the Latin American context Xin and Rudel (2004) find that the diffused perception of widely spread corrupt exchanges between public officials and closely-knit groups undermines corruption aversion among citizens. One of the consequences is that bribes and corrupt exchanges becomes more tolerated as they can be viewed as a main to pursue group interests, if not social objectives. Similarly, within the Eastern European context, Graeff and Svendsen (2013) argue that following the organisational collapse, linkages developed between informal groups and bureaucrats allow these groups to pursue their goals at the cost of increasing tolerance towards corruption.

The role of individuals’ life condition cannot be neglected in this respect. By using data from the third wave of the Life in Transition Survey (2015-2016), we compute the country average score of life satisfaction and corruption aversion as in Figure 1. The scatter plot shows that that countries scoring higher in life satisfaction tend to score high also in corruption aversion. It is documented that more deprived socio-economic conditions lower citizens’ conformity to formal rules. For instance, victims of crime or individuals encountering more difficulties in accessing health care and education services due to their low socio-economic status, are more

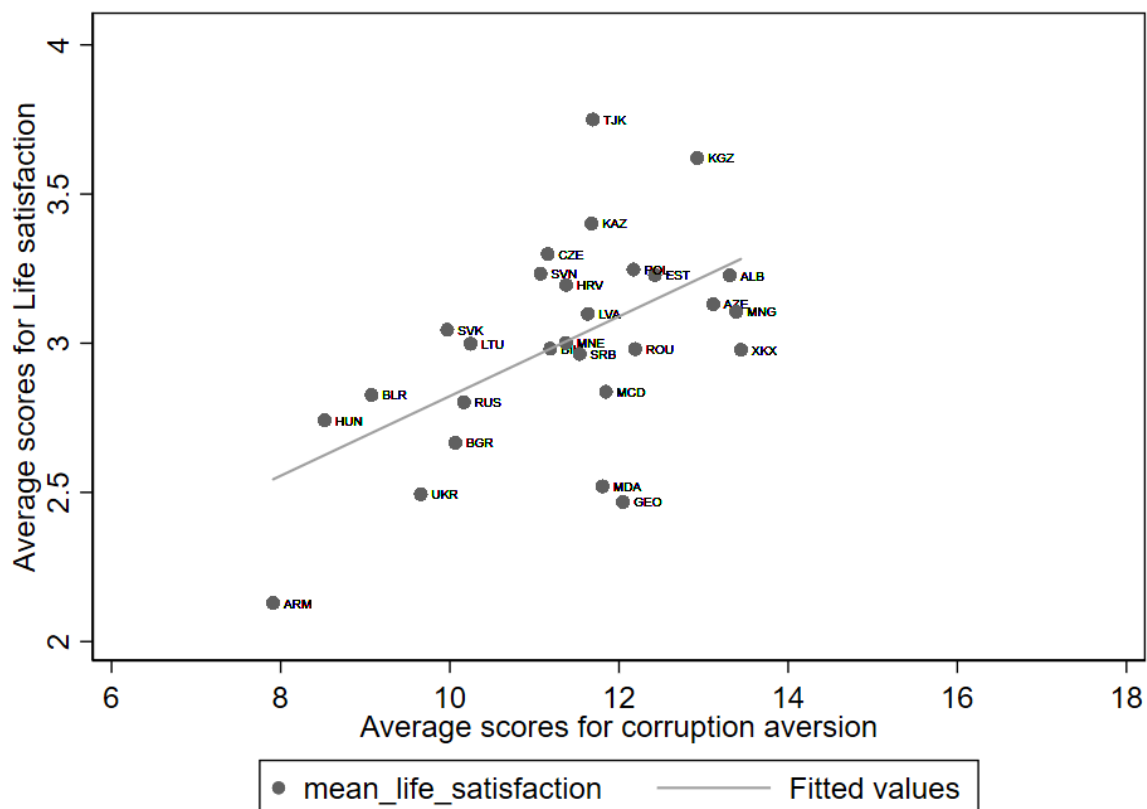


likely to bribe to access public services, job positions and, overall, to improve their life conditions (Hunt 2007). Evidence also suggests that perceived unfairness both in terms of income and in terms of life condition and satisfaction might reduce public support towards government's actions against corruption (Li et al. 2015).

The concept of well-being has been extended beyond its material wealth perspective as it includes a more cognitive, affective and emotional assessment of the individual's living condition (Diener 2000).

Some scholars use the terms happiness, subjective well-being and life satisfaction interchangeably (Easterlin 2001; James 2011), even though not all the literature agrees upon this practice (Kahneman and Krueger 2006). If we consider the definition of subjective well-being as cognitive, affective and eudaimonic evaluation of people's lives (Diener 2000), life satisfaction, this is the term we will use in our work, reflects the cognitive dimension of the subjective well-being (Diener et al. 1999; Maccagnan et al. 2019).

Figure 1. Scatter Plot of Life Satisfaction vs. Corruption Aversion



Source: Compiled by author based on the third wave of Life in Transition Survey.

## *II.2 Life Satisfaction and Corruption*

It has been widely recognised nowadays that subjective self-assessments of life satisfaction are particularly valuable to understand individuals' preferences and behaviours (Frey and Stutzer 2002). Life satisfaction has been found to stimulate social capital as people more satisfied with their life tend to adopt a more public spirit approach (Güven 2011). This is essential to fight rent-seeking behaviour. Studies of social psychology explain this prosocial behaviour by emphasising the importance that aspects such as becoming a better person and living a more virtuous life have on individuals aiming to maintain a high level of life satisfaction. In other words, people with high life satisfaction are more likely to act to make the world a better place (Schueller and Seligman 2010). One of the cognitive traits of the individuals satisfied with their life is to pursue a meaningful life, seeking for purposes higher than the mere individual's materialistic gain (Seligman 2002). The aim is to maintain high life satisfaction by engaging in actions that promote a more positive social and institutional environment where to live and that contribute to the enhancement of a better society and of other peoples' quality of life (Peterson et al 2005; Steger et al 2008).

This fits with the perspective that individuals' attitudes towards rent-seeking behaviour such as corruption are influenced by material and cognitive living conditions (Konstantinidis and Xezonakis, 2013; Choi and Woo 2012; Lane 2017). Life satisfaction have been found to be negative predictors of crime rate in German municipalities (Buettner and Spengler 2003) and to affect young Latino-Americans' opinion about their actual engagement in anti-social activities (Caldwell et al. 2010). In relation to prosociality, empirical evidence shows that individuals more satisfied with their life tend to engage more in unpaid voluntary activities (Griep et al. 2015; Oishi et al. 2007) are more likely to be blood donors and to provide money to charities (Priller and Schupp 2011).

At least to our knowledge, studies on the impact of life satisfaction on individuals' attitudes towards corruption are very limited though. Evidence from a survey conducted in China in 2011 shows that individuals more satisfied with some aspects of their life based on retrospective and prospective self-assessments and perceived social status, are more satisfied with the anti-corruption efforts of the government (Li et al. 2015). This outcome might also be the result of a compromise where individuals might "accept" or "forgive" political and institutional corruption in exchange of collective benefits or if they see an improvement of their economic and social living standards (Choi and Woo 2012; Konstantinidis and Xezonakis, 2013). This is particularly valid in geopolitical contexts subject to weak public institutions and to strong patron-client relationships (Manzetti and Wilson 2007).

