Prisoner in the cage of history? Its influence in understanding the current tolerance of bribery in Romania

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Abstract

Our paper examines the influence of the historical legacy regarding the impact of the border of the former Habsburg Empire, the former political membership of the Romanian Communist Party (PCR), and perceptions about the communist past - in understanding the current tolerance of bribery in Romania, more than 25 years after the fall of communism. We started from an existing background suggesting that in the aftermath of the fall of communism, Romania underwent significant socio-economic changes, with persisting regional disparities accentuated by historical and cultural legacies. Using representative data from the European and World Values Survey joint dataset v.2.0, other relevant sources (Public Opinion Barometer from 2000 and 2007), variable selection and analysis methods based on DK/NA value treatment, binary derivations, the LASSO pack in Stata 17.0 together with different types of regressions including OLS, binary and ordered logistic ones, cross-validations both random and based on well-established criteria (mixed-effects modeling), and collinearity removal techniques based on maximum accepted values of the Variance Inflation Factor (VIF), the results highlight that respondents from certain Romanian macro-regions that experienced higher levels of membership in the PCR and positive views about communism are less likely to be tolerant of bribery. It appears that if the region of residence was part of the former Habsburg Empire, current intentions for bribery are higher. Furthermore, our findings suggest that the propensity to bribe is negatively affected by current macro elements, such as higher crime levels, material deprivation, urban connectivity or lower levels of migration abroad, and left-wing voting preferences.

Keywords: bribery tolerance, intentions, historical border, former communist party membership

Introduction

A comprehensive definition of corruption states that an act is corrupt if a member of an organization uses his/her position, own rights to make decisions, to access information, or other resources of an institution, to the advantage of a third party and

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thereby receives money or other economically valuable goods or services in ways that are either illegal or against the organizational aims or rules. An act of corruption represents embezzlement if a member of an organization uses his/her rights to make decisions, access information or other resources of an institution to own economic advantage, eventually to the benefit of some other members of the organization, in ways that are either illegal or against the organization's aims or rules. (Andvig, 2003, p. 6) Among various types of corruption, bribery seems to be the most common. (Johnston, 2005)

After the fall of communism, Romania began the transition to a free-market economy and built democratic institutions to start a new life. The road seemed to be a difficult one, with many hurdles and barriers. After three decades (or even more) of capitalism, Romania has made significant economic, social, political, and institutional improvements. Although looking at macroeconomic data, one could claim that development is homogeneous, this perspective is rather misleading. Regional disparities and inequalities are real, and it is crystal clear that Romanian counties have developed at different speeds and in different ways. The divergent diachrony has been due to several factors, including culture, institutions, and even geography (Wu & Zhu, 2011). These have further generated differences in physical and human capital and technology (Acemoglu, 2008). As North (1990) has previously pointed out, formal and informal institutions are responsible for different human behaviours, as it appears that norms, rules, traits, and mental patterns are shaped and guided by them (Hofstede et al., 2010).

The influence of corruption is vivid and potent in the Romanian economy and society. Transparency International's Corruption Perception Index (CPI) for 2021 ranked Romania 66th out of 180 countries. In order to control corruption, the Worldwide Governance Indicators for 2020 revealed that Romania scored 54.81 on a percentile scale of 0 to 100, where 100 is the highest rank. It seems reasonable to assume that different economic growth and social development levels have shaped bribery tolerance differently. It is also rational to believe that poorly developed countries or regions having weak institutions and being unable to provide sound quality public resources and services are more likely to generate incentives for their citizens to act corruptly.

Our paper aims to contribute to the understanding of post-communist corruption, especially in Romania, by analysing how the historical legacies of the former Habsburg Empire and the communist period influence the persistence and development of bribery practices today.

A mainstream hypothesis has pointed out that communism destroyed this legacy by making corruption at that time all-pervasive, convenient, and pernicious. Why? Because, under many conditions, engaging in corruption was a matter of survival and an easy fight against brutal communism, therefore, prima facie, it was induced or caused by the limitations and inconsistencies promoted by a rigid and distorted bureaucracy to harm the market incentives (Andvig, 2003). The latter applies because

we might consider that its causes are almost exclusively due to this blamed period of our recent history, and, thus, it would not be necessary to look deeper. As previous empirical studies noted, the impact of socialism on institutional quality has proved insignificant in transition countries (Dimitrova-Grajzl, 2007). If this remark is futile, we might ask a rational question: have the citizens who lived under communist rules lost their moral compass and behaved corruptly on a large and widespread scale? Moreover, the literature on corruption states that former communist countries recorded some of the highest rates of corruption in the world, which increased further during the transition to free-market capitalism (Havrylyshyn, 2020).

In the context of existing regional disparities, we are interested in analysing the influences of macroeconomic variables related to these geographical and social communities on the perception of bribery tolerance. The paper also aims to investigate a hypothesis that has received little attention in the literature, namely whether individuals with personal and family ties to the former Romanian Communist Party (PCR) and those who display a friendly and nostalgic attitude towards communism are more likely to be more tolerant of bribery-related actions and traits even almost three decades after the fall of the communist regime. More in-depth, we ask a fundamental question. Are the citizens from Romanian macro-regions that were part of the former Habsburg Empire more or less tolerant of bribery, therefore transgressing the state and its institutions to maintain legal norms within a society, than their counterparts who were not part of it?

The contribution of this article to the literature attempting to link the actual tolerance of bribery to attitudes towards formal and informal communist institutions is twofold. First, the focus on actual bribery tolerance through the lens of communist-era objectives is rarely an object of investigation. Second, we improve the understanding of the roles of certain attitudes and beliefs about the communist past in influencing bribery today. We also provide evidence that history matters when we engage in an in-depth understanding of the causes and mechanisms that trigger corrupt behavior. Therefore, our analysis brings new insights into the phenomenon of corruption and can prove extremely useful for policymakers who seek to articulate effective and targeted anti-corruption policies.

The rest of the article follows in different sections: Section 2 reviews the literature exhibiting the relationship between the Communist party membership and perceptions, the macroeconomic perspectives related to economic, political, social, and historical events, and the actual bribery tolerance. Section 3 describes the variables involved in the research, the data, and the methodology used. Section 4 highlights the main findings and the interpretation of results. Finally, section 5 underlines the conclusion, while section 6 presents the references from the literature.

1. Literature review

Previous research has found that post-communist levels of corruption have been a heritage of former communist regimes (Levin & Satarov, 2000) and have varied in intensity and form from one post-communist country to another (Karklins, 2002).

Other studies have shown that culture plays a critical role in shaping economic preferences and is a characteristic that influences economic development (Guiso et al., 2006). In the context of analysing a former communist country with a turbulent history and with part of it under the Habsburg Empire until 1918, we consider that these historical legacies may shape the attitudes, norms, and rules of interaction with former institutions differently. Some documented that such legacies, especially related to those empires that exercised global influence, were passed on from generation to generation through cultural norms. Therefore, a study by Becker et al. (2015) found that citizens living in territories once under the former Habsburg Empire now show higher trust levels in the police and courts. Similarly, Del Monte and Papagni (2007) studied the role of cultural factors in Italy in generating subnational variation in corruption intensity. Dong and Torgler (2013) found a significant connection between corruption and the historical influences exerted in Chinese provinces. By contrast to mainstream economics, which preaches a rational and calculated individual influenced by external stimuli, other researchers have highlighted the significant influence exerted by internal rewards and internalized values on engaging in various actions and behaviours and embracing peculiar codes of conduct (Andriani & Sabatini, 2015; Chen et al., 2007; Mazar & Ariely, 2006). In addition, LaPorte and Lussier (2011) have argued that communist legacies are transmitted, tolerated, and even accepted through various channels, such as related institutions, public attitudes towards corruption, and behavioural patterns. Specifically, they argued that communism "created structural incentives for engaging in corrupt behaviours, which became such a widespread fact of life that they became rooted in the culture io these societies - that is, the social norms and practices prevailing in communist societies" (Sandholtz & Taagepera, 2005, p. 109). Sajo (1998) found that the heritage of the nomenklatura or privileged social class or clientelistic network in communism was responsible for the high levels of corruption in post-communism. Soviet bureaucrats were prone to internalize corrupt practices because they were seen as an act of gratitude but not something exempted from social norms (Obydenkova & Libman, 2015).

