# RELATIONSHIP BETWEEN PROPERTY RIGHTS ENFORCEMENT AND CORRUPTION – PANEL ANALYSIS OF EU COUNTRIES

#### **Davor Mance**

University of Rijeka, Faculty of Economics, Croatia davor.mance@efri.hr

#### **Mario Pecaric**

University of Split, Faculty of Economics, Croatia mpecaric@efst.hr

#### ABSTRACT

We investigate the relationship between property rights enforcement and corruption in EU countries. Property rights are the basic economic institution enabling commerce as a form of exchange of titles. Property rights enable the building of rational expectations about the results of future actions. Therefore, by reducing insecurity, property rights provide incentives for investment, wealth formation, specialization, production, and trade. Corruption is an institutional dysfunction caused by the relationship between private and governmental sector consisting of an act of abuse of power by governmental employees for the purpose of private gain. Corruption was, until recently, mainly analysed as an independent variable. We permit for endogeneity of both variables when regressing the composite index of perception of freedom from corruption against the composite index of property rights enforcement. The choice of variables and the model follows from the theoretical background of the Economic analysis of law and property rights literature. The study is conducted as a panel data analysis of the EU28+2 countries over 21 years. The analysis suggests that corruption is a consequence of the embodiment and enforcement of a formal institution of "property rights".

Keywords: corruption, institutions, property rights, public policy.

#### **1. INTRODUCTION**

Institutions are the basic fabric of society. Institutions shape human behaviour. The function of institutions is to provide incentives that shape trustworthy human behaviour creating mutual expectations about the results of human interactions (North, 1990). Formal institutions are embodied in governmental organisations and bureaucratic institutional mechanism designs declaring status functions (Searle, 2005). By corruption, we usually mean corruption of institutions up to the point of their dysfunction by some form of dishonest, fraudulent or outright illegal behaviour of government officials, involving abuse of public office for personal gain. There is no universally accepted definition of corruption.

For the purposes of this analysis, we propose a working definition of corruption as being a social fact denoting an institutional dysfunction occurring in a social environment of interaction of the public sector with the private one in the allocation of assets under government control. It is proximately caused by desire dependent behaviour of governmental officials in the allocation of property rights and ultimately by misaligned property rights allocation mechanism designs.

We claim the role of property rights is crucial in explaining corruption. Scarcity is the main problem of economics, and property rights are the necessary institution to mitigate the problem (Demsetz, 2008). Economic progress is based on specialization and trade.

Specialization without recoverability of irreversible costs is impossible (Mance et al., 2015). Irreversible investments necessary for specialisation are protected by property rights. All commercial activities involve transfers of property rights. If transfer of property rights is subject to clear, unambiguous, and publicly accepted rules, property rights constitute a functional institutional mechanism design (Hurwitz, 2006). Corruption adversely affects these commercial activities as it poses a threat to clear, unambiguous, and impartial rules, impairing mutual trust and expectations about the results of human interactions.

We start with a short theoretical insight and literature review of factors deemed to cause, i.e. to be correlated with corruption where corruption is a dependent variable. We continue with the explanation of the dataset, appropriate methodology, empirical results with the discussion, and at the end a short conclusion with some policy recommendations.

### 2. THEORETICAL INSIGHT AND LITERATURE REVIEW

Although property rights and corruption are complex and multidisciplinary phenomena, their interaction may be conceptualised as a framework of New Institutional Economics: a combination of the Theory of property rights and Economic Analysis of Law. According to the methodological individualism, property rights are an essential institution of the market economy. The discussion about the role of property rights was best dealt by Ronald Coase in his famous article on the Federal Communications Committee (Coase, 1959). Coase argues that:

"A private-enterprise system cannot function properly unless property rights are created in resources, and, when this is done, someone wishing to use a resource has to pay the owner to obtain it. Chaos disappears; and so does the government except that a legal system to define property rights and to arbitrate disputes is, of course, necessary." (Coase, 1959, p.14).

