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Public Spending Decomposition  
on Organized Crime**

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## Economic Theory

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# An Empirical Analysis of the Public Spending Decomposition on Organized Crime

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### Summary

The aim of this paper is to investigate, empirically, what components of the public spending imply a decreasing effect on the organized crime and what components create opportunities for the organized crime, discussing also the role of government efficiency. The findings show a strikingly consistent pattern. Organized crime mainly operates in the distribution of the public spending for health, housing and community amenities. There is a decreasing effect on organized crime of the public expenditure devoted to education and to create *morality* values, such as the expenditure for recreation, culture and religion. Finally, government efficiency in public spending is beneficial for reducing the opportunities of the organized crime.

**Keywords:** Government Efficiency, Organized Crime, Public Spending

**JEL Classification:** C13, H50, K40

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# An empirical analysis of the public spending decomposition on organized crime

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## Abstract

The aim of this paper is to investigate, empirically, what components of the public spending imply a decreasing effect on the organized crime and what components create opportunities for the organized crime, discussing also the role of government efficiency. The findings show a strikingly consistent pattern. Organized crime mainly operates in the distribution of the public spending for health, housing and community amenities. There is a decreasing effect on organized crime of the public expenditure devoted to education and to create *morality* values, such as the expenditure for recreation, culture and religion. Finally, government efficiency in public spending is beneficial for reducing the opportunities of the organized crime.

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## 1. Introduction

There is a need of more and better empirical studies that investigate the role of the governments in reducing the organized crime. Van Dijk (2007) shows that organized crime is more prevalent in countries where the rule of law is less well assured, and vice versa. Varese (2011) argues that in the absence of effective and formal institutions, that guarantee property rights and contract enforcement, it is likely that alternative institutions, such as

mafia-groups, will arise to do so. Furthermore, there are empirical studies that show a positive relationship between government expenditure and organized crime (Caruso, 2009; Gennaioli *et al.*, 2010; Neanidis *et al.*, 2014). The plausible interpretation for these findings give support to the hypothesis that more State in the market create opportunities for the criminal associations, which are particularly interested in the appropriation of public money (Barone *et al.*, 2015). However since government must allocate scarce resources among various priorities (defence, education, environment, etc.), it would be important to better understand if the positive relationship between public spending and organized crime occurs for the various components of the government expenditure. In this context, the aim of this paper is to investigate, empirically, what components of the public spending imply a decreasing effect on the organized crime and what components create opportunities for the organized crime, discussing also the role of government efficiency.

The paper is organized as follows. Section 2 discusses the data and presents the empirical model. Section 3 reports the results. Section 4 provides robustness checks. Section 5 discusses the role of government efficiency. Finally, section 6 concludes.

## 2. Empirical specification and data

The empirical approach to assess the impacts of public spending on the organized crime can be summarised as follows:

$$Y_i = \alpha + \beta X_i + \delta Z_i + \epsilon_i \quad (1)$$

where Y denotes the variable related to the organized crime, X is the set of control variables, Z is the set of policy variables, and  $\epsilon_i$  is the stochastic error term.

A perception index of organized crime, which captures the extent of victimization of businesses, has been used to measure the dependent variable Y. Data on this index come from the World Economic Forum (WEF)'s survey, which is annually carried among business executives of larger companies to identify obstacles to businesses, and includes a question of whether organized crime, defined as "mafia oriented racketeering, extortion", imposes significant costs and is a burden to businesses. The WEF data set is the largest source of cross-national data on perceived organized crime. The set of control variables X includes the determinants of organized crime, commonly, identified in various studies (Van Dijk, 2007; Buonanno *et al.*, 2008;

Kollias *et al.*, 2013), which are: GDP per capita, employment, entrepreneurship, education, urbanization and rule of law. The set  $Z$  includes the policy variables related to public spending. Initially, this set includes the general government expenditure (as % of GDP). Then, this variable on public spending is substituted with the variables related to government expenditure by function, defined according to the international Classification of the Functions of Government (COFOG) in the framework of the European System of National Accounts, and listed, in details, in Table 1. Furthermore, the description of the variables and data sources are reported in Table 2.

[Table 1 about here]

[Table 2 about here]

The sample consists of 112 observations, covering four years (2010-2013), and includes the EU Member States, listed in Table A.1 in Appendix. The summary statistics, reported in Table 3, show that the mean of the organized crime perception is not high, just 0.2, with a maximum of 0.5, which is related to Italy, where, effectively, there is the highest concentration of racketeering and extortion criminal associations, such as *mafia*, *'ndrangheta* and *camorra* (Varese, 2006; Paoli *et al.*, 2014). The mean of the government expenditure, as share of GDP, is almost 47%, and the highest contribution to the public spending is provided, on average, by the expenditure for social protection (17% of GDP). The lowest contributions to the public spending are due to the expenditure for environment protection and housing and community amenities (on average, 0.8% of GDP).