At the same time, previous articles have documented that societies with higher levels of past Communist Party membership and higher intensity of corruption exhibit a more powerful nostalgia for those long-gone times, which further validates and legitimizes former Communist Party members and fosters phenomena associated with corruption (Libman & Obydenkova, 2021). The emphasis on the Communist Party membership is not accidental. Knowing and understanding the darkness and limitations of the pre-1989 political system, such membership meant

access to privileges not available to ordinary people. Being actors with decision-making powers within a centrally planned economic system, they could circumvent this weak and inefficient system by engaging in informal practices, including corruption and bribery (Rose, 2001). Even after the fall of communism in Central and Eastern European countries, previous studies have documented that many people connected to the Communist Party remained involved in administrative and political positions and became successful entrepreneurs (Sik & Wellman, 1998). More generally, Tarkowski (1989) stated that corruption was a constitutive component of socialist regimes. Libman and Obydenkova (2013) found empirical evidence in Russia that the share of Communist party membership at the regional level is a significant predictor of corruption levels. Aidis et al. (2008) pointed out that members of former Communist parties in post-socialist countries continued to use the pervasive system of informal rules (blat) to preserve their privileges and prevent other entrepreneurs from entering the market. As previously documented by Ivlevs and Hinks (2018), one would expect that a high membership level in the former PCR would increase the current propensity to engage in bribery operations to expedite the provision of public services. Gehlbach (2009) conducted an empirical analysis and found that, within a country, the levels of corruption vary widely across regions, as do those differences displayed across countries. Obydenkova and Libman (2015) found that in contemporary Russia, a potent communist legacy has increased the different facets related to corruption among street-level bureaucrats and the population.

The privative cultural content, such as attitudes towards homosexuality and suicide, was taken into account because most of these countries are conservative and religious; therefore, such social values are considered sinful behaviour. Also, these morally questionable issues (homosexuality and suicide) should arise clearly due to immoral issues, namely corruption. A basic set of immutable moral norms, widely accepted and shared by societies, are considered partly constitutive of objective morality but different from law (Miller, 2016). Same-sex marriages are not legal in all countries considered in our sample.

The relationship between bribery and poverty (severe material deprivation rate) has been analysed in other research and seems unclear. For example, Justesen and Bjornskov (2014) documented that socio-economic status is critical in predicting bribery, with individuals at the bottom of the income distribution being more vulnerable to bureaucratic corruption. Hunt and Laszlo (2005) have exhibited that the value and incidence of bribery are highly dependent on household income. In contrast, Mocan (2008) found that individuals at the upper end of the income distribution are more likely to pay bribes when asked by government officials.

Morris (2018) provided evidence on the role of crime rates on corruption. He found that, in the case of Mexico, there is a mutual causality between crime and corruption, in the sense that the effective fight against corruption should come together with the same policies and instruments to reduce crime. More specifically,

looking at other specific cases, Van Dijk (2007) pointed to a positive relationship between organized crime and corruption. Other studies have shown that the higher the levels of corruption in a country, the more likely it is to experience considerable increases in other negative phenomena, such as crime, poverty, or unemployment (Salihu, 2022). On the other hand, Meier and Holbrook (1992) found a positive, but not significant, association between corruption and crime rates.

Voters who legitimize corrupt parties in power are more likely to excuse the venality of those in power while knowing the benefits they will gain through redistribution policies (De Sousa & Moriconi, 2013; Manzetti & Wilson, 2007). In general, the choice of this variable relates to the idea that "corruption fighting is an issue ideologically closer connected to the right of center" (Bågenholm, 2009, p. 15). Di Tella and MacCulloch (2009) found empirical evidence that countries with left-wing parties in power have previously faced higher levels of corruption. Beck et al. (2001) highlighted that left-wing governments positively correlate with corruption tolerance. Therefore, they stated that while "members of right-wing parties are more likely to originate from an entrepreneurial background and their party platforms more strongly represent the interests of businessmen" (Hesami, 2011, p. 2), then they may end up in a network of interests compatible with corrupt practices (Abrate et al., 2016). In the same vein, Jimenez and Garcia (2012) emphasized, using data from several Spanish municipalities, that left-wing voters are very sensible to corruption cases and scandals, thus reducing their vote share, while right-wing parties have seen an increase of these in subsequent elections.

Attitudes towards bribery among those left behind after members of their communities migrate abroad are challenging. First, some studies demonstrate the deterrent role of emigration on corruption among those remaining in the home country (Beine & Sekkat, 2013; Hockel et al., 2018). Contrary to these theories, other researchers have found that more money sent home reduces the incidence of corruption among households receiving remittances (Tyburski, 2012). Also, the substitution effect through remittances may lead to less corruption among recipients who stay at home (Abdih et al., 2012).

In an article by Becker et al. (2015), the authors argued that people residing and living in former Habsburg territories were less predisposed to pay bribes to the police or courts than those outside these communities. Research conducted by Denisova-Schmidt and Huber (2014) showed higher levels of corruption in the Eastern part of Ukraine, especially among Russian-speaking populations who mainly defied reformist movements (e.g., the Orange Revolution movement) even after the fall of the Soviet Union.

Nostalgia for communism appears to vary between individuals who have prospered since its dissolution and those who have not (Okulicz-Kozaryn, 2014). This viewpoint aligns with the observation that communist nostalgia, as a complex phenomenon, is more closely linked to dissatisfaction with the economic situation at a specific time (2007) rather than with non-democratic values (Petrović, 2013).

Consistent with the previous studies presented, we propose to test the validity of the following hypothesis:

H1: Current justifying attitudes to accepting bribes are positively influenced by the individual predisposition towards behaviours related to economic criminality (Justif_gov_benefits - F114A and Justif_avoid_fare_transport - F115), non-discrimination on sexual orientation (homosexuality), and religious marginalism as an extremist form of non-assuming freedom outside dogmatic and social morality (suicide).

H2: Do high regional weights related to parental membership in the PCR positively influence how bribery tolerance (i.e., high tolerance) is perceived nowadays?

H3: Does a friendly and nostalgic attitude towards communism (it was a good idea, or life was better before 1989) increase a current tolerance towards accepting bribes?

2. Data and methods

We used the European and World Values Survey joint dataset v.2.0[1], filtered exclusively for Romania (cntrycow=360), together with significant external information available from various other sources (e.g., Public Opinion Barometer - see sections on survey items and descriptive statistics - Tables 1 and 2, Appendix section).

The descriptive statistics (Table 2, Appendix section) contains some statistical indicators (such as number of valid observations or N, average value or Mean, standard deviation or SD, and the limits for the interquartile ranges: Min, 0.25, Median or 0.5, 0.75, and Max) computed for the extended list of all variables considered for this study (Table 1, Appendix section). For instance, these statistics (Table 2, Appendix section) can reveal low average values for the target variable (Justif_accept_bribe, originally F117) in both forms (1-10 original scale and binary derivation for two symmetric subscales: 1-5 and 6-10), namely the weighted average value of 1.6 (for the 1-10 scale format) and 0.05 (for the binary one: 0 and 1). Thus, 0.05 also suggests the corresponding structure of Romanian respondents on finding justifiable the bribe acceptance in its binary format (138 $\sim$ (0.05 - the minimum of 0) * N, meaning 138 valid positive responses or $\sim$5% in the original subscale of 6-10). In the case of gender (1 for male respondents, 2 for female), the average value of 1.57 also reflects the corresponding structure of Romanian respondents on gender (1627 $\sim$ (1.57 - the minimum of 1) * N, meaning 1627 valid female responses or $\sim$57%).

First, we found the most important influences of bribe acceptance (Justif_accept_bribe - F117nt in Table 1, Appendix section) using both cvlasso (with

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[1]First accessed on 29 November 2021 and downloaded from the online address: www.worldvaluessurvey.org/WVSEVSjoint2017.jsp.

the LSE option - lambda for which MSPE or the Mean Squared Prediction Error is within one standard error of the minimal MSPE) and rlasso in three successive steps. In the first stage, rlasso kept a small list of variables, while cvlasso was more selective. Both cvlasso and rlasso are part of the LASSO pack (Least Absolute Shrinkage and Selection Operator) in Stata 17.0 MP-Parallel Edition. We used this statistics and data science tool for all derivation, selection, analysis, and validation steps necessary for this article. LASSO originates in geophysics as an L1-regularization approach for a specific problem named sparse spike deconvolution (Levy and Fullagar, 1981) (Santosa & Symes, 1986; Tibshirani, 1996).

In the second stage, we treated the missing, not asked, and don't know/don't answer (DK/NA) values (Figure 1, Appendix section) for the seven common influences for both rlasso and cvlasso found in the previous step that served as input at this point, and reapplied both methods. In the third stage, we used the remaining six common influences from rlasso and cvlasso identified in the second step. We reapplied both methods, aiming for no loss when selecting both (Figure 2, Appendix section).

$$\text{max VIF} = 1 / (1 - \text{the R-square of the model}) \tag{1}$$

In addition, we performed several steps of collinearity assessment using the ordinary least squares (OLS) method, preceded by generating the binary form of the variable to be analysed using symmetric coding (Figure 3, Appendix section). We measured the Variance Inflation Factor (VIF) computed relative to a maximum threshold (i.e., max VIF - equation 1) (Xia et al., 1999; Vatcheva et al., 2016) for the entire model with six variables and also for all possible pairs (C62 = 15). We found the following collinear pairs: (E290nt, Justif_suicide - F123nt) and (Justif_gov_benefits - F114Ant, F116nt). We kept only those (Justif_suicide - F123nt and Justif_gov_benefits - F114Ant) that provide higher explanatory power (R-squared) and accuracy (AUC) for both forms of the dependent variable: scale and binary. At this point, only four influences remained (Justif_gov_benefits - F114Ant, Justif_avoid_fare_transport - F115nt, Justif_homosexuality - F118nt, and Justif_suicide - F123nt).