The bundle of property rights is a circumstance relative institution giving its holder an exclusive power (right, duty, obligation, authorization, permission, etc.) over access, withdrawal, management, exclusion, and alienation (Ostrom and Schlager, 1996, p.136) of assets in the sense it excludes others from acting in a same or similar way where the problem of rivalry exists (Samuelson, 1954). Property rights are contextual rules of exclusion. Rational agents exchange their bundles of property rights further enhancing their efficiency and welfare and trying to decrease transaction costs. The transaction cost is the cost of defining property rights, their demarcation, and enforcement regardless of its form (private, club, common, or public). The transaction cost is inversely proportional to the degree of how well the property rights are defined and protected: the less well defined and enforced the property rights, the higher their transaction cost, the less efficient the market mechanism, and lower the welfare. Unlike the ideal Coasean zero-transaction-costs world, the real-world transaction costs are always positive. According to the Economic Analysis of Law (Posner, 1992), property rights evolved through the evolutionary common law mechanism design as a means of imposing socially acceptable behaviour on self-interested and rational individuals increasing trust, decreasing transaction costs, and increasing economic efficiency.

The major stumbling block in the development of countries is their inability to produce capital due to the institutionally defective form of *evidence of ownership* preventing assets and liabilities to form in a clear and transparent way and to subsequently be traded in global circles (de Soto, 2000, p.16-17). So, how does the institution of property rights influence the institutional fact of corruption?

Corruption as a social fact is an informal institution internalised by the behaviour of economic agents inducing a "social cost" in form of a "moral hazard": a behaviour incommensurate with formal institutions. At the same time it is a rational behaviour by self-interested individuals trying to lower their transaction costs. In evaluating a property right as a formal legal rule, one needs to compare it with its informal opportunity cost: corruption. As in a "black market" the *ex ante* opportunity cost of a corruptive activity might be lower for the corrupting individual (Williamson, 1979), but the overall social cost is nevertheless higher.

The most problematic issue with corruption is its definition, and currently there is no universally accepted theory of corruption (Farrales, 2005). The frequently used definition of corruption is: *"the abuse of public power for private benefit"* (Aguilera and Vadera, 2008). This definition is too broad as it may well include any kind of theft and embezzlement by public officials. For all practical purposes, corruption is always associated with the interaction of the governmental and the private sector (Rose-Ackermann, 1997, p.31).

Corruption means corruption of institutions, where institutions are regulations, rules, and procedures, by any institutional status function declaration that would put an individual or entrepreneur that is corrupting in a preferential position creating thus an exclusive economic rent.

The causes of corruption were analysed extensively by Treisman (2000). An increase in income per capita and an increase in the quality of the legal system strongly decrease corruption whereas an increase in inflation and complexity of the regulatory system have a negative relationship to corruption. The analyses were either cross-country regressions or time-series analyses with the resulting lack of control over the variables, or lack of dynamic effects, something we tried to overcome in this paper. Treisman (2000) finds the following six factors significant in the causation of corruption: protestant tradition, history of British rule, more developed economy, openness to trade, and long exposure to democracy. Current degree of democracy was not significant. Federations were more corrupt. These factors describe some 80% of corruption (Treisman, 2000).

To the authors' knowledge, no direct causal conjecture of a relationship between property rights enforcement and corruption has been postulated.

# 3. EMPIRICAL ANALYSIS

# 3.1 Data

The empirical analysis is based on a balanced panel of property rights indices and freedom from corruption indices of 28 European Union (EU) member states plus Switzerland and Norway over a time span of 21 years ranging from 1995 to 2016. The data was acquired from the Heritage foundation and Transparency international internet sites. The analysis was performed with the E-Views 9.0 statistics software.