The importance of considering life satisfaction relies also on the fact that cognitive evaluation of life satisfaction and income-based measures not always move at the same pace. In some circumstances, the increasing of economic well-being might not imply more life satisfaction (Maccagnan et al. 2019). At the aggregate level, evidence shows that there is not a consistent correlation between income and life satisfaction and even when such a correlation occurs, it is not very clear whether it is the increase in income that contribute to a better life satisfaction or other country characteristics including rule of law and stable governments (Frey and Stutzer 2002). Within our specific context of analysis, across the countries of the post-soviet bloc, the increasing in the economic well-being has not consistently correlated to more life satisfaction. For instance, the Eastern European Happiness Gap” refers to the individuals of the former communist countries of Central and Eastern Europe that appear less satisfied with their life than their neighbours of the Western Europe even after a convergence in economic well-being of these countries with the rest of the western neighbours (Guriev and Zhuravskaya 2009)<sup>1</sup>. This has been influenced by a transition period where market and institutional reforms were initially accompanied by great rise in uncertainty and by a temporary economic downturn (Easterlin 2009). This suggests that institutional reforms should continue given that they lately contribute to reverse this trend.

The Happiness Economics perspective argues that there exist two crucial problems that cannot be neglected. Firstly, individuals in transition economies need to adapt to new and current circumstances. This means that even when individuals experience positive changes, for instance a marriage, happiness and life satisfaction might increase only temporarily (Lucas et al. 2003). Secondly, individuals tend to compare their quality of life with the ones of others. Inevitably, increasing in individual’s aspirations, matching with higher income, does not correspond to an increase in happiness and life satisfaction (Easterlin 2001).

Both perspectives suggest that institutional and market reforms aiming higher economic targets are crucial but might not be enough for a more sustainable socio-economic development. Policies aiming to improve individuals’ life condition also under its cognitive aspect might have a return effect and make people happier to be supportive of the governmental institutions and against rent-seeking attitudes such as corruption.

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<sup>1</sup> Only recently, this happiness gap has reportedly closed, partly due to a decrease in the life satisfaction among western Europeans, and partly through generational change (Guriev and Melnikov 2018).

### III. DATA AND METHODOLOGY

We exploit the recent wave (third wave) of the Life in Transition Survey, which is jointly conducted in 2015-2016 by the European Bank for Reconstruction and Development (EBRD) and World Bank (WB). The 2016 LiTS wave survey is administered in 34 countries, 28 of them are former socialist countries<sup>2</sup> where our analysis focus on. The data is collected through face-to-face interviews with approximately 1500 household members in each country. Respondents are selected through a two-stage stratified sampling procedure on the basis of geographical regions, and urban/rural location. The first stage counts on primary sample units selected according to information on local electoral districts, while in the second stage respondents are selected through a random walk fieldwork procedure within the primary sampling unit. The 2016 wave LITS wave is a very pertinent source of data as it contains detailed information about household socio-economic characteristics, household dwelling and assets, respondent's attitudes and values, employment status of respondent, respondent's entrepreneurial activities, as well as questions on respondents' self-evaluation about their life condition and governance perceptions<sup>3</sup>. While some of these extensive questions are also included in the waves 2006 and 2010, the 2016 wave is the only one to date that contains questions on individuals' corruption aversion, our primary dependent variable. The 2016 LiTS wave has been recently used in an insightful variety of works related to socio-economic and institutional aspects in transition economies (Adserà et al. 2021; Mavisakalyan et al. 2021; Guriev and Melnikov 2018; Ivlevs et al. 2020; Amini et al. 2022; Ivlevs and Hinks 2018)

#### *III.1. Dependent variable: corruption aversion.*

To construct our dependent variable, corruption aversion, we applied several steps. In the first step, we have identified three relevant survey items which can be proxy for corruption aversion. These items are individuals' responses to whether they agree or disagree with the following statements: *[Q817B]* "If I would witness an act of corruption, I would feel personally obliged

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<sup>2</sup> For the purpose of this work, we exclude from our sample Cyprus, Germany, Italy, and Turkey. Countries in our empirical analysis: Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Belarus, Bulgaria, Croatia, Czech Republic, Estonia, FYR Macedonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Kosovo, Latvia, Lithuania, Montenegro, Moldova, Mongolia, Poland, Romania, Russia, Serbia, Slovak Republic, Slovenia, Tajikistan, Ukraine, Uzbekistan.

<sup>3</sup> Further details about survey design and implement can be obtained from survey website (<https://litsonline-ebd.com/>). The data are available and accessible from the European Bank of Reconstruction and Development database at [www.ebrd.com](http://www.ebrd.com) with the permission of EBRD database. The specific link is the following: <https://www.ebrd.com/what-we-do/economic-research-and-data/data/lits.html>

to report it”. [Q817C] “I would report a case of corruption even if I would have to spend a day in court to give evidence”. [Q817D] “Ordinary people can make a difference in the fight against corruption”. Then, in the second step, we applied a polychoric Principal Component Analysis (PPCA) which was developed by Kolenikov and Angeles (2004) to overcome several shortcomings of regular PCA. PCA enables to find connections between survey items in order to identify a smaller number of unifying variables (Mooi et al., 2018). Regular PCA relies on a matrix of Pearson’s correlations and assumes that the variables are continuous and must have a multivariate normal distribution. Therefore, calculation of components would be problematic if variables are dichotomous and ordinal and not have a normal distribution. Our variables are ordered categorical variables and use of a PPCA is justified and more accurate results are expected to be produced accordingly. During application of a polychoric PCA, we focused on components with an eigenvalue larger than 1. In the third step, we computed composite indicator of corruption aversion as weighted sums of the items with factor loadings of a minimum 0.4 which is in line with past literature, for example, Andriani et al. (2022). Also, we looked the sign of the factor loadings which have to be consistent with expected signs. (Eigenvalue Table and scree plot can be found in Appendix, Table 1A and Figure 1A). As a result of the PPCA procedure, Factor loadings of items for our final variables are as follows:

$$\begin{aligned} \text{Corruption aversion} = & 0.59 * \textit{I feel obliged to report} \\ & + 0.60 * \textit{I would spend a day in court to report corruption} \\ & + 0.53 * \textit{Ordinary people can make a difference.} \end{aligned}$$

Consequently, it can be seen that none of the variables were eliminated throughout the procedure and they were used in the final variable. Although PPCA is sufficient procedure for observing interrelations between variables and creating corruption variable, we compute the Cronbach’s alpha which results to be equal to 0.83 suggesting internal consistency among the composite items.

### *III.2. Independent variables: Life satisfaction*

Life satisfaction is composed out of two questions (i) “All things considered, I am satisfied with my life now”; (ii) “All things considered, I am satisfied with my financial situation as a whole”. Respondents were asked to respond using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Then, to ease the interpretation of regression results, we calculate the scores as the average of scores on all items corresponding to life satisfaction

for the overall sample and standardized these scores using the sample mean and standard deviation. Standardized z –scores are included in regressions.

### III.3. Other control variables

Following previous studies (Fungacova et al. 2019), we also include other covariates such as gender (female=1), age and age square, education (tertiary education=1), employment (unemployed=1), marital status (married=1), type of settlement (capital, urban but not capital), if the respondent declares to be religious (religious=1), respondent or any member of respondent’s family affiliation to the Communist Party (communist\_party=1), citizens’ trust towards public institutions (institutional trust), and citizens trust towards other fellow citizens (social trust), democracy preferences, and corruption perceptions and self-reported household income in local currency (converted in US dollars in logarithm). As applied to life satisfaction variable in regressions, we also use standardized z –scores of institutional and social trust. Descriptive statistics have been provided in Table 1.

Table 1. Descriptive statistics for dependent and independent variables.