We then performed several cross-validations using mixed-effects modeling (Kappen et al., 2014; Griesbach et al., 2021) with melogit (mixed-effect binary logit for the binary form of the dependent variable) and meologit (mixed-effect ordered logit for scale one), taking into account random effects on regions (reg_nuts1, reg_nuts2, and a derivation, namely Former_Habsb_Emp_in, which indicates a subregion as being part of the former Habsburg Empire more than hundred years ago, i.e., north-west, centre, and west respectively - Figure 4, Appendix section), as well as other socio-demographic characteristics, such as gender, age, marital status and a derivation that only considers married people or people living with someone, number of children, level of education, employment status, and position of the

respondent on the income scale. Regardless of the clusters obtained using these criteria above, all four variables resulting at the end of the previous selection stage (here as fixed effects) were considered significant (*** for 0.001 or ** for 0.01) (Zhu, 2016). Therefore, the entire selection type is lossless. Furthermore, we considered the four remaining influences above as the core (quad-core) model.

The next step was to control the use of the regional and socio-demographic variables mentioned above by including each in separate models (together with the already identified core). To simplify the reporting of differences between regions in Romania, we recorded them as follows (Figure 5, Appendix section).

Finally, we tested the influence of each of the other external variables (Table 1) taken individually and in conjunction with the four WVS items identified above in several selection steps. To do this, we used ordered logit (ologit) regressions, and we kept each item capable of increasing the explanatory power of the model (higher R-squared) or informational value (lower AIC and BIC values) (Bollen et al., 2014) compared to the base one containing only the core. In addition, we checked whether the sign of the coefficient of each outer element was persistent between two types of hierarchical models (a single predictor, one containing only the outer element, and another with the quad-core together with the outer element) and removed any exceptions (in terms of outer items not being consistent in sign, thus losing significance, or having very small coefficients). We also checked for collinearity issues using OLS but found none in all reported models and controls (calculated VIF is always below the maximum acceptable threshold - equation 1), except for the outer variables. The latter has an intersecting derivation basis, being region-dependent (most with the same cardinality of 8) and, from the very beginning, subject to collinearity problems. The latter is the main reason for performing additional checks and adding them individually to the core model.

3. Results and discussions

After the last selection step, the results emphasize eleven additional items when the importance is a subject of concern (Table 3 - Ordered Logit, Appendix section).

Table 3 (Appendix section) presents various robustness and collinearity checks that further validate the prior choice of the 6model kernel. Scobit, logit, ologit, probit, oprobit, and OLS regressions were applied. The selected variables are robust in all these specifications, regardless of whether the dependent variable was considered dummy or continuous. In addition, we computed maximum VIF relative to a maximum threshold (Vatcheva et al., 2016) to assess multicollinearity issues. This additional filter adds more robustness to the original model. All variables met this criterion (no collinearity issues).

Table 4 (Appendix section) presents a set of cross-validations using mixed-effects ordered (models 1 to 9) and binary logistic models (models 10 to 18), taking

into account the quad-core of the model as fixed effects and various regional and socio-demographic variables as random effects.

Table 5 (Appendix section) presents ordered logistic regressions (models 1 to 10) and OLS regressions (models 11 to 20), considering the quad-core of the original model and a set of additional controls (regional - code 5, set as reference - and socio-demographic variables).

Table 6 (Appendix section) presents the ordered logistic regressions, taking into account the core identified above and different variables related to current macro social, political, and economic facets (e.g., crime issues, political elections, poverty or material deprivation, index of urban connectedness, index of local experience of migration abroad, whether or not the region of residence belongs to the former Habsburg Empire) and about the communist legacy in terms of attitudes or status-quo concerning personal and family wealth and political affiliation of family members.

In addition, macro elements were considered (i.e., as material deprivation and higher crime levels or a higher number of persons definitively sentenced by the courts - models 2 to 4). It is reasonable to believe that environments with high crime rates and high numbers of convicted offenders may provide an environment conducive to bribery and corruption, in general (Hunt, 2007). The latter is also reasonable because the former drives the latter, while both are present in human societies due to weak legal institutions and regulations and high poverty rates (Chatterjee & Ray, 2014).

The results of the last parliamentary elections (model 5, average of the Chamber of Deputies and Senate) are significant for our analysis. The reason behind this choice relies on how people vote in general. Such political behaviour (considering the lack of information or contrary) could be a proxy of how people usually approach bribery or corruption tolerance. Our results refute the evidence provided by Beck et al. (2001). In regions where the voting population expressed trust in left-wing political parties or coalitions, subjects are less likely to tolerate bribery. Under these circumstances, these findings are consistent with other research showing that corruption in the public sector is higher where right-wing parties are in power (Hesami, 2011).

Model 6 results indicate that in regions that had higher migration abroad in 2011, individuals are more likely to be involved in accepting bribes. The literature on this topic is sparse. In our case, a reasonable explanation is that the financial remittances of those who remain at home may be prime targets for bribery practices, especially when interacting with public sector institutions and officials, but also that they may be prime donors with the financial resources to do so (Ivlevs & King, 2017).

Model 7 introduces the index of urban connectedness. It measures how close each administrative-territorial unit in Romania (for each macro-region considered) is to the nearest small, medium, large, and even more (very large) cities. A high score for this index is equivalent to saying that the administrative-territorial units in a given

region are very close to these categories of cities. Therefore, they are much more connected to their infrastructure (institutions, workplaces, etc.) than those more distant or geographically isolated. The latter also means that networks of urban centres are very well-distributed geographically, nearly uniformly covering the territory in number or density. If returning to the regression results above, they underline that more urban connectivity or more urban centres are distributed evenly throughout the territory. Hence, the shorter the distance between each territorial unit, the lower the propensity for them to tolerate bribery. While previous research has pointed out that individual satisfaction with state services decreases as distance from urban centres increases (Krishna & Schober, 2014; Bland et al., 2021), our results support the theory that less distance from urban centres is related to higher satisfaction with state services, hence a reduction in the intention to engage in corrupt practices such as bribery.

Model 8 shows a negative relationship between bribery tolerance and those regions of Romania that were part of the former Habsburg Empire until 1918. Therefore, respondents living in these regions appear to be more likely to be tolerant of bribery. In our case, the results are contrary to those of Becker et al. (2015) and Denisova-Schmidt and Huber (2014). The explanation is twofold. First, what emerges from the literature needs to be clarified and nuanced. Territories now part of sovereign nation-states, formerly part of the Habsburg Empire, have experienced heterogeneous rates of economic development. In particular Bukovina, a territory located in the far east of the former Empire, was much poorer than other historical regions in the late 19th and early 20th centuries, demonstrating consistent differences in regional development. (Plopeanu et al., 2020) The differences in socio-economic performance are mainly due to a lack of access to foreign markets and limited investment in education (Klein et al., 2017). The latter lag behind the Eastern Empire has continued, compared to the core of the former Empire, until today, failing to activate its catch-up potential (Abramovitz, 1986; Gerschenkron, 1962). Therefore, it is reasonable to assess that institutions in Bukovina were not as strong, stable, and efficient as those in the centre or core of the Empire, even if the center-periphery model should be invoked for institutional development (Bobinac, 2015). Second, these results are consistent with the analysis conducted in Croatia by Tkalec (2020): Areas formerly part of the Military Frontier are poorer, have higher levels of trust in institutions, a higher tendency to bribe them, and show less trust in other people (possibly related to the ethnic population mix in the area). These results are consistent with the colonial policies of the Habsburgs, "who exerted highly centralized authority through their military institutions while at the same time failing to provide adequate resources to alleviate poverty, leaving the people to resort to corruption." Moreover, after communism decades, the potential of these imported institutions to generate sound attitudes, norms, and values may have been perverted, as parts of the literature supporting this thesis (Chloupkova et al., 2003; Olson, 1995).