[Table 3 about here]

### 3. Results

To get a first insight, Fig. 1 shows the relationship between the organized crime index and government expenditure. Fig.1a plots the organized crime index versus government expenditure, as share of GDP; alternatively, fig.1b plots the organized crime index versus the government expenditure per capita (transformed in natural logarithmic terms). They indeed both suggest a weak negative association.

[Figure 1 about here]

Furthermore, using the ordinary least-square (OLS) method to estimate the model specification in eq.(1), the results, reported in Table 4 column (1), show that the government expenditure has a null effect on organized crime and the coefficient upon the government expenditure is not statistically significant. However, these findings diverge from those reported in the literature, that show a positive impact of public spending on organized crime (Caruso, 2009; Gennaioli *et al.*, 2010; Neanidis *et al.*, 2014). The positive relationship finds support in the fact that criminal organizations are particularly interested in the appropriation of public money (Barone *et al.*, 2015). Two motivations can explain the weak or null association with respect to the positive relationship. Firstly, in this empirical analysis, organized crime as perception index is used, rather than the number of different crimes. This choice is motivated in Van Dijk (2007), that explains how police-based information on levels of organized crime will often be misleading. In fact, arrests or convictions for involvement in organized crime are likely to reflect police performance rather than the true extent of criminal activity. Secondly, this empirical investigation is a cross-country analysis rather than a one-country analysis, and, hence, the heterogeneity of the countries may affect on the estimates.

The sign of the coefficients upon the control variables mainly confirms the results of previous studies. As criminal organizations infiltrate in areas with high economic activity, where greater opportunities of profitable business are possible, the expected gains from crime increase in more prosperous economies (Neanidis *et al.*, 2014). Thus, the positive sign of the coefficient upon the GDP is as expected. An increase of employment is expected to lower the level of crime (Chang, 2013). But the results show the opposite effect for the employment rate, that is a positive sign. This outcome finds support in the argument that in more prosperous economies, the employment rates are higher than in less prosperous countries and, hence, an increase of the employment rate would lead to an increasing effect of organized crime. The negative sign of the coefficient upon the entrepreneurship can be related to two reasons. First, the choice to start a business activity does not include the expected cost that could be required by the criminal associations, for example, because the entrepreneur does not know if he will receive a protection supply and how much the protection cost will be, and, hence, the perception of the extent of organized crime may be low; second, as not all

the entrepreneurs accept the protection provided by the criminal associations, there can be an excess of supply (Paoli *et al.*, 2014). The rationale of a positive effect of education on organized crime can be found if one considers that criminal associations need to recruit educated individuals in order to survive and develop in an ever dynamic environment, both with regard to the way they formulate their business strategies and by the way they keep them secret from law enforcement agencies (Chang, 2013; Neanidis *et al.*, 2014). The positive sign of the coefficient upon urbanization finds reasons in the fact that there is more crime in more populated areas than in less populated or rural areas (Glaeser *et al.*, 1999). The negative sign of the coefficients upon the rule of law confirms that organized crime is more prevalent in countries where the rule of law is less well assured, and vice versa (Van Dijk, 2007). Summarizing, the strongest effects (in absolute terms) are those of GDP per capita and rule of law, suggesting that in more prosperous economies, there must be the establishment of strong law enforcement and justice institutions to decrease the organized crime.

[Table 4 about here]

Since government must allocate scarce resources among various priorities (defence, education, environment, etc.), it would be important to better understand if the weak relationship between public spending and organized crime is confirmed for the various components of the public spending. Table 4 in column (2) shows mixed results for the coefficients upon the components of government spending. The positive coefficient upon the public order and safety expenditure may find reason, as in Kollias *et al.* (2013), in two interpretations. First, the ineffectiveness of public order spending may be attributed to organisational, operational or other problems that affect the efficiency of anti-crime policy and in particular the operation of the police force. Second, over the period in question, crime has increased and the resources committed to public order may not have been sufficient to deter and reduce criminal activity. Also the coefficients upon the public spending for environment protection, health, housing and communities amenities are positive and statistically significant. These results suggest that organized crime mainly operates in the distribution of the public spending for these components of the government expenditure. The effect of public spending on organized crime is negative for that expenditure devoted to human capital formation, such as education, and social values, such as recreation, culture and religion. These

results find support in the standard Becker (1968) and Ben-Porath (1967) investment model of human capital formation, where they show that higher public investment in education would lead to less crime. This interpretation can be extent to the public investment for recreation, culture and religion, that aims to create the so-called *morality* values in the individuals. A weak association or coefficients not statistically significant have been found for the other components of the government expenditure, which are defence, public services, economic affairs and social protection. The coefficients upon the control variables confirm their sign and its order of magnitude.