Variables	N	Mean	St. Dev.	Min	Max
Corruption Aversion	33,197	-0.003	1.50	-2.71	3.05
I feel obliged to report corruption (item 1)	35,654	3.01	1.17	1	5
I would spend a day in court to report corruption (item 2)	35,462	2.82	1.20	1	5
Ordinary people can make a difference (item 3)	36,653	2.78	1.25	1	5
Log(income)	33,140	6.38	1.90	0.10	20.92
Life satisfaction	40,954	3.02	1.03	1	5
Age (in years)	42,197	48.60	17.50	18	95
Female (yes=1)	42,197	0.57	0.50	0	1
Married (yes=1)	42,197	0.58	0.49	0	1
Unemployed (yes=1)	42,196	0.22	0.41	0	1
Self-employed	42,197	0.02	0.16	0	1
Communist party background (yes=1)	42,197	0.22	0.41	0	1
Religious (yes=1)	41665	0.91	0.29	0	1
Capital (yes=1)	43,702	0.16	0.36	0	1
Urban not capital (yes=1)	43,702	0.39	0.49	0	1
Tertiary education (yes=1)	42,197	0.24	0.43	0	1
Institutional trust	37,905	14.40	5.34	5	25
Social trust	41,377	2.56	1.10	1	5
Democracy	42,197	0.46	0.50	0	1
Corruption perceptions	37,613	2.46	1.15	1	5
Interacting w public	41,936	0.69	0.46	0	1

Note: The maximum score for institutional and social trust is 25 and 20 respectively. Source: compiled by author

Regarding institutional trust, it has been argued that compliance with legal rules, such as anti-corruption regulations, and attitudes against rent-seeking behaviours is more likely when individuals trust more public institutions (Scholtz 1998). Empirical evidence suggests that reporting corruption is discouraged among people with concerns related to lack of legal protection (Zipparo 1998) and that they perceive that their action will not provide any outcome (Gorta 2013). Institutional trust may reflect citizens' evaluations of public institutions, policy makers and political leaders as accountable, transparent, and honest (Zmerli et al., 2007). Hence, this can be viewed as the result of the public authority to be accepted as legitimate by citizens (Hakverdian and Mayne 2012). Recent evidence shows that where confidence in public institutions is high, citizens' efforts in fighting corruption increase (Peiffer and Alvarez 2016). Regarding social trust, because non-corruption is a form of compliance and cooperation for the benefit of the collective, cooperation has been found to increase among people that trust more their fellow citizens (Berigan and Irwin 2011).

#### *III.4. Methodology*

The analysis might suffer from potential endogeneity issues. Since data on corruption attitude and life conditions are collected at the same time, there might be unobservable individuals' cognitive trait influencing both individuals' answers regarding life conditions and their perception of corruption. Additionally, reverse causality between corruption aversion and explanatory variables life satisfaction might occur. This implies that despite we seek to investigate the impact of life satisfaction on corruption aversion, the direction of causation may well be other way around, meaning that life satisfaction may determine corruption aversion. Recent literature focusing on the inter-play between individuals' perception of corruption and life satisfaction tend to approach corruption as the independent variable and people's life satisfaction as a dependent variable (e.g. see Amini and Douarin 2020; Ciziceno and Travaglino 2019). We address this issue by using two-stage least squares instrumental variable (2SLS IV) estimation method. Hence, we set up two stage model:

$$CA_{ij} = \beta_0 + \beta_1 LS_{ij} + \beta_2 X_{ij} + \beta_1 CFE_j + \text{error term}_{ij} \quad (1)$$

$$LS_{ij} = \beta_0 + \beta_1 \text{technology}_{ij} + \beta_2 X_{ij} + \beta_1 CFE_j + \text{error term}_{ij} \quad (2)$$

Here, in both specifications,  $CA_{ij}$  is the dependent variable, stands for corruption aversion for the individual  $i$  living in country  $j$ .  $LS_{ij}$ ,  $X_{ij}$ ,  $CFE_j$  represent life satisfaction, individual level

controls and country fixed effects, respectively. In the first stage of 2SLS IV,  $LS_{ij}$ , is the endogenous variable in Eq. (2) respectively, and estimated along with the instrumental variable, the individual level controls, and country fixed effects.

To mitigate endogeneity concerns, we use one instrument for  $LS_{ij}$ . The variable *technology<sub>ij</sub>* in Eq. (2) is chosen as an instrument for  $LS_{ij}$ , and is obtained from LITS survey that provides details whether households possess technological items or have the access to technology. By following Bjørnskov et al., (2008) and Ivlevs and Hinks (2018), we calculated the measure of access to technology based on the principal component technique, using survey information if the household possesses a phone, TV, computer, washing machine, internet. Past studies have presented evidence that possession of technological items have an association with life satisfaction such as phone and computer (Kavetsos and Koutroumpis, 2011), TV (Bruni & Stanca, 2008; Kataria and Regner, 2011), washing machine (De Leire and Kalil, 2010), internet (Pénard et al., 2013). This association takes place through several mechanisms. For example, people may alter their time management and practice new activities since these technological items may help to save time, facilitate daily activities, make daily life easier (Castellaci and Tveito, 2018). Also, studies on relations goods argue that these technological items may deteriorate interpersonal relations (Bruni & Stanca, 2008; Rotondi, et al., 2017.) and create addictions (Pénard et al., 2013), thus, may lead to adverse consequences on life satisfaction. In light of these studies discussed, our instrument access to technology is expected to correlate with life satisfaction and could explain life satisfaction and mitigate potential omitted variable bias and reverse causality concerns which may lead to endogeneity problems. On the contrary, this instrument, access to technology is not expected to be correlated with the error term of corruption aversion equation. Since this measure is built on concrete, physical and necessary items for households and assumed to be an objective variable (than subjective well-being or life satisfaction), this may not directly link to individual's standing against corruption. People's attitudes and behaviours are primarily shaped by social norms, culture, shared values and social networks (Hofstede, 2001). Corruption is a socio-cultural phenomenon and has social roots (López & Santos, 2014). Therefore, people may shape their attitudes toward corruption under influence of socioeconomic environment rather than solely relying own household affordability. In addition, social norms, culture, shared values last longer than individual's possession of material goods, thus, effect on individual's behaviour would be much stronger. In a more specific perspective, people's perception of corruption could be shaped during their experience with corrupt situations such as when they interact with public officials, and they



were asked for additional informal payments. People are less or no likely to interact with public officials while buying these technological items. Upon the collapse of the Soviet Union, the role of the public sector in market exchanges is limited and private sector became more active. Providers (sellers) of these products are primarily private sector actors, e.g., technology shops. Hence, one could not expect to develop an attitude against corruption, while buying these technological products. Through this argument, it can be said that possessing these technological goods may not necessarily be expected to affect directly people being corruption averse. To sum up, in light of these arguments, we expect that access to technology instrument is directly correlated with life satisfaction whereas is not directly correlated with the error term of corruption aversion.

For purpose of checking whether life satisfaction is endogenous, we have performed the Durbin and Wu-Hausman tests. According to the endogeneity test result in Table 2, we reject the null hypothesis, which assumes that the life satisfaction is exogenous variable in their respective models and the regression-based test at 1% significance levels. This test result also signals that our instrument is statistically suitable for this analysis. Now we turn to the empirical results. In addition, since we use one instrumental variable in each model, there is no concern regarding over-identification of the instrumental variable.