Models 9-12 are related to regional membership levels in the former Romanian Communist Party and the current tolerance of bribery. In this sense, model 9 highlights that the higher the regional percentages of those who did not have family members in the former Romanian Communist Party, the stronger the current intentions to tolerate bribery. Conversely, models 10 to 12 emphasize that the higher the regional percentages of those having one, both, or at least one parent member of the former Romanian Communist Party, the lower the current intentions to tolerate this corruption practice. The results stress that in communities that have experienced much closer formal ties to the Romanian Communist Party (formal membership), the current attitudes of respondents towards tolerance of corruption are much weaker than otherwise. In particular, the situation where both parents were members of the former Romanian Communist Party is the strongest factor against current perceptions of bribery tolerance. At first glance, one explanation could relate to the idea that previous membership of the Romanian Communist Party was purely formal, out of interest rather than ideological commitment or imprint, forced by certain circumstances to join such a totalitarian economic and political regime. Another variant of decryption is related to the fact that in those regions where there was a greater appetite or adherence to the PCR, the networks of informal institutions created by them filled the institutional vacuum of those times and created opportunities that no longer needed such practices related to corruption (e.g., bribery). While these results are intriguing, and in many cases, contradict previous research, we consider they are robust, reliable, and worth considering. A potential clue relies on the fact that Model 5 highlights the same negative sign when considering the percentage of eligible voters who chose a left-wing party or coalition in the last parliamentary election. It is a fact that, in general, a large proportion of them are nostalgic for the pre-1989 times or are ideologically close to their policies and realities.

Models 13 and 14 show how pre-1989 views of living standards have influenced current attitudes to bribery. The results postulate that in regions where pre-1989 living standards are perceived to be better and much better than in 2007, attitudes towards bribery are less friendly than when those standards of living before 1989 were better or much better. Whether it is nostalgia for an idealized period or not, people who believe that before was better than now were either members of the Communist Party, who had a higher standard of living, with access to privileged positions in society, job security, security of life, cheap or free housing, or were their descendants who idealized the past and faced the difficulties and uncertainties of the transition to a free market economy. Therefore, the higher the proportion of people in selected regions believing that the standard of living was better before 1989, the lower the bribery tolerance of respondents. Moreover, those privileged before the fall of communism were better off after 1989, especially as they could access privileged positions in society during the transition (Jain, 2001), especially as the lustration law in Romania was instituted very late, becoming operational only in

2010. The same is true when considering model 15. The respondents living in communities that privilege the idea that communism was a good idea are less likely to engage in corrupt practices. Generally, according to Petrović (2013), "communist nostalgia" relates to the current precarious economic situation; therefore, a higher intention to act corruptly could be the effect.

Model 16 is related to so-called symbolic capital (i.e., being in charge of a group of at least three people before 1990). This perspective depends on the social, economic, and political position of the individual before the collapse of communism in Central and Eastern European countries. Only politically reliable, spotless, and respectable party members (e.g., not just ordinary party members, but, in many cases, the most influential ones) were entitled to hold a leading position in the system. In the regions of Romania (nuts2) having higher percentages of people who held leadership positions (were responsible for a group of at least three persons) in the socialist system, respondents are not currently willing to accept bribes. The latter may be related to their affiliation with communist and post-communist interest networks that continued to act as catalysts for their welfare many decades after the collapse of socialism. Therefore, being beneficiaries of such privileges reduced the motivation to act corruptly.

Models 17 to 19 show that if the mother, father, or both parents owned a car before 1989 in regions with a high share of these assets in the family wealth portfolio, current respondents are more reluctant to accept bribery. Car ownership could act as a proxy. And the latter applies to a certain degree of wealth under communism. It seems these results highlight that a privileged position in communist society equates to lower current intentions to act corruptly. The explanation lies in the fact that current respondents live in social and economic environments that retain beneficial "shadows" of the past (e.g., factories, plants, infrastructure built before 1989, or businesses run by successful communist-era people or so-called socialist entrepreneurs (Grusky, 2019) who created jobs and opportunities after the fall of communism) that offer them chances in the present and thus make them less prone to engage in corrupt activities.

4. Implications

In terms of implications possible to derive from this paper, we only mention:
1) Historical Legacies and Corruption Perception: (1.1) The historical legacy of the former Habsburg Empire and the political membership in the Romanian Communist Party play significant roles in shaping contemporary attitudes towards bribery in Romania. (1.2) Regions with a higher historical connection to the Communist Party or a positive view of communism are associated with lower bribery tolerance.
2) Geographical Influence on Bribery Intentions: (2.1) The geographical location of a region (if it was part of the former Habsburg Empire) seems to impact

current intentions for bribery. (2.2) Understanding the historical borders and political affiliations can provide insights into the variations in bribery tolerance across different macro-regions.

3) Social and Economic Factors: (3.1) Social and economic factors (such as crime levels, material deprivation, and urban connectivity) have a significant influence on the propensity to bribe. (3.2) Lower levels of migration abroad are associated with higher bribery intentions, suggesting a potential link between economic opportunities and corruption perception.

4) Political Affiliation and Corruption: (4.1) Left-wing voting preferences are positively associated with bribery intentions, indicating a potential connection between political ideology and corruption. (4.2) This also suggests that political orientations might have a role in shaping the ethical stance of individuals regarding corrupt practices.

5) Implications for Policy and Governance: (5.1) Policymakers and public institutions should consider historical factors when addressing corruption issues. Strategies may need to adapt to the specific historical and political context of different regions. (5.2) Efforts to reduce bribery and corruption should focus not just on legal measures. Socio-economic factors and historical perceptions should also count.

6) Long-lasting Impact of Political Membership: The enduring impact of former political membership in the Romanian Communist Party on attitudes towards bribery emphasizes the need for long-term strategies to reshape societal values and ethical standards.

7) Complexity of Corruption Dynamics: The study highlights the complex and multifaceted nature of corruption dynamics involving historical, political, and socio-economic factors. Any effective anti-corruption strategy should recognize and address this complexity.

All these implications suggest that tackling corruption in Romania requires a comprehensive understanding of historical, social, and economic factors. Policymakers should consider crafting nuanced strategies that account for regional variations and historical legacies to effectively combat bribery and foster a culture of transparency and integrity.

5. Limitations and future research

This paper started from a joint principal dataset (European and World Values Survey) limited to a single wave corresponding to a small-time interval of just four years (between 2017 and 2020). It also used a conversion of the original scale of the target variable to a binary derivation considering only a symmetric split (0 for 1-5 and 1 for 6-10) of the original 1-10 scale, with all possible limitations arising from here. Moreover, only nine variables stood for random effects when cross-validating using mixed-effects modelling. Therefore, the models were cross-validated on all

possible subsets deriving only from these nine criteria, as well as considering random selections of subsets (cvlasso).

In future studies, we will consider larger datasets with an increased time frame, more countries, many other derivations for the target, and additional variables when performing cross-validations together with supplemental analysis methods and representation tools (e.g., risk prediction nomograms for binary logistic regressions) to better emphasize the importance of predictors and offer an intuitive visual possibility to perform direct risk calculations for cases similar to the ones in the dataset used, and starting from the already identified predictors and the corresponding scores and probabilities associated with values for different possible responses.

Conclusions

The paper explored the influence of historical legacies, namely the belonging of different regions of Romania to the former Habsburg Empire and former political membership in the Romanian Communist Party, as well as perceptions of the communist past, on current tolerance of bribery almost three decades after the collapse of the communist regime.

Among other things, we used representative data from the European and World Values Survey joint dataset v.2.0 (a single wave corresponding to four years between 2017 and 2020) and other relevant sources, such as the Public Opinion Barometer, to capture the most significant variables in the case of Romania. We used Stata 17.0 to perform variable selection and analysis methods based on DK/NA value treatment, variable derivations, and the LASSO pack together with different types of regressions, including OLS, binary and ordered logistic ones, cross-validations both random and based on well-established criteria (mixed-effects modeling), and collinearity removal techniques based on maximum accepted values of VIF. Our results highlight that, in different macro-regions of Romania that have recorded higher PCR membership levels and friendly and nostalgic views of communism, people are now less likely to be bribery tolerant. In addition, we found that if the region of residence is part of the former Habsburg Empire, it is more likely to predict higher current bribery intentions. Our results also emphasize an inverse relationship between the propensity to bribe and crime levels, material deprivation, and urban connectivity rates. A direct and positive association between the target and the levels of migration abroad and left-wing voting preferences stands as documented.

Overall, based on the extensive contributions of prior research, this paper delves into the corruption landscape of Romania, examining how historical legacies and individual ties to the Communist Party influence present-day attitudes toward bribery. Including a focus on regional disparities and cultural influences, this research aims to contribute insights for policymakers crafting effective anti-corruption strategies in the post-communist context. Some limitations on the time

range in the principal dataset, the specific derivations and validations used, and future research directions reside in a dedicated section.