The property rights index consists of an assessment of the ability of the state to enforce laws protecting private property rights, the likelihood of expropriation, the independence of the judiciary concerning the enforceability of property rights, and the ability of individuals and businesses to enforce contracts (Heritage foundation, 2016). It measures the degree to which a country's laws protect private property rights and the degree to which its government enforces those laws. The index is granted 100 points if private property is absolutely guaranteed by the government, if the court system enforces contracts efficiently and quickly, and the justice system punishes those who unlawfully confiscate private property. (Heritage foundation, 2016)

The Freedom from Corruption index is derived from the Transparency International's Corruption Perceptions Index (CPI) and inverted. The maximum point score (100) is given to the least corrupt country, and the score of zero is given to the country deemed absolutely corrupt.

### **3.2 Methodology**

The quantitative analysis starts with the Panel Ordinary Least Squares (OLS) analysis complemented by the Panel Granger (non-)causality test. Since Panel Granger causality tests must be performed on stationary data in level and trend, and to decrease the possibility of spurious regressions, a stationarity test of the nominal panel data series was performed with a series of Unit root tests. Current behaviour depends upon past behaviour, in lieu of cultural habit formation, slow adjustment speed, etc. The ability to estimate a dynamic model for individual effects is unique for panel data.

Because causality may run in both directions, from property rights to corruption and vice versa, these regressors may be correlated with the residuals. Time-invariant country characteristics, called fixed effects, may also be correlated with the explanatory variables. The presence of the lagged dependent variable gives rise to autocorrelation. By differencing, the fixed effect and the autocorrelation is removed, as well as any time invariant component. In this way the Dynamic General Method of Moments (GMM) First Differences (FD) controls for unobserved heterogeneity when this heterogeneity is constant over time. Finally and most importantly, FD removes the unit-root process from the data, and also control for the phenomena of momentum and inertia. Since lags of the dependent variable are necessarily correlated with the idiosyncratic error we test the residuals using the Arellano-Bond GMM estimator (Arellano and Bond, 1991).

# 3.3 Results

We start our analysis with Panel OLS. The results are shown in Table 1.

Method: Panel Least Squares	Total panel (balanced) observations: 630			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
PROPERTY_RIGHTS	0.890963	0.006200	143.7123	0.0000
R-squared Adjusted R-squared S.E. of regression Sum squared resid Log likelihood	0.683284 0.683284 11.51455 83395.82 -2432.906	Mean dep S.D. deper Akaike inf Schwarz c Hannan-Q	endent var ndent var fo criterion riterion quinn criter.	63.72540 20.46031 7.726685 7.733742 7.729426

Table 1: Panel Least Squares of factors influencing freedom from corruptionDependent Variable: FREEDOM\_FROM\_CORRUPTION

After the nul hypotheses of unit root processes could not have been rejected, nominal data was differentiated. The tests on differentiated data let us reject the nul hypothesis of a Unit-Root process (p<0.001) (Table 2).

Method	Statistic	Prob.	Cross-sections	Obs			
Null: Unit root (assumes common unit root process)							
Levin, Lin & Chu t	-11.6847	0.0000	19	346			
Null: Unit root (assumes individual unit root process)							
Im, Pesaran and Shin W-stat	-9.76257	0.0000	19	346			
ADF - Fisher Chi-square	163.367	0.0000	19	346			
PP - Fisher Chi-square	177.882	0.0000	19	361			

Table 2: Panel unit root test of the differentiated index of property rights

Same conclusion was reached for Freedom from corruption index (Table 3).

Table 3: Panel unit root test of the differentiated index of freedom from corruption

Method	Statistic	Prob.	Cross-sections	Obs			
Null: Unit root (assumes common unit root process)							
Levin, Lin & Chu t	-14.9661	0.0000	30	542			
Null: Unit root (assumes individual unit root process)							
Im, Pesaran and Shin W-stat	-17.3653	0.0000	30	542			
ADF - Fisher Chi-square	332.486	0.0000	30	542			
PP - Fisher Chi-square	400.429	0.0000	30	570			

Panel Granger causality tests have been performed on differentiated data with time lags of 2, 3, and 4 years. The results may be found in Table 4.