Additionally, following the empirical literature (Amini and Douarin 2020; Bahur 2017; Witte et al. 2020), we include country fixed effects estimations in order to control for unobserved heterogeneity across countries. The fact that our life satisfaction scores are robust in a fixed effect set up, mitigates potential biases related to endogeneity and omitted variables bias (see also Bjørnskov et al. 2010; Diaz-Serrano and Rodriguez-Pose 2012; Djankov et al. 2016).

#### IV. EMPIRICAL RESULTS: BASELINE MODEL

Table 2 reports the second stage results of 2SLS IV estimation of corruption aversion. Table 2 consists of 5 columns (1-5): In Column 1, we report ordinary least squares (OLS) estimation results, whereas in Column 2 we report the model estimation of dependent variable corruption aversion, which is created based on polychoric PCA. Columns (3-5) show the estimations results for each composite item of dependent variable, corruption aversion. According to the OLS results, it can be seen that life satisfaction is positively and statistically significantly associated with higher corruption aversion. This is also confirmed in the 2SLS estimation

results in Column 2 which reveal that the coefficient of life satisfaction is positive and highly statistically significant at the 1% level. Individually considering, one standard deviation change in life satisfaction, keeping everything else constant, is associated with increased corruption aversion in respondents approximately 57 percentage points.

As expected, corruption aversion increases with education confirming previous results from the empirical literature (Treux 2011). Our results also confirm the part of the literature that argues that trust matters (Uslaner 2004). In fact, Table 2 shows that corruption aversion increases with social trust and institutional trust. Individuals trusting their fellow citizens tend to have a more cooperative approach and hence, being less tolerant towards rent-seeking behaviours. Likewise, the literature of reporting crime has well established that citizens are more likely to report crimes and corruption when they feel they can trust the public institutions as they might feel more legally protected (Zipparo 1998). Furthermore, individuals' cooperation and support towards the collective goods increases when they perceive that they can rely on effective external enforcement mechanism, such as those employed by the public authorities (Beringan and Irwin 2011).

Our results suggest a negative relationship between religiosity and corruption aversion. This recalls the historical tradition narrative according to which religious traditions might influence individuals' attitudes towards social hierarchy. In this respect, in context dominated by religion such as Eastern Orthodoxy, Islam and Catholicism, challenges to office-holders are more unlikely to occur (Treisman 2000). Our results can be interpreted as a logical consequence of this perspective, particularly given the context of analysis dominated by what Treisman labels as "hierarchical religions". Aligned with this view, we find that religiosity reduces the tendency of challenging the office-holders by reporting corruption. The literature explains this relational mechanism by stressing on the idea that religiosity may boost values of "amoral familism" *à la Banfield* (Banfield 1958). Accordingly, in such contexts, prosocial attitude towards the broader society is undermined by the expectation that individuals will act in the interests of their small reference group at the cost of increased nepotism, and reduce support towards rules compliance and civic duty (Andriani and Sabatini 2015).

Corruption aversion seems to increase with preferences towards democracy. This result recalls previous empirical evidence suggesting that citizens involved in fighting corruption tend to be driven by democratic values of impartiality even if they live in context where corruption is used to solve daily-life problems (Bauhr 2017). In this respect, individuals' values and beliefs of accessing fair treatment and public resources without the need of bribing provide a important incentives for citizens to act against corruption (Bauhr 2017). Such a non-discriminatory

conditions as the right of not being discriminated by the public authority in accessing public goods and “the right to be treated with equal concerns and respect from the courts” (Rothstein and Torsello 2014, p.276) endorse individuals’ view about human rights and democratic values. More specifically, we should expect a higher propensity towards corruption aversion among individuals that embrace democratic values and that prefer democracy to any other form of state-citizens governance.

Following Guerrero and Rodriguez-Oreggia (2008), in our models we include individuals’ perception of corruption as this might influence their corruption aversion. A widespread perception of corruption might induce individuals to believe that no much could be done to reduce it and this might affect also their negative propensity towards any form of rent-seeking behaviours (Guerrero and Rodriguez-Oreggia 2008; Torgler 2005). Our estimations suggest a positive and, in some instances, statistically significant correlation between perceived corruption and corruption aversion.

Table 2: Corruption aversion, life satisfaction, 2SLS IV estimation results

VARIABLES	Dependent variable: Corruption aversion				
	OLS	IV 2SLS (Second stage)	I feel obliged to report corruption (Second stage)	I would spend a day in court to report corruption (Second stage)	Ordinary people can make a difference (Second stage)
	(1)	(2)	(3)	(4)	(5)
Life satisfaction	0.130*** (0.0132)	0.572*** (0.113)	0.386*** (0.0743)	0.295*** (0.0748)	0.253*** (0.0765)
Age	-0.00852** (0.00383)	0.000479 (0.00453)	0.00356 (0.00298)	-0.00178 (0.00302)	-0.00141 (0.00307)
Age squared	2.59e-05 (3.78e-05)	-6.15e-05 (4.45e-05)	-6.14e-05** (2.92e-05)	-1.86e-05 (2.97e-05)	-1.82e-05 (3.01e-05)
Female	-0.103*** (0.0225)	-0.112*** (0.0231)	-0.0454*** (0.0151)	-0.0890*** (0.0153)	-0.0549*** (0.0156)
Log (income)	0.0393** (0.0172)	-0.107*** (0.0410)	-0.0889*** (0.0272)	-0.0515* (0.0274)	-0.0303 (0.0280)
Married	0.0137 (0.0248)	-0.00497 (0.0258)	-0.00167 (0.0169)	-0.00136 (0.0172)	-0.00562 (0.0174)
Unemployed	-0.0194 (0.0301)	-0.00117 (0.0311)	-0.00596 (0.0204)	0.0183 (0.0207)	-0.0252 (0.0209)
Communist party	0.0503* (0.0264)	0.0447* (0.0271)	0.0433** (0.0178)	0.0341* (0.0180)	-0.0126 (0.0183)
Religious	-0.116*** (0.0424)	-0.119*** (0.0434)	-0.0630** (0.0285)	-0.0594** (0.0288)	-0.0693** (0.0293)
Tertiary education	0.110*** (0.0273)	0.0389 (0.0332)	0.0182 (0.0217)	0.0245 (0.0219)	0.0406* (0.0224)
Institutional trust	0.166*** (0.0142)	0.0629** (0.0299)	0.0227 (0.0197)	0.0240 (0.0199)	0.0814*** (0.0203)
Social trust	0.0378*** (0.0117)	0.0265** (0.0123)	0.00205 (0.00808)	0.0214*** (0.00822)	0.0291*** (0.00834)
Capital city	0.114*** (0.0340)	0.132*** (0.0351)	0.0748*** (0.0230)	0.0434* (0.0234)	0.113*** (0.0237)
Urban not capital	0.0287 (0.0251)	0.0505* (0.0263)	0.0433** (0.0172)	0.0313* (0.0175)	0.0110 (0.0176)

Democracy	0.0959*** (0.0227)	0.0762*** (0.0237)	0.0575*** (0.0156)	0.0365** (0.0158)	0.0441*** (0.0161)
Corruption perceptions	0.112*** (0.0113)	0.0213 (0.0257)	-0.0214 (0.0169)	0.0131 (0.0171)	0.0599*** (0.0174)
Self-employed	0.00321 (0.0652)	-0.0137 (0.0668)	-0.0186 (0.0440)	0.0141 (0.0446)	-0.0145 (0.0452)
Interacting w public	-0.0474* (0.0252)	-0.0229 (0.0265)	0.0340* (0.0174)	-0.0408** (0.0177)	-0.0377** (0.0179)
Country FE	YES	YES	YES	YES	YES
Observations	23,198	23,198	23,976	23,839	24,525
R-squared	0.160	0.119	0.074	0.104	0.125
Durbin score chi2	-	p = 0.0001	p = 0.0000	p = 0.0026	p = 0.0192
Wu Hausman F test	-	p = 0.0001	p = 0.0000	p = 0.0026	p = 0.0192

Note:

\* p<0.1,

\*\* p<0.05,

\*\*\* p<0.01. Standard errors in parentheses. Source: authors' own calculations.