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Appendix
Table 1. Description of variables

Variable	Short description	Coding details
F117	Justifiable: Someone accepting a bribe (Justif_accept_bribe)	1 – Never justifiable …. 10 – Always justifiable
F117bin	Justifiable: Someone accepting a bribe (binary format) (Justif_accept_bribe_bin)	F117bin=0 if F117!=. & F117>0 & F117<6; H010bin=1 if H010!=. & H010>=6
F114A	Justifiable: Claiming government benefits to which you are not entitled (Justif_gov_benefits)	1 – Never justifiable …. 10 – Always justifiable
F115	Justifiable: Avoiding a fare on public transport (Justif_avoid_fare_transport)	1 – Never justifiable …. 10 – Always justifiable
F118	Justifiable: Homosexuality (Justif_homosexuality)	1 – Never justifiable …. 10 – Always justifiable
F123	Justifiable: Suicide (Justif_suicide)	1 – Never justifiable …. 10 – Always justifiable
Reg_nuts2	Region where the interview was conducted (NUTS-2)	1 - North-West; 2 - Central; 3 - North-East; 4 - South-East; 5 - South (Muntenia): 6 - Bucharest-Ilfov; 7 - South-West (Oltenia); 8 - West
Former_Habsb_Emp_in	Current Romanian NUTS regions that belonged to the former Habsburg Empire until 1918 (Suceava county was intentionally excluded due to lack of details to establish its belonging or nor to the former Habsburg Empire)	Former_Habsb_Emp_in=1 if reg_nuts2num==1	reg_nuts2num==2	reg_nuts2num==8; Former_Habsb_Emp_in=0 otherwise
X003	Age	years (82 means 82 and older)
X001	Gender	1-Male; 2-Female
X007	Marital status (Marital_status)	1-Married; 2-Living together as married; 3-Divorced; 4-Separated; 5-Widowed; 6-Single/Never married
X007bin	Marital status (binary) (Marital_status_bin)	X007bin=1 if X007==1	X007==2; X007bin=0 otherwise
X011	How many children do you have (Nr_children)	0 - No child; 1 – 1 child; 2 – 2 children … 5 – 5 children or more
X025A_01	Highest educational level attained ISCED 2011 (Edu_level)	0 – Early childhood education (ISCED 0) / no education … 8 – Doctoral or equivalent (ISCED 8)
X047E_EVS5	Scale of incomes (Scale_income_e)	1 - 1st decile …. 10 - 10th decile
X047_WVS7	Scale of incomes (Scale_income_w)	1 - Lower step …. 10 - Tenth step
X047	Scale of incomes (Scale_income)	X047=X047E_EVS5 if X047E_EVS5!=. & X047E_EVS5>=1 & X047E_EVS5<=10; X047=X047_WVS7 if X047_WVS7!=. & X047_WVS7>=1 & X047_WVS7<=10
X028	Employment status (Employment_status)	1 – Full time; 2 – Part time; 3 – Self employed; 4 – Retired: 5 – Housewife; 6 – Students; 7 – Unemployed; 8 – Other

Variable	Description	Source
Severe_material_deprivation_rate	The severe material deprivation rate represents the proportion of the total population of people in a state of severe material deprivation, i.e. people aged 18 and over who, due to lack of financial resources, cannot afford at least 4 of the following: - timely payment, without arrears, of utilities and other current obligations, - paying for one week's holiday a year away from home, - the possibility of meeting unforeseen expenses from your own resources, - owning a landline or mobile phone, - owning a colour television, - owning a washing machine, - owning a personal car, - paying for adequate heating for your home.	average 2015-2017, Tempo INSSE
Crime_rate	Crime rate (percent) = (Number of persons convicted per 100.000 inhabitants / Resident population)*100	average 2015-2017, Tempo INSSE
Pers_convict_courts_percPOP	Persons definitively convicted by the courts (percent) = (Persons sentenced definitively by the courts / Resident population)*100	average 2015-2017, Tempo INSSE
Elections1_left	Results for Parliamentary elections (Chamber of Deputies), left-wing parties (PSD+ALDE)	2016 (https://parlamentare2016.bec.ro/index.html)
Elections2_left	Results for Parliamentary elections (Senate), left-wing parties (PSD+ALDE)	2016 (https://parlamentare2016.bec.ro/index.html)
Elections_left	Results for Parliamentary elections (average of Chamber of Deputies and Senate), left-wing parties (PSD+ALDE)	2016 (https://parlamentare2016.bec.ro/index.html)
No_parent_PCR_member	No parent was a member of the Romanian Communist Party before 1989, percent in population	Public Opinion Barometer, november 2000
One_parent_PCR_member	Mother or father was a member of the Romanian Communist Party before 1989, percent in population	Public Opinion Barometer, november 2000
Both_parents_PCR_member	Mother and father were members of the Romanian Communist Party before 1989, percent in population	Public Opinion Barometer, november 2000
At_least_one_parent_PCR_member	One or both parents were members of the Romanian Communist Party before 1989, percent in population	Public Opinion Barometer, november 2000
Communism_worse	Standard of living before 1989: much worse and worse=0; the same=1; better and much better=2, weight of answers of 0 in total answers.	Public Opinion Barometer, october 2007, The Gallup Organization Romania
Communism_better	Standard of living before 1989: much worse and worse=0; the same=1; better and much better=2, weight of answers of 2 in total answers.	Public Opinion Barometer, october 2007, The Gallup Organization Romania
Communism_good_idea	In your opinion, communism…? 'Is not a good idea=0; is a good idea but has been poorly applied=1; is a good idea that has been well applied=2. Then, we have recoded: 1&2=1, 0=0. Further, we took into account the share of answers of 1 in total answers.	Public Opinion Barometer, october 2007, The Gallup Organization Romania

Boss_before_1990	Before 1990, you were in charge of at least 3 people. Answers were coded: No=0, Yes=1, Don't know=blanc. For each county, we calculated the share of "Yes" responses in total responses, then we computed the average for each NUTS.	Public Opinion Barometer, november 2000
Mother_auto_before_1990	Before 1990, the subject's mother owned a car. Answers were coded: No=0, Yes=1, Don't know=blanc. For each county, we calculated the share of "Yes" responses in total responses, then we computed the average for each NUTS.	Public Opinion Barometer, november 2000
Father_auto_before_1990	Before 1990, the subject's father owned a car. Answers were coded: No=0, Yes=1, Don't know=blanc. For each county, we calculated the share of "Yes" responses in total responses, then we computed the average for each NUTS.	Public Opinion Barometer, november 2000
Both_parents_auto_before_1990	Before 1990, the subject's parents owned a car. Answers were coded: No=0, Yes=1, Don't know=blanc. For each county, we calculated the share of "Yes" responses in total responses, then we computed the average for each NUTS.	Public Opinion Barometer, november 2000
IMIGEXPER	Index of local experience of migration abroad, 2011	Sandu, Dumitru (2016). Migration abroad experience and modernityat the local level in Romania (https://www.researchgate.net/publication/301608144_Migration_abroad_experience_and_modernity_at_the_l ocal_level_in_Romania_excel_file)
IURCON	Index of urban connectedness (IURCON)*ln(pop2011/1000)	Sandu, Dumitru (2019). Urban Connectednessand Regions in Romania: SPSS Data File (DOI: 10.13140/RG.2.2.23641.88167)

Source: authors' calculations in Stata

Table 2. Descriptive statistics

Variable	N	Mean	SD	Min	0,25	Median	0,75	Max
Justif_accept_bribe	2818	1,6	1,62	1	1	1	1	10
Justif_accept_bribe_bin	2870	0,05	0,21	0	0	0	0	1
Justif_gov_benefits	2791	2,14	2,25	1	1	1	2	10
Justif_avoid_fare_transport	2826	2,07	2,15	1	1	1	2	10
Justif_homosexuality	2721	2,31	2,35	1	1	1	3	10
Justif_suicide	2786	1,63	1,7	1	1	1	1	10
Reg_nuts2	2870	4,24	2,18	1	3	4	6	8
Age	2799	48,71	17,85	18	34	49	64	82
Gender	2870	1,57	0,5	1	1	2	2	2
Marital_status	2800	2,53	2,09	1	1	1	5	6
Marital_status_bin	2870	0,62	0,48	0	0	1	1	1
Nr_children	2794	1,41	1,23	0	0	1	2	5
Edu_level	2778	3,24	1,62	0	2	3	3	8
Scale_income_e	1252	3,97	2,07	1	3	4	5	10
Scale_income_w	1169	5,39	1,98	1	4	5	7	10
Scale_income	2421	4,65	2,14	1	3	5	6	10
Employment_status	2770	3,09	1,9	1	1	4	4	8
Severe_material_deprivation_rate	2870	21,98	4,63	15,33	17,8	22,4	26,7	29,23
Crime_rate	2870	0,01	0	0,01	0,01	0,01	0,01	0,01
Pers_convict_courts_perc_pop	2870	0,19	0,01	0,17	0,17	0,19	0,2	0,2
Elections_left	2870	52,52	12,21	27,98	45,55	59,55	64,9	66,09
IMIGEXPER	2870	49,89	6,13	41,38	42,2	50,63	54,92	58,2
IURCON	2870	2,16	0,62	1,47	1,61	2,14	2,37	3,64
Former_Habsb_Emp_in	2870	0,33	0,47	0	0	0	1	1
No_parent_PCR_member	2870	67,7	7,89	50,27	66,67	67,4	69,74	84,62
One_parent_PCR_member	2870	13,2	3,36	6,29	12,17	13,42	14,29	20,22
Both_parents_PCR_member	2870	19,11	4,71	9,09	18,32	18,75	19,91	29,51
At_least_one_parent_PCR_member	2870	32,3	7,89	15,38	30,26	32,6	33,33	49,73
Communism_worse	2870	0,32	0,06	0,24	0,27	0,28	0,36	0,44
Communism_better	2870	0,49	0,08	0,38	0,42	0,49	0,55	0,61
Communism_good_idea	2870	0,47	0,08	0,25	0,44	0,49	0,52	0,56
Boss_before_1990	2870	16,37	4,84	8,99	15,13	15,15	21,98	25,14
Mother_auto_before_1990	2870	7,06	2,41	4,9	5,86	5,92	7,36	13,11
Father_auto_before_1990	2870	7,23	2,59	4,2	6,23	6,25	7,79	13,66
Both_parents_auto_before_1990	2870	14,29	4,99	9,09	12,09	12,17	15,15	26,78