Table 4: Panel Granger causality tests

Null Hypothesis:	Lag	Obs	F-Stat	Prob.
D(PROPERTY_RIGHTS) does not Granger Cause D(FREEDOM_FROM_CORRUPTION)	2	540	3.6782	0.0259
D(PROPERTY_RIGHTS) does not Granger Cause D(FREEDOM_FROM_CORRUPTION)	3	510	6.7271	0.0002
D(PROPERTY_RIGHTS) does not Granger Cause D(FREEDOM_FROM_CORRUPTION)	4	480	6.4145	5.10-5
D(FREEDOM_FROM_CORRUPTION) does not Granger Cause D(PROPERTY_RIGHTS)	4	480	0.1517	0.9622

The results show the null hypothesis of non-causation between differenced panel data of Property rights over the Freedom from corruption index may be rejected for all measurements. The inverse null hypothesis cannot be rejected. We proceed with GMM testing.

 Table 5: Panel GMM FD test of Property Rights and Freedom from Corruption

 Dependent Variable: FREEDOM\_FROM\_CORRUPTION

Method: Panel Generalized Method of Moments

Transformation: First Differences

Total panel (balanced) observations: 570

Instrument specification: @DYN(FREEDOM\_FROM\_CORRUPTION,-2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FREEDOM_FROM_CORRUPTION(-1)	0.668314	0.017835	37.47281	0.0000
PROPERTY_RIGHTS	0.164270	0.020615	7.968668	0.0000
Cross-section fixed (first differences)				
Mean dependent var	0.263158	S.D. dependent	t var	3.882240
S.E. of regression	5.463995	Sum squared re	esid	16957.78
J-statistic	29.85829	Prob(J-statistic	)	0.370024

The results show a strong and statistically significant effect of the lags of the dependent variable but also of the property rights variable. The J-statistic states that the instruments are uncorrelated with the error term and the Prob(J-statistic) significantly different from

zero (0.37) shows that it is far from the rejection of its null, giving us the confidence that our instrument set is appropriate. To further test for model consistency, we test the residuals for biasness, i.e. their serial correlation with the variables.

Tuble 6. Michano Dona Schul Correlation Test						
Test order	m-Statistic	rho	SE(rho)	Prob.		
AR(1)	-3.342831	-5450.277521	1630.437484	0.0008		
AR(2)	-0.064465	-62.509098	969.652344	0.9486		

Table 6: Arellano-Bond Serial Correlation Test

The test shows the first order AR(1) statistic is statistically significant, whereas the second order AR(2) statistic is not. These results point to the residuals being serially uncorrelated in levels. The model above was chosen as the most appropriate one according to its lower standard error values and the results of the post-hoc Arellano-Bond residuals test (Arellano and Bond, 1991). This is probably due to the ability of Panel GMM FD models to use the time variation of explanatory variables.

### **3.4 Discussion**

There is a statistically significant correlation between property rights panel indices and the freedom from corruption panel indices. The function of the Panel OLS was an introductory one showing the potential for further testing. The appropriate test was the one using both the time-series and the cross-section information in the best possible way. We have given priority to Panel GMM FD test because of its use of time variation in the explanatory variables as a way of integrating Granger Causality into the overall results. In fact, the previously conducted Granger Causality tests on differenced data (to eliminate non-stationarity) could not have rejected the unidirectional relationship going from "property rights" to "freedom from corruption". Although an endogenous relationship between corruption is primarily a reflection of the weak definition and enforcement of property rights. Therefore, a policy clearly defining, demarcating and thus better enforcing property rights by reducing transaction costs makes corrupt activities economically unviable.

Overall, we couldn't statistically reject our main theoretical conjecture of the importance of well defined and enforced "property rights" in explaining the "freedom from corruption" index.

Institutions are supposed to create *desire independent behaviour* by all participants in a transaction. This should especially count for public officials. They need to act professionally for the purpose of assuring institutionally acceptable behaviour by others. If the institutional and organisational *mechanism design* is misaligned with its *collective intentionality* objectives, and produces *behavioural incentives* contrary to its objective, the institutional mechanism design is corrupted and the institutional.