Our results suggest that being female is negatively correlated to corruption aversion. Empirical literature shows a consistent negative association between women and levels of corruption due to their prosociality and to their tendency to be more risk averse (Bauhr et al 2019; Tiffany et al. 2019). However, it is also argued that this relationship might depend on institutional contexts and types of corruption (Bauhr and Charron 2020). Individuals belonging to a less advantageous groups such as females are more likely to be deterred by reporting corruption in the absence of specific factors including legal protection and trust in the legal and institutional procedures and confidence in whether the reporting would make a tangible difference (Gorta 2013). The literature of whistleblowing reinforces this perspective by arguing that whistleblowing is more likely among individuals with higher seniority and work position within an organisation as they are less exposed (or they perceive to be less exposed) to retaliation for whistleblowing (Vandekerckhove and Phillips 2019).

#### *IV.1. Life satisfaction as public good of corruption control*

An interesting development of our empirical approach is to conduct our analysis for each corruption item separately.

Item (i) “If I would witness an act of corruption, I would feel personally obliged to report it”; and Item (ii) “I would report a case of corruption even if I would have to spend a day in court to give evidence” reflect individuals’ attitudes towards corruption aversion on the basis of their sense of legal and civic responsibilities and obligations. These individuals’ sense of obligation, item (i), and responsible commitment, item (ii), may rely upon values of law abidance and civic duty affecting their preferences and their view of what is considered “wrong” and, hence, worth

to be reported (Orviska and Hudson 2002). In these instances, individual's life satisfaction is positively correlated to these attitudes as catalyst of prosocial oriented values.

The statement (iii) "Ordinary people can make a difference in the fight against corruption" distinguishes from the sense of individual's responsibility, legal and civic obligations more emphasised by statements (i) and (ii) as it identifies more a sort "public good" aspect of fighting corruption. The statement (iii) reflects the individual's positive view of the society recalling to some extent what Uslaner (2004) defines as the moralistic trust dimension: the belief that people constitute a moral community and that they can be trusted not to cheat but, on the contrary, they behave for the benefit of the society. Beyond the individual cost-benefit perspective of fighting corruption, the statement (iii) reflects more consistently on values and moral beliefs that in general citizens can make the difference in fighting corruption. Under this perspective, the coefficient of life satisfaction in the model (5) of table 2 emphasises the collective aspect of life satisfaction rather than individual device. In its complex construct, aspects of subjective well-being such as life satisfaction relates with social morality and common goods (Ryan and Deci 2008). Under this perspective, life satisfaction recalls a collective resource related to individuals' perception of moral values and norms reflecting the type of society they wish to have. Hence, life satisfaction is not only an individual matter but also a collective endeavour. As such it contributes to the improvement of the social and institutional environments where the access to fair and expected social support such as healthcare, education, public transports, legal justice, safe working conditions and indiscriminatory treatment needs to be guaranteed (Gibson-Graham et al. 2016). This is also aligned with the perspective that aspects of individual's subjective well-being cannot be viewed in isolation from the social context, but it is also built from individual's evaluation of social mechanisms and factors affecting collective living including collaborative behaviour, honesty, trustworthiness, security and safety, social support and social justice (Atkinson et al 2020). This influences the way we perceive the way other individuals will behave.

## V. EXTENSIONS AND ROBUSTNESS

We conduct a series of sensitivity analyses to confirm the validity of our results. 1. We address potential selection bias issues by employing Heckman's (1979) correction model approach which is commonly used method in estimating behavioural relationships. 2. we run our 2SLS

model specification for each single item of life satisfaction. 3. following the literature of social capital and political economy, we consider the inclusion of types of social relationships in which respondents are involved. 4. We replicate our model by omitting civil servant respondents from our sample. 5. We compute predicted values of corruption aversion across different levels of life satisfaction for individuals living in EU countries and those living in Non-EU countries separately. 6. We compute predicted values of corruption aversion with levels of institutional trust across life satisfaction groups. 7. We run robustness test for omitted variable bias. 8. We replicate our model by using modified instrument variable.

#### *V.1. Addressing selection bias and Heckman's correction estimations*

In corruption related studies, Ivlevs and Hinks (2015) have emphasized the potential selection bias which might emerge from a non-random selection, based on respondents' unobservable characteristics. It is assumed that random response to corruption related questions is unlikely to be true since respondents might get affected prior events or experienced to bribing while in contact with public servants. To address this potential selection bias, we use Heckman's (1979) correction model approach which is commonly used method in estimating behavioural relationships. Heckman's approach consists of two equations, selection and outcome equations. Selection, probability of selecting the respondent who interacted with public officials and hence paid bribe to them, while outcome equation estimates respondent's corruption aversion. We should find identification variables to predict the probability of respondent interacting with public officials. Therefore, following Ivlevs and Hinks (2018), we include three variables (possible omitted variables) into selection equation such as children, student and health, which might increase respondents' the chance of encountering public officials, hence, paying bribe, in order to receive public services. For example, respondents with children have to interact with primary and secondary education institutions, while students have to interact with higher education institutions. Last one, respondents with poor health conditions are likely to interact with health care institutions.

Results of Heckman selection approach is presented in Column (1) and (2) in Table 3. It can be seen from these two columns that three identifying variables children, student and poor health have higher probability of paying bribe in selection equation. It is noticeable that *rho* term is statistically significant at 5% ( $p=0.0384$ ) indicating that sample selection bias is existing, and the use of Heckman selection approach is justified. When we look our primary variable related results, it can be seen that higher life satisfaction decreases the probability of paying bribe, while higher life satisfaction also increases corruption aversion. Furthermore, we

included inverse mills ratio obtained from the selection equation to our IV 2SLS estimation models. Hence, with the Heckman correction, selection bias in IV 2SLS estimation is expected to be minimized. Results of IV 2SLS with Heckman correction are presented in columns (3) and (4) in Table. By tackling selection bias, our results show that positive association between life satisfaction and corruption remains positive and statistically significant. Beta coefficient of life satisfaction is approximately 57 percentage points (0.577) which is close to beta coefficient of life satisfaction reported, 57 percentage points (0.572) in Table 2. Hence, selection concern has not greatly impacted on magnitude of beta.