Source: authors' calculations in Stata

Table 3. Robustness and collinearity checks for the model kernel using different types of regressions for both the original (scale) and binary form of the dependent variable

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Regression type	scobit	logit	ologit	probit	ogprobit	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Predictors	Justif_acce pt_bribe	Justif_acce pt_bribe_bi	Justif_acc ept_bribe	Justif_acce pt_bribe_bi	Justif_acc ept_bribe	Justif_acce pt_bribe_bi	Justif_acce pt_bribe_bi	Justif_acce pt_bribe_bi	Justif_acce pt_bribe_bi	Justif_acce pt_bribe_bi	Justif_acce pt_bribe_bi	Justif_acce pt_bribe_bi	Justif_acc ept_bribe	Justif_acc ept_bribe	Justif_acc ept_bribe	Justif_acc ept_bribe	Justif_acc ept_bribe	Justif_acc ept_bribe	Justif_acc ept_bribe
	n	n	n	n	n	n	n	n	n	n	n	n							
Justif_gov_benefits	0.3067*** (0.0554)	0.2787*** (0.0432)	0.2995*** (0.0281)	0.1326*** (0.0211)	0.1630*** (0.0165)	0.0162*** (0.0029)	0.0207*** (0.0030)	0.0274*** (0.0035)	0.0215*** (0.0033)				0.1788*** (0.0227)	0.2237*** (0.0242)	0.2796*** (0.0258)	0.2305*** (0.0252)			
Justif_avoid_fare_transport	0.2754*** (0.0595)	0.2496*** (0.0495)	0.2727*** (0.0307)	0.1217*** (0.0238)	0.1405*** (0.0176)	0.0183*** (0.0041)	0.0290*** (0.0040)			0.0306*** (0.0044)	0.0248*** (0.0041)		0.1723*** (0.0265)	0.2715*** (0.0273)			0.2914*** (0.0281)	0.2438*** (0.0270)	
Justif_homosexuality	0.2221*** (0.0548)	0.2088*** (0.0501)	0.1559*** (0.0300)	0.0911*** (0.0234)	0.0827*** (0.0171)	0.0108*** (0.0028)		0.0235*** (0.0031)		0.0189*** (0.0030)		0.0159*** (0.0030)	0.0964*** (0.0202)		0.2087*** (0.0220)		0.1680*** (0.0212)		0.1456*** (0.0222)
Justif_suicide	0.2949*** (0.0641)	0.2590*** (0.0490)	0.3232*** (0.0383)	0.1372*** (0.0244)	0.1586*** (0.0214)	0.0320*** (0.0056)			0.0435*** (0.0054)		0.0392*** (0.0053)	0.0442*** (0.0057)	0.2749*** (0.0363)			0.3806*** (0.0362)		0.3468*** (0.0342)	0.4022*** (0.0372)
Constant	-5.7890*** (0.5127)	-6.1387*** (0.4532)		-3.1120*** (0.2071)		-0.0997*** (0.0105)	-0.0555*** (0.0085)	-0.0606*** (0.0086)	-0.0686*** (0.0087)	-0.0552*** (0.0086)	-0.0664*** (0.0089)	-0.0568*** (0.0087)	0.1989*** (0.0593)	0.5606*** (0.0559)	0.5487*** (0.0574)	0.4825*** (0.0571)	0.6341*** (0.0573)	0.5341*** (0.0564)	0.6406*** (0.0567)
N	2645.0000	2645.0000	2642.0000	2645.0000	2642.0000	2645.0000	2779.0000	2685.0000	2739.0000	2706.0000	2769.0000	2682.0000	2642.0000	2766.0000	2680.0000	2732.0000	2700.0000	2754.0000	2675.0000
chi2	111.4109		395.4910	118.5587	302.3471														
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
r2_p		0.3872	0.2119	0.3815	0.2029														
r2						0.2516	0.1737	0.1623	0.2073	0.1656	0.2106	0.1853	0.4101	0.3019	0.2761	0.3364	0.2627	0.3263	0.2809
RMSE						0.1850	0.2021	0.2048	0.1945	0.2019	0.1929	0.1978	1.2365	1.3783	1.4020	1.3223	1.3967	1.3283	1.3723
AIC	652.2565	652.7469	3489.8503	638.7339	3529.2657	-1303.1580	-997.5410	-891.6718	-1192.4589	-977.1454	-1250.8323	-1078.6506	8624.4130	9627.3257	9419.7927	9282.6764	9469.6012	9382.1621	9287.6685
BIC	687.5391	682.1490	3566.2811	688.1360	3605.6965	-1273.7558	-979.7515	-873.9854	-1174.7129	-959.4357	-1233.0535	-1060.9676	8653.8094	9645.1012	9437.4734	9300.4148	9487.3042	9399.9245	9305.3437
OLSmaxAcceptVIF						1.3362	1.2102	1.1937	1.2615	1.1985	1.2668	1.2275	1.6951	1.4325	1.3814	1.5070	1.3564	1.4843	1.3906
OLSmaxComputVIF						1.3344	1.1545	1.0350	1.0856	1.1064	1.1574	1.1809	1.3343	1.1414	1.0338	1.0878	1.1030	1.1607	1.1777

Notes: *, **, and *** indicate significance at 0.05, 0.01, and 0.001. Raw coefficients from regressions are above parentheses. The errors are between parentheses.
Source: authors' calculations in Stata

Table 4. Cross-validations using mixed-effects ordered (first nine) and binary (last nine) logistic models, considering the quad-core of the model as fixed effects and the regional and socio-demographic variables as random effects