A full theoretical conjecture is shown in Figure/Chart 1 below.

16<sup>th</sup> International Scientific Conference on Economic and Social Development – The Legal Challenges of Modern World – Split, 1-2 September 2016



*Figure/Chart 3: From Collective Intentionality to Institutional Corruption. Source: Own representation.* 

The social fact of corruption is created by the interaction of the governmental and private sectors in their attempt to allocate scarce goods by an allocation rule that has been accepted by the society. Nevertheless, the governmental mechanism design is seriously flawed when it is not transparent, when it allows governmental officials to act discretionarily providing preferential treatment in exchange for benefits other than their legal remuneration.

### 4. CONCLUSION

The results of the analysis suggest that corruption is not only a matter of cultural heritage in general in the sense of culture being a set of informal institutions adopted by a population of a country, but a consequence of the embodiment of a formal institution of "property rights" in particular. Although we modelled by including for a strong possibility of endogeneity, it seems the "causal" relationship unequivocally goes from well defined and enforced "property rights" to "freedom from corruption". Some policy guidelines may be derived from these results. Clearly and unambiguously defined, and enforced property rights are the single most important factor positively influencing "freedom from corruption". Secondly, to control for corruption also means to restrict public authorities from discretionary allocation of goods and resources under government control, thus preventing the creation of discretionary preferential "rents".

# LITERATURE:

- 1. Aguilera, R. V., & Vadera, A. K. (2008). The dark side of authority: Antecedents, mechanisms, and outcomes of organizational corruption. Journal of Business Ethics, 77(4), pp. 431–449. DOI: 10.1007/s10551-007-9358-8
- 2. Arellano, Manuel and Bond, Stephen (1991) Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. The Review of Economic Studies, Vol. 58, No. 2, pp. 277-297.
- 3. Coase, R. H. (1959) The Federal Communication Committe. Journal of Law and Economics. Vol. 2 (Nov.), pp. 1-59. The University of Chicago Press.
- 4. Demsetz, H. (2008) From Economic Man to Economic System: Essays on Human Behavior and the Institutions of Capitalism. Cambridge University Press, Cambridge, UK.
- 5. De Soto, H. (2000) The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else. Basic Books, New York.
- 6. Farrales, M. J. (2005). What is corruption? A history of corruption studies and the great definitions debate. San Diego: University of California. Social sciences Research Network.
- Mance, D., Vretenar, N., Katunar, J. (2015). Opportunity Cost Classification of Goods and Markets. International Public Administration Review, 13(1), pp. 119–134. DOI: 10.17573/ipar.2015.1.06
- 8. North, D. C. (1990) Institutions, Institutional Change, and Economic Performance. Cambridge University Press, Cambridge.

- 9. Ostrom, Elinor and Edella Schlager (1996) The Formation of Property Rights, in Susan Hanna, Carl Folke, and Karl-Göran Mäler (eds) Rights to Nature, pp. 127-56. Washington, D.C.: IslandPress.
- 10. Posner, R. A. (1992) Economic Analysis of Law. 4th ed. Little, Brown and Company.
- 11. Rose-Ackerman, S. (1997) The political economy of corruption. In K. A. Elliott (Ed.), Corruption and the global economy (pp. 31–60). Washington, DC: Institute for International Economics.
- 12. Samuelson, P. A. (1954) The Pure Theory of Public Expenditure, Review of Economics and Statistics 36(Nov.): 387-9.
- 13. Searle, John R. (2005) What is an institution? Journal of Institutional Economics, 1: 1, pp. 1–22.
- 14. Treisman, D. (2000) The causes of corruption: A cross-national study. Journal of Public Economics, 76(3), 399–457.
- 15. Williamson, O. E., (1979) Transaction-Cost Economics: The Governance of Contractual Relations. Journal of Law and Economics, 22(2), pp. 233-261.