Table 3: Life satisfaction and corruption aversion, IV 2SLS with Heckman correction results

VARIABLES	Heckman selection model		IV 2 SLS with Heckman correction	
	Selection (Interaction/paid a bribe) (1)	Outcome (Corruption Aversion) (2)	First (Life satisfaction) (3)	Second (Corruption Aversion) (4)
Life satisfaction	-0.0267** (0.0109)	0.116*** (0.0171)		0.577*** (0.117)
Age	-0.00158 (0.00321)	-0.0127*** (0.00461)	-0.0294*** (0.00185)	0.00453 (0.00528)
Age squared	1.44e-05 (3.15e-05)	5.04e-05 (4.53e-05)	0.000270*** (1.82e-05)	-9.28e-05* (5.01e-05)
Female	0.0213 (0.0182)	-0.0804*** (0.0268)	0.0777*** (0.0109)	-0.134*** (0.0249)
Log (income)	0.126*** (0.0143)	0.0662*** (0.0234)	0.434*** (0.00895)	-0.160*** (0.0576)
Married	0.107*** (0.0206)	0.0440 (0.0314)	0.218*** (0.0128)	-0.0770** (0.0380)
Unemployed	-0.151*** (0.0241)	-0.0993** (0.0389)	-0.171*** (0.0148)	0.0513 (0.0378)
Communist party	0.250*** (0.0219)	0.0855** (0.0359)	0.291*** (0.0147)	-0.0630 (0.0464)
Religious	0.0494 (0.0360)	-0.152*** (0.0477)	0.0544*** (0.0204)	-0.140*** (0.0440)
Tertiary education	0.0686*** (0.0225)	0.0824*** (0.0316)	0.191*** (0.0131)	0.0175 (0.0371)
Institutional trust	0.0220* (0.0115)	0.171*** (0.0181)	0.250*** (0.00666)	0.0538* (0.0326)
Social trust	-0.0249*** (0.00945)	0.0274* (0.0146)	-0.00269 (0.00565)	0.0358*** (0.0121)
Capital city	0.0767*** (0.0282)	0.147*** (0.0406)	0.0140 (0.0164)	0.103*** (0.0352)
Urban not capital	0.0113 (0.0203)	0.0453 (0.0299)	-0.0405*** (0.0121)	0.0409 (0.0259)
Democracy	0.0586*** (0.0184)	0.144*** (0.0272)	0.0886*** (0.0109)	0.0599** (0.0257)
C perceptions	-0.0611*** (0.00912)	0.104*** (0.0151)	0.116*** (0.00574)	0.0538*** (0.0183)
Self-employed	0.0856 (0.0547)	-0.0429 (0.0765)	0.138*** (0.0314)	-0.0538 (0.0689)
Technology			0.0784***	

		(0.00429)	
Student	0.350*** (0.0676)		
Children	0.309*** (0.0219)		
Health	0.224*** (0.0292)		
Mills ratio		2.577*** (0.0680)	-0.967*** (0.335)
Observations	24,494	23,249	23,249
Selected	16,536		
Unselected	7,958		
Rho=0	0.201** (0.0973)		
Prob > chi2 (rho=0)	p=0.0384		
R-squared		0.375	0.120

Note:

\* p<0.1,

\*\* p<0.05,

\*\*\* p<0.01. Standard errors in parentheses. Source: authors' own calculations.

### V.2. Additional estimations for single items of life satisfaction

It can be argued that the potential substitutive and complementary relationships occurring among the single components of life satisfaction are not captured by the composite indicator. Hence, we re-estimate our 2SLS model specifications for each single composite item of the life satisfaction variable separately to avoid possible risks of multicollinearity. Recalling the two composite items: the first item is “All things considered, I am satisfied with my life now”; the second item is “All things considered; I am satisfied with my financial situation as a whole”. Table 4 shows that each single component is a positive and statistically significant predictor of corruption aversion.

Table 4: The second stage results of 2 SLS IV regression for robustness checks.

VARIABLES	Dependent Variable: Corruption Aversion (PCA)			
	V1		V2	V3
	LS Item1	LS Item2	Social ties	Non-public and unemployed
LS (item 1)	0.564*** (0.111)			
LS (item 2)		0.721*** (0.145)		
Life satisfaction			0.566*** (0.114)	0.560*** (0.115)
Meeting with relative or friend			-0.0385 (0.0349)	
Membership in clubs & civil society organizations			0.181*** (0.0265)	
Control variables	YES	YES	YES	YES
Country FE	YES	YES	YES	YES



R-squared	0.106	0.083	0.122	0.119
Observations	23,269	23,262	23,198	21,372

Note:

\* p<0.1,

\*\* p<0.05,

\*\*\* p<0.01. Standard errors in parentheses. Source: authors' own calculations. Only the second stage of the IV 2SLS regression has been presented. Other explanatory variables and coefficients are not reported. Available upon request. Item 1: "All things considered, I am satisfied with my life now", Item 2: "All things considered; I am satisfied with my financial situation as a whole." Source: Author's own calculations.

### *V.3. Robustness checks for social ties*

We test whether our results can be altered by the types of social relationships in which the respondents are embedded. Alesina and Giuliano (2014) suggest that in social contexts where social relationships are based on strong family ties there is less interest and participation in political activities. On the contrary, the literature of social capital predicts that individuals' involvement in associational activities increases a sense of civic engagement and public spirit (Putnam 1993) increasing a positive individual's attitude towards rules compliance (Alm and Gomez 2008) To address these issues, we consider two additional independent variables: "meeting with relative or friends" and "membership in clubs & civil society organizations".

Meeting with relative and friends capture the level of family ties and derives from the following survey question: "How often do you meet up with friends or relatives who are not living with you in your household, on average?" Frequencies are 1 = On most days, 2 = Once or twice a week, 3 = Once or twice a month, 4 = Less than once or twice a month, 5 = Never. Following Huber and Mikula (2019) and David et al. (2010), we created index by encoding these answers such as 1 if the answer was "on most days", 2/7 if it was "once or twice a week", 2/30 for "once or twice a month", 1/60 for "less often" and 0 for "never". This should effectively infer calculating the likelihood that a respondent meets relatives or friends on a given day (Huber and Mikula, 2019).

Following the literature of social capital (Putnam 1993) the variable of civic engagement is a binary variable assuming value 1 if the respondent declares to be either active or a member of a voluntary organisation and 0 otherwise<sup>4</sup>. The estimations in Table 4 report that the coefficient

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<sup>4</sup> This variable derives from the survey question "Here is a list of clubs and civil society organizations. For each one, please indicate, whether you are an active member, an inactive member, or not a member of that type of organization". The list of organizations includes churches and religious organizations, sport and recreational organizations and associations, art, music and educational organizations, labour unions, environmental

of life satisfaction remains statistically significant and positive even after the inclusion of these two additional variables. Additionally, as expected, the variable of civic engagement is a positive and significant predictor of corruption aversion, while the proxy for strong family ties does not exhibit any significant relationship.

#### *V.4. Consideration of non-civil servants*

In some countries, civil servants not reporting corruption acts can be criminally prosecuted since public officials have legal obligations in this respect (Batory 2012; Burai 2010). Therefore, on the basis of this literature, we conduct a further sensitivity analysis, and we replicate our baseline model by omitting the respondents employed as civil servants as it is shown in Table 4. The relationships between our independent variable of interest and corruption aversion remain unaltered.