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Predictors	Justif_accept bribe	Justif_accept bribe	Justif_accept bribe	Justif_accept bribe	Justif_accept bribe	Justif_accept bribe	Justif_accept bribe	Justif_accept bribe	Justif_accept bribe	Justif_accept bribe bin	Justif_accept bribe bin	Justif_accept bribe bin	Justif_accept bribe bin	Justif_accept bribe bin	Justif_accept bribe bin	Justif_accept bribe bin	Justif_accept bribe bin	Justif_accept bribe bin
Justif_gov_benefits	0.2959*** (0.0382)	0.3001*** (0.0184)	0.3040*** (0.0269)	0.2995*** (0.0366)	0.2995*** (0.0160)	0.2988*** (0.0149)	0.2926*** (0.0499)	0.2965*** (0.0399)	0.2954*** (0.0397)	0.2770*** (0.0527)	0.2787*** (0.0088)	0.2879*** (0.0455)	0.2785*** (0.0241)	0.2776*** (0.0303)	0.2855*** (0.0233)	0.2769*** (0.0450)	0.2735*** (0.0647)	0.2754*** (0.0590)
Justif_avoid_fare_transport	0.2812*** (0.0500)	0.2723*** (0.0252)	0.2755*** (0.0326)	0.2727*** (0.0065)	0.2727*** (0.0145)	0.2769*** (0.0232)	0.2712*** (0.0224)	0.2881*** (0.0388)	0.2595*** (0.0210)	0.2496*** (0.0475)	0.2496*** (0.0095)	0.2435*** (0.0526)	0.2474*** (0.0031)	0.2493*** (0.0428)	0.2636*** (0.0285)	0.2445*** (0.0316)	0.2589*** (0.0619)	0.2221*** (0.0444)
Justif_homosexuality	0.1597*** (0.0426)	0.1608** (0.0579)	0.1559*** (0.0266)	0.1559*** (0.0298)	0.1559*** (0.0030)	0.1635*** (0.0142)	0.1615*** (0.0264)	0.1252*** (0.0348)	0.1579*** (0.0218)	0.2085*** (0.0638)	0.2088*** (0.0550)	0.2238*** (0.0538)	0.2127*** (0.0016)	0.2084*** (0.0311)	0.2262*** (0.0351)	0.2094*** (0.0360)	0.1673*** (0.0480)	0.2071*** (0.0495)
Justif_suicide	0.3108*** (0.0372)	0.3054*** (0.0549)	0.3304*** (0.0389)	0.3232*** (0.0543)	0.3232*** (0.0486)	0.3220*** (0.0125)	0.3012*** (0.0461)	0.3224*** (0.0574)	0.3346*** (0.0181)	0.2604*** (0.0380)	0.2590*** (0.0540)	0.2643*** (0.0559)	0.2620*** (0.0173)	0.2565*** (0.0489)	0.2525*** (0.0235)	0.2404*** (0.0478)	0.2726*** (0.0743)	0.2587*** (0.0581)
Constant										-6.1477*** (0.5152)	-6.1387*** (0.4462)	-6.4294*** (0.4744)	-6.1545*** (0.2621)	-6.1203*** (0.6053)	-6.3857*** (0.2385)	-6.1061*** (0.3464)	-5.9370*** (0.4974)	-5.8686*** (0.5531)
var(_cons[Reg_nuts2])	0.1453 (0.0885)									0.0152 (0.0345)								
var(_cons[Former_Habisb_Emp_in])		0.0931*** (0.0161)									0.0000 (0.0000)							
var(_cons[Age])			0.1079 (0.0583)									0.4749** (0.1834)						
var(_cons[Gender])				0.0000 (0.0000)									0.0184*** (0.0030)					
var(_cons[Marital_status_bin])					0.0000 (0.0000)									0.0191** (0.0065)				
var(_cons[Nr_children])						0.0095 (0.0244)									0.1718 (0.1386)			
var(_cons[Edu_level])							0.0181 (0.0519)									0.0000 (0.0000)		
var(_cons[Scale_income])								0.0378 (0.0373)									0.0000 (0.0000)	
var(_cons[Employment_status])									0.0941 (0.1832)									0.1754 (0.1505)
N	2642.0000	2642.0000	2576.0000	2642.0000	2642.0000	2575.0000	2568.0000	2250.0000	2558.0000	2645.0000	2645.0000	2579.0000	2645.0000	2645.0000	2578.0000	2571.0000	2252.0000	2561.0000
chi2	270.3160	.	464.3874	.	.	4676.9713	2061.4036	430.0997	1976.1977	183.0045	.	103.1452	.	.	2455.5868	1811.1537	970.6702	308.4995
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AIC	3452.1200	3443.7628	3378.8515	3465.8503	3467.8503	3312.1740	3334.9618	3008.7189	3323.6308	654.6282	644.7469	632.6620	646.3716	646.3328	580.1618	618.4155	583.1563	609.2473
BIC	3493.2750	3449.6421	3460.8074	3471.7296	3479.5089	3341.4421	3381.7689	3060.1871	3364.5597	689.9107	650.6273	667.7929	658.1325	658.0937	609.4356	647.6758	611.7541	644.3362

Notes: *, **, *** indicate significance at 0.05, 0.01, and 0.001. Raw coefficients from regressions are above parentheses. The errors are between round parentheses.
Source: authors' calculations in Stata

Table 5. Ordered logistic regressions (first ten) and OLS regressions (last ten), considering the quad-core of the model and additional controls of regional (code 5, as reference) and socio-demographic variables

Predictors/model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Justif_gov_benefits	0.2995*** (0.0281)	0.2951*** (0.0288)	0.3001*** (0.0284)	0.2998*** (0.0288)	0.2964*** (0.0282)	0.2995*** (0.0282)	0.2994*** (0.0278)	0.2969*** (0.0287)	0.2922*** (0.0302)	0.2954*** (0.0283)	0.1788*** (0.0227)	0.1752*** (0.0227)	0.1777*** (0.0226)	0.1760*** (0.0231)	0.1783*** (0.0227)	0.1784*** (0.0227)	0.1783*** (0.0227)	0.1693*** (0.0229)	0.1740*** (0.0253)	0.1735*** (0.0223)
Justif_avoid_fare_transport	0.2727*** (0.0307)	0.2817*** (0.0331)	0.2723*** (0.0319)	0.2758*** (0.0319)	0.2715*** (0.0308)	0.2727*** (0.0309)	0.2794*** (0.0308)	0.2741*** (0.0305)	0.2882*** (0.0349)	0.2605*** (0.0309)	0.1723*** (0.0255)	0.1711*** (0.0271)	0.1710*** (0.0267)	0.1737*** (0.0275)	0.1715*** (0.0265)	0.1720*** (0.0266)	0.1751*** (0.0269)	0.1699*** (0.0268)	0.1899*** (0.0317)	0.1598*** (0.0262)
Justif_homosexuality	0.1559*** (0.0300)	0.1609*** (0.0322)	0.1612*** (0.0315)	0.1583*** (0.0309)	0.1589*** (0.0306)	0.1559*** (0.0302)	0.1674*** (0.0302)	0.1707*** (0.0301)	0.1230*** (0.0346)	0.1555*** (0.0302)	0.0964*** (0.0202)	0.0989*** (0.0205)	0.0986*** (0.0203)	0.0963*** (0.0207)	0.0981*** (0.0202)	0.0961*** (0.0202)	0.1004*** (0.0206)	0.1042*** (0.0207)	0.0780*** (0.0224)	0.0959*** (0.0202)
Justif_suicide	0.3232*** (0.0383)	0.3078*** (0.0396)	0.3041*** (0.0388)	0.3229*** (0.0390)	0.3245*** (0.0382)	0.3233*** (0.0383)	0.3243*** (0.0392)	0.2960*** (0.0380)	0.3231*** (0.0391)	0.3381*** (0.0373)	0.2749*** (0.0363)	0.2690*** (0.0362)	0.2687*** (0.0361)	0.2737*** (0.0366)	0.2755*** (0.0363)	0.2743*** (0.0363)	0.2678*** (0.0370)	0.2589*** (0.0366)	0.2677*** (0.0382)	0.2828*** (0.0363)
North_West		0.5760** (0.2204)										0.2034* (0.0941)								
Central		0.8728*** (0.2315)										0.2718** (0.0954)								
North_East		0.3696 (0.2342)										0.1138 (0.1087)								
South_East		0.5265 (0.2704)										0.1359 (0.1051)								
South (Muntenia)		0.0000 (.)										0.0000 (.)								
Bucharest_Ilfov		-0.0925 (0.3157)										-0.0208 (0.0646)								
South_West (Oltenia)		0.2418 (0.5272)										0.0997 (0.0881)								
West		1.2645*** (0.2255)										0.2901** (0.0990)								
Former_Habsb_Emp_id			0.6321*** (0.1381)										0.1805** (0.0620)							
Age				0.0057 (0.0035)										0.0008 (0.0015)						
Gender					-0.1372 (0.1331)										-0.0707 (0.0595)					
Marital_status_bin						0.0020 (0.1392)										-0.0407 (0.0667)				
Nr_children							0.0651 (0.0573)										0.0229 (0.0245)			
Edu_level								-0.1295** (0.0445)										-0.0610** (0.0183)		
Scale_income									0.0050 (0.0331)										-0.0082 (0.0149)	
Employment_status										0.0742* (0.0369)										0.0371 (0.0189)
Constant											0.1989*** (0.0593)	0.0836 (0.0705)	0.1480* (0.0631)	0.1627 (0.1057)	0.3041** (0.1148)	0.2271** (0.0837)	0.1513* (0.0692)	0.4100*** (0.0840)	0.2717** (0.0904)	0.1042 (0.0750)
N	2642.0000	2642.0000	2642.0000	2576.0000	2642.0000	2642.0000	2575.0000	2568.0000	2250.0000	2558.0000	2642.0000	2642.0000	2642.0000	2576.0000	2642.0000	2642.0000	2575.0000	2568.0000	2250.0000	2558.0000
chi2	395.4910	411.1960	384.8722	378.3531	405.8945	403.6523	463.1558	382.1180	330.4363	403.9788										
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
r2_p	0.2119	0.2229	0.2186	0.2124	0.2122	0.2119	0.2153	0.2049	0.2007	0.2074										
r2											0.4101	0.4140	0.4128	0.4100	0.4106	0.4102	0.4134	0.3880	0.3861	0.3988
RMSE											1.2965	1.2340	1.2338	1.2396	1.2362	1.2366	1.2290	1.2199	1.2599	1.2210
AIC	9489.8503	9455.3416	9462.2986	9385.5918	9490.4116	9491.8500	9328.4053	9336.3409	9022.3933	9336.0723	8624.4130	8620.6625	8613.9765	8598.1193	8624.2777	8625.7433	8311.6730	8352.8930	7409.3669	8286.9342
BIC	9556.2811	9572.9274	9544.6087	9467.5477	9572.7216	9574.1601	9410.5537	9418.2532	9102.4548	9417.9300	8653.8094	8691.2140	8649.2522	8635.2432	8659.5535	8661.0190	8346.7946	8387.9983	7443.6790	8322.0161
OLSmaxAcceptVIF											1.6951	1.7066	1.7031	1.6948	1.6965	1.6956	1.7046	1.6341	1.6290	1.6634
OLSmaxComputVIF											1.3343	1.1904	1.3491	1.3566	1.3349	1.3369	1.3315	1.3106	1.3206	1.3204

Notes: *, **, *** indicate significance at 0.05, 0.01, and 0.001. Raw coefficients from regressions are above parentheses. The errors are between round parentheses.
Source: authors' calculations in Stata

Table 6. Ordered logistic-based models, considering the core of the model and various variables

Predictors / model	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Justif_gov_benefits	0.2995*** (0.0281)	0.3000*** (0.0283)	0.2996*** (0.0280)	0.2940*** (0.0281)	0.2974*** (0.0284)	0.2929*** (0.0285)	0.3000*** (0.0282)	0.3001*** (0.0284)	0.3020*** (0.0282)	0.3001*** (0.0284)	0.3022*** (0.0281)	0.3025*** (0.0282)	0.3009*** (0.0282)	0.3025*** (0.0285)	0.3066*** (0.0284)	0.3047*** (0.0282)	0.2997*** (0.0281)	0.2999*** (0.0281)	0.2998*** (0.0281)
Justif_avoid_fare_transport	0.2727*** (0.0307)	0.2755*** (0.0313)	0.2911*** (0.0923)	0.2713*** (0.0311)	0.2723*** (0.0314)	0.2675*** (0.0306)	0.2729*** (0.0312)	0.2723*** (0.0319)	0.2774*** (0.0308)	0.2769*** (0.0309)	0.2770*** (0.0308)	0.2774*** (0.0308)	0.2805*** (0.0316)	0.2715*** (0.0313)	0.2707*** (0.0311)	0.2747*** (0.0309)	0.2701*** (0.0308)	0.2711*** (0.0307)	0.2705*** (0.0307)
Justif_homosexuality	0.1559*** (0.0300)	0.1552*** (0.0305)	0.1585*** (0.0306)	0.1580*** (0.0305)	0.1582*** (0.0306)	0.1577*** (0.0303)	0.1595*** (0.0310)	0.1612*** (0.0315)	0.1596*** (0.0310)	0.1608*** (0.0312)	0.1588*** (0.0306)	0.1596*** (0.0310)	0.1558*** (0.0310)	0.1581*** (0.0307)	0.1590*** (0.0305)	0.1569*** (0.0302)	0.1585*** (0.0303)	0.1590*** (0.0304)	0.1588*** (0.0303)
Justif_suicide	0.3232*** (0.0383)	0.3155*** (0.0384)	0.3241*** (0.0391)	0.3243*** (0.0387)	0.3133*** (0.0384)	0.3206*** (0.0382)	0.3168*** (0.0388)	0.3041*** (0.0388)	0.3124*** (0.0386)	0.3084*** (0.0386)	0.3157*** (0.0386)	0.3124*** (0.0386)	0.3092*** (0.0384)	0.3090*** (0.0383)	0.3151*** (0.0385)	0.3273*** (0.0384)	0.3220*** (0.0385)	0.3215*** (0.0385)	0.3217*** (0.0385)
Severe_material_deprivation_rate		-0.0424** (0.0151)																	
Crime_rate			185.1345*** (42.8616)																
Pers_convict_courts_perc_pop				17.1972** (5.4792)															
Elections_left					-0.0159** (0.0051)														
IMIGEXPER						0.0292*** (0.0107)													
IURCON							-0.4866*** (0.1296)												
Former_Habob_Emp_in								0.6321*** (0.1381)											
No_parent_PCR_member									0.0429*** (0.0087)										
One_parent_PCR_member										-0.1089*** (0.0206)									
Both_parents_PCR_member											-0.0859*** (0.0146)								
At_least_one_parent_PCR_member												-0.0429*** (0.0087)							
Communism_worse													5.0704*** (1.0948)						
Communism_better														-2.6203*** (0.9700)					
Communism_good_idea															-1.7284* (0.7396)				
Boss_before_1990																-0.0345* (0.0135)			
Mother_auto_before_1990																	-0.0651* (0.0312)		
Father_auto_before_1990																		-0.0788** (0.0301)	
Both_parents_auto_before_1990																			-0.0365* (0.0154)
N	2642	2642	2642	2642	2642	2642	2642	2642	2642	2642	2642	2642	2642	2642	2642	2642	2642	2642	2642
chi2	395.491	390.923	379.9194	419.0804	388.5229	428.4525	396.4787	384.8722	389.7888	387.3363	390.9608	389.7888	382.7391	389.6872	390.11	405.3346	406.6712	402.7005	404.6804
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
r2_p	0.2119	0.2147	0.2177	0.2144	0.2148	0.2139	0.2165	0.2186	0.2189	0.2203	0.2175	0.2189	0.2166	0.2148	0.2136	0.2135	0.2132	0.2141	0.2137
AIC	3480.85	3479.78	3466.5817	3480.712	3479.191	3482.967	3471.532	3462.484	3460.9	3455.081	3467.307	3460.9	3462.484	3479.341	3484.29	3484.837	3486.075	3482.147	3484.125
BIC	3566.281	3562.09	3548.8918	3563.022	3561.501	3565.277	3553.842	3544.506	3543.21	3537.391	3549.617	3543.21	3544.794	3561.651	3566.6	3567.147	3568.385	3564.457	3566.435

Notes: *, **, *** indicate significance at 0.05, 0.01, and 0.001. Raw coefficients from regressions are above parentheses. The errors are between round parentheses. Source: authors' calculations in Stata

Figure 1. Stata script used for treating the missing, not asked, and don't know/don't answer (DK/NA) values in the second step of both rlasso and cvlasso

```
use "F:\EVS_WVS_Joint_v2_0.dta"
gen F118nt=.
replace F118nt=F118 if F118!=. & F118>0 & if cntrycow==360
gen F119nt=.
replace F119nt=F119 if F119!=. & F119>0 & if cntrycow==360
gen F123nt=.
replace F123nt=F123 if F123!=. & F123>0 & if cntrycow==360
gen E290nt=.
replace E290nt=E290 if E290!=. & E290>0 & if cntrycow==360
gen F114Ant=.
replace F114Ant=F114A if F114A!=. & F114A>0 & if cntrycow==360
gen F115nt=.
replace F115nt=F115 if F115!=. & F115>0 & if cntrycow==360
gen F116nt=.
replace F116nt=F116 if F116!=. & F116>0 & if cntrycow==360
gen F117nt=.
replace F117nt=F117 if F117!=. & F117>0 & if cntrycow==360
```

Source: authors' calculations in Stata

Figure 2. Stata script used to select variables in the 3rd stage of both rlasso and cvlasso

```
rlasso F117nt E290nt F114Ant F115nt F116nt F118nt F123nt  if cntrycow==360
cvlasso F117nt E290nt F114Ant F115nt F116nt F118nt F123nt  if cntrycow==360
cvlasso, lse
```

Source: authors' calculations in Stata

Figure 3. Stata script meant to generate the binary format of the response variable

```
gen F117nt_bin=.
replace F117nt_bin=1 if F117nt!=. & F117nt>=6 & if cntrycow==360
replace F117nt_bin=0 if F117nt!=. & F117nt<6 & if cntrycow==360
```

Source: authors' calculations in Stata

Figure 4. Stata script for generating custom region-dependent criteria for cross-validation

```
gen Former_Habsb_Emp_in=.
replace Former_Habsb_Emp_in=1 if (reg_nuts2=="RO11" | reg_nuts2=="RO12") &
cntrycow==360
replace Former_Habsb_Emp_in=0 if (reg_nuts2=="RO21" | reg_nuts2=="RO22" |
reg_nuts2=="RO31" | reg_nuts2=="RO32" | reg_nuts2=="RO41") & cntrycow==360
```

Source: authors' calculations in Stata

Figure 5. Simple Stata script for recording the Romanian regions using a single-digit number

```
generate reg_nuts2num= .
replace reg_nuts2num = 2*floor(real(substr(reg_nuts2,3,2))/10)+mod(real(substr(reg_nuts2,3,2)),10)-2
```

Source: authors' calculations in Stata