#### *V. 5. EU vs. Non-EU countries*

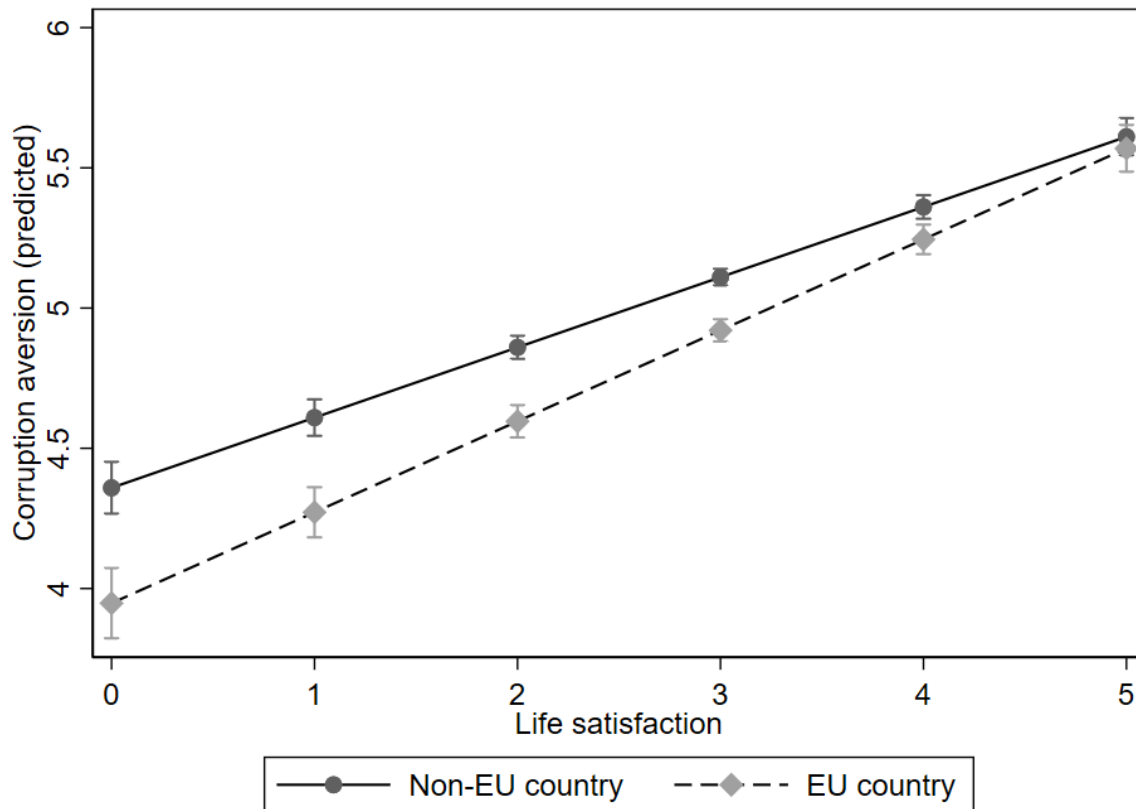
Our baseline model uses country fixed effect estimations to control for specific country characteristics. However, we consider the fact that some countries are now members of the European Union (EU). The EU membership is conditional to the implementation of institutional reforms, including anti-corruption policies, aligned with the EU treaty and with the western European democratic values (Grødeland, 2010). This is likely to make the institutional framework, and respective corruption policies, of the East European countries EU-members more aligned with the western EU-members than with the non-EU former socialist countries. In this respect, we conduct a further sensitivity analysis by estimating predicted values of corruption aversion across different levels of life satisfactions for individuals living in EU countries and individuals living in Non-EU countries (Figure 2). Our results suggest that a positive relationship between life satisfaction and corruption aversion occurs in both groups. Interestingly, when life satisfaction is very high there is no distinction in the level of corruption aversion between individuals living in a EU or in a Non-EU country. On the contrary, across lower levels of life satisfaction the impact of life satisfaction on corruption aversion tend to be higher among individuals living in non-EU countries compare to those living in EU countries.

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organizations, professional associations, humanitarian and charitable organizations, youth organization and parties.

This difference might reflect the gap existing between these two groups in terms of institutional framework and access to public resources.

Figure 2. EU vs. Non-EU countries



Note: Statistical significance of the correlation, p-value= 0.000. Source: authors' own calculations

The perspective of joining the EU has induced the post-socialist countries towards a clear socio-economic and political transformation dividing them between Central and Eastern Europe (CEE) and former Soviet Union (FSU) (Nikolova and Nikolaev, 2017). This distinction seems to be captured also by the corruption perception index (CPI). According to the last projections, the average CPI of the CEE is 17 points higher (lower corruption perception index) than the average CPI of the FSU. Unlike the FSU countries, the CEE countries have been subject to a series of institutional, political and economic changes to join the EU. The EU membership, in fact, is conditional to the adoption of institutional, economic and political reforms towards a more democratic set up, rule of law and human rights, and towards a market-oriented economy that fulfil the criteria set by the Copenhagen European Council of 1993 (Nikolova and Nikolaev, 2017). Furthermore, in exchange of these reforms, the EU membership allows the access to a series of EU instruments including the adoption of shared

institutional rules and procedures, policies to favour regional development (Delhey 2001). This institutional evolution has created a clear gap in the rule of law between these two groups in terms of more effective mechanisms of contract enforcement, respect of property rights and respect of human and social rights (Nikolova, 2016). Life satisfaction influences citizens' cognitive evaluation of their quality of life and their perception about the types of society they wish to have (Nikolova, 2016). Where the rule of law is less implemented and human rights less satisfied, there is a more widespread citizens' perception of unfair deprivation from accessing public resources and receiving equal treatment. Life satisfaction, in this respect, might enhance, even further, values of fairness and need of changes, particularly among individuals engaging in actions that contribute to a better social and institutional environment (Peterson et al. 2005).

#### *V.6. Life Satisfaction, Institutional Trust and Corruption Aversion*

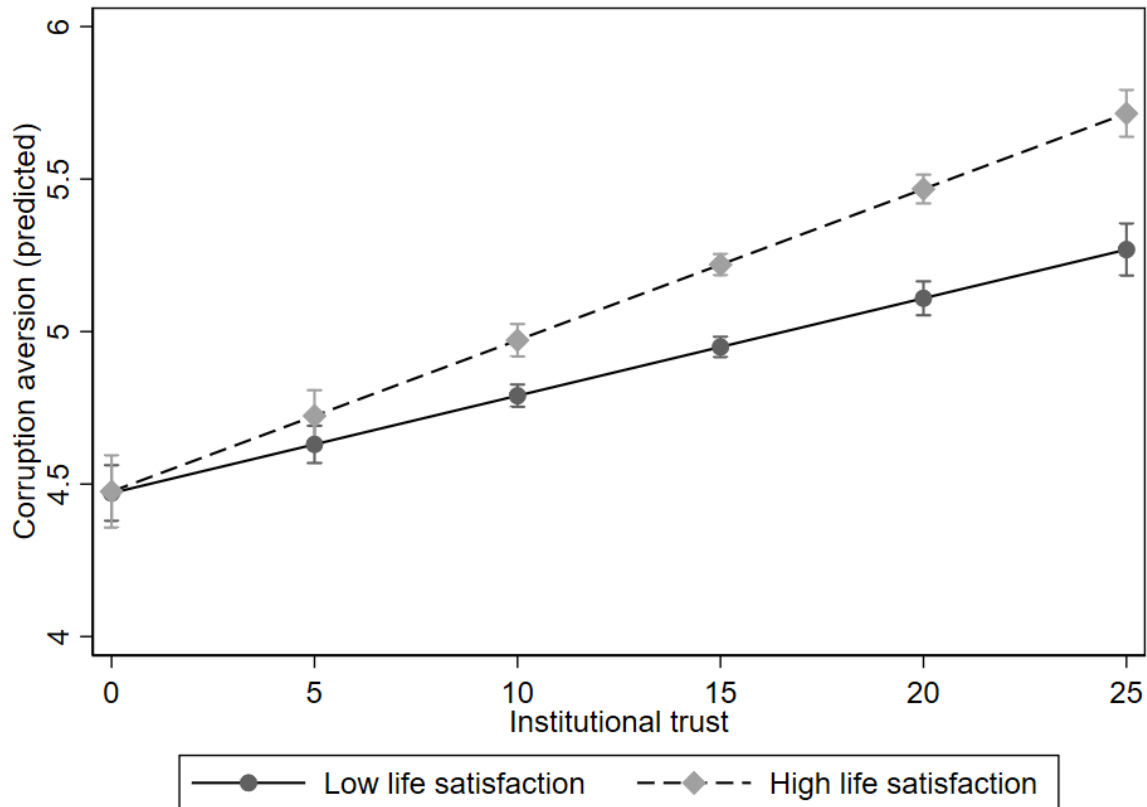
Institutional trust reflects the perception that individuals have about the fairness and effectiveness of the formal rules, procedures and structures governing the public institutions (Hakverdian and Mayne 2012). This includes, particularly, the employment of policies and reforms addressing public preferences and protecting citizens by potential rent-seekers and rule-deviators (Hakverdian and Mayne 2012). This continuous individuals' assessment of the functioning of the public institutions results not only from subjective criteria of self-interests (Hardin 1999) but also from individuals' values and beliefs reflecting the type of society the individuals wish to have (Mansbridge 1999). Individuals' cognitive traits that favour prosocial values orientation, as life satisfaction seems it does, should have amplified the impact that institutional trust has on corruption aversion.

We test this by predicting levels of corruption aversion with levels of institutional trust across life satisfaction groups (Figure 3). The two groups have been computed by using the mean score of life satisfaction. Hence, the individuals in the group with high life satisfaction declare a life satisfaction above the sample mean while those in the group with low life satisfaction declare a life satisfaction equal and below the sample mean.

The predicted values suggest that belonging to the group of respondents with high life satisfaction has an amplifying effect on the impact of institutional trust on corruption aversion. Particularly as institutional trust increases. More specifically, when institutional trust is very low, its impact on corruption aversion does not differ between life satisfaction groups. However, as institutional trust increases so does corruption aversion and this occurs even more amongst the group of respondents with high life satisfaction. A speculative interpretation is

that individuals feeling afflicted by more life adversities might also perceive that public institutions work less efficiently in more marginalised contexts. Perception that likely might not be shared with individuals that are more satisfied with their life.

*Figure 3 Predicted Values of Corruption Aversion across Levels of Institutional Trust and Across Groups of Life Satisfaction*



Note: Statistical significance of the correlation, p-value= 0.0000. Source: authors' own calculations.

Similarly to Figure 2 and Figure 3, we have further undertaken estimations to elaborate the role of country level variables on the relationship between corruption aversion and life satisfaction. These country level variables are (i) economic development, (ii) ethnic fragmentation, (iii) political stability, and (iv) voice and accountability (v) inequality. These estimations are visualised and added to Appendix (Figure 2A-6A).

#### *V.7. Robustness to Omitted Variable Bias*

For minimizing concerns over omitted variable bias, we conducted a coefficient stability test proposed by Oster (2019) to baseline OLS estimation provided in Column 1, Table 2. By

assuming Oster's preferred the threshold of explanatory power ( $R_{max}$ ) equals to R-square of the specification of interest ( $R_{max}=1R$ ), we calculated the relative degree of selection as 3.77 for the coefficient of interest to be equal zero (0). According to Oster (2019), this result could be interpreted that the unobservables would need to be almost 4 (3.77) times as important as the observables to produce a the specification of interest of zero. We further uplifted the threshold to  $R_{max}=1.3R$ , our degree of selection equals to 1.16 which is still higher than accepted level of 1 suggested by Oster (2019). Therefore, one could say that our results are robust to omitted variable biases.

#### *V.8. Exclusion Criteria and Robustness Check for Modified Instrument Variable*

There could be concerns over the way technology constructed and its subcomponents. Despite these are objective and material items (phone, TV, computer, washing machine, internet), there are items within the technology instrument such as internet might raise concerns over exclusion criteria. Therefore, we have applied a robustness test for alternative instrument, modified technology variable which excludes internet from its form. Our results remain the same even after using modified instrument variable in our estimations (Results about this robustness check can be found in Appendix, Table 2A).

## VI. CONCLUSIONS

Our analysis shows that increase in life satisfaction is associated with higher corruption aversion. This suggests that individuals with a better life condition are more likely to provide support to their respective governments in fighting corruption. Our results are consistent with a series of robustness checks and even when we control for different countries characteristics and when we consider different institutional frameworks and institutional trust.

This type of research is of paramount importance for at least two reasons.

Firstly, our research suggests that institutional compliance is not only a matter of law enforcement. Cognitive aspects and life conditions should be considered in studying individuals' conformity to institutions. Aligned with this research perspective, the literature shows that individuals more likely to engage in illegal activities, including corruption, are those with higher tolerance towards these activities (Mehlum et al. 2005). For instance, in the specific case of corruption, citizens that are less averse to corruption are less likely to file complaints (Truex 2011). Hence, shedding light on the determinants of individuals' corruption aversion would help better understand citizens' behaviour in this respect. Citizens' predisposition of

reporting crime and malpractices contributes to the establishment of a more consistent and solid state-citizens relationship, particularly crucial in contexts under institutional and economic transition. Our analysis suggests that individuals with a better life condition are more likely to provide support to their respective governments in fighting corruption.

Secondly, linked to the above point, a better understanding of determinants of individuals' attitudes towards corruption will help employ more effective policy interventions. In terms of policy recommendations, our work reinforces the perspective of the co-benefit, indicated as the positive impact that well-being has on different socio-economic aspects including social outcome, and other human behaviour (Maccagnan et al. 2019). In our specific case, policies improving citizens' life conditions and expectations could have spill-over effect on other aspects of the law and order of the society. Individuals under adverse conditions are more likely to engage in rent-seeking and anti-social behaviours and to be less supportive of the public authorities. Citizens with better access to socio-economic resources may be more loyal to their public authority and more compliant with formal institutions and rule put in place to govern that society. This would reduce social costs and makes the device of the institutions more conform to their main purpose which is to constrain and shape human interactions as well as open up possibilities (Hodgson 2006). On a complementary note, it is argued that life satisfaction has monetary values, if not direct, at least indirect (Maccagnan et al. 2019). In this respect, anti-social and rent-seeking behaviours represent important monetary costs for the society. Estimating the effects of their determinant factors may help estimate these costs. For example, Caldwell et al. (2010) using a sample of young Mexican American (aged 11–17) find a negative and statistically significant correlation between their degree of delinquency and their level of self-esteem. indicators of subjective well-being, happiness, life satisfaction have also been recently used to estimate. Using indicators of subjective well-being, happiness, life satisfaction to estimate anti-social behaviours will allow to value the overall monetary benefit of increasing life conditions. This will help decision makers to set more robust cost-benefit analyses of non-market service policies like those aiming to increase life satisfaction and to rethink about the monetary values of these policies which are not obviously reflected in GDP. Finally, our results can also be a warning for more advanced economies such as the Western European ones. The increasing inequality and, hence, a subsequent decline of individuals' life satisfaction, may drive citizens to become less compliant with rules, more tolerant towards anti-social behaviours and less supportive of government policies. Emblematic in this respect is the case of German municipalities where some life conditional factors such as unemployment, divorce rate, poverty and inequality are significant predictors of crime rate

(Buettner and Spengler 2003). Citizens' life condition might become one of the key factors explaining other forms of individuals' behaviour including individuals' tax behaviour, their preferences towards contributing to public goods and their attitude towards climate change and environmental sustainability. We leave these questions to be investigated in future research avenues.

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## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available in The European Bank for Reconstruction and Development at [<https://www.ebrd.com/what-we-do/economic-research-and-data/data/lits.html>] These data were derived from the following resources available in the public domain: [<https://www.ebrd.com/what-we-do/economic-research-and-data/data/lits.html>] (Accessed date: 22.03.2022)

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