To check the sensitivity of the results to the set of regressors, the step-wise procedure has been applied to the model specification in eq. (1). This procedure begins with estimating a model with only the intercept. It then runs a distinct regression for each regressor, and estimates the regressors contribution to the model by an F-test. The regressor producing the largest F-statistic is then added to the set of regressors of the model. The procedure is repeated, and regressors are added one by one to the model until no remaining variable produces an F-statistic significant at least at the 50 percent level. Each time a new variable is added, the selection procedure checks that all the already included variables are still significant. Insignificant variables are deleted. The selected model is that reported in Table 4 column (3), which confirms all the control variables except urbanization as determinants of organized crime. Amongst the public spending components, the selected variables are the government expenditure for education and recreation, culture and religion, with negative effect on organized crime. The opposite effect will yield the government expenditure for environment protection, health, housing and community protection.

#### 4. Robustness checks

This section investigates the robustness of the previous results through four tests: (i) substitution of control variables; (ii) substitution of policy variables; (iii) analysis of subgroups of countries; (iv) endogeneity test.

##### *(i) Alternative control variables*

Since one may be concerned that the findings was driven by the specific set of control variables defined in Table 2, a set of five regressions have been run, that include the substitution of the control variables with the proxies defined in Table 5. Each regression is run as anew with the new definition



of the control variable. Using the ordinary least-square (OLS) method coupled with the stepwise procedure, the results, reported in table 6, show a strikingly consistent pattern. The organized crime is more prevalent in more prosperous countries and where the rule of law is less well assured. Also the results suggest that organized crime mainly operates in the distribution of the public spending for environment protection, health, housing and community amenities. There is a decreasing effect on organized crime of the public expenditure devoted to education and to create social values, such as the expenditure for recreation, culture and religion.

[Table 5 about here]

[Table 6 about here]

*(ii) Alternative policy variables*

This robustness test includes the substitution of the components of the government expenditure, as share of GDP, with the government expenditure per capita (transformed in natural logarithmic term) by function (Table 5). The results in Table 6, column (6), confirm the previous estimates, for both control and policy variables. In addition, the stepwise procedure finds statistically significant the coefficients upon the public spending for economic affairs, that has a negative effect on organized crime, and the coefficient upon urbanization, that has a positive effect, but it is very small.

*(iii) Subgroups of countries*

Since the sample pools high with upper middle income countries, as well as advanced economies with emerging and developing countries, the estimated relationship between public spending and the organized crime may be different from the actual relationship for subgroups of countries. In order to take into account of the regional differences, the sample is split in two sub-samples, containing either only the high income EU countries of the OECD or the East European countries. The relationship is estimated separately on these two sub-samples. The OLS estimates reported in Table 7 show again a positive effect of the GDP per capita and a negative effect of the rule of law for both sub-sample. We also find that the public spending for environment has a positive effect on organized crime only for the EU East countries; whereas the positive effect of public spending for housing and community amenities occurs only for the high income EU countries.

[Table 7 about here]

*(iv) Endogeneity*

As the components of the government expenditure may be partially endogenous to the organized crime values, the two-stage least squares (2SLS) approach has been employed to control for omitted variable bias, potential reverse causality and measurement error. The 2SLS estimates are reported in table 8. The displayed 2SLS estimates are both qualitatively and quantitatively similar to those obtained with OLS estimates. For all the empirical models the Sargan tests reject the hypothesis that the residuals are correlated with instruments, and, hence, the instruments are valid. The Wu-Hausmann test rejects the hypothesis that the components of the government expenditure is endogenous. Therefore, the OLS estimates should be preferred to 2SLS estimates.

[Table 8 about here]

## 5. The role of government efficiency

One question that remains open in the analysis of the effects of public spending on organized crime is related to the role of government efficiency. In particular, the question that needs still now to be faced is what the effect of public spending would be on the organized crime if the government does not perform efficiently. The perception that the government behaves efficiently in spending the public revenues and for providing public services, its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies are all factors that can have effects on the extent of organized crime. If on the one hand, a strong perception of government efficiency implies that the government spending satisfies the public preferences; on the other hand, in the absence of effective and formal institutions that perform their roles in providing secure property rights and contract enforcement, it is likely that alternative institutions will arise to do so (Varese, 2011).

Table 9 reports the results of the OLS estimates, with the set  $Z$  that includes the general government expenditure and the components of public spending, respectively, in column (1) and (2). The stepwise procedure confirms the sign and order of magnitude of the coefficients upon the various components of public spending and the control variables. The coefficient

upon the government efficiency is statistically significant and the findings show that an increase of the government efficiency is associated with a decreasing effect on the organized crime and, hence, as Varese (2011) argued, the organized crime is expected to operate where the government does not perform efficiently.

[Table 9 about here]

## 6. Conclusions

This article provides a first attempt to measure the impact of the various components of the public expenditure on the organized crime.

Using a sample of 112 observations, covering four years (2010-2013) and including the EU Member States, the findings show mixed effects for the various components of the public spending. In fact, the effect of public spending on organized crime is negative for the education expenditure, which is devoted to human capital formation, and recreation, culture and religion expenditure, that is likely devoted to enforce *morality* values. The findings also suggest that organized crime mainly operates where the government does not perform efficiently and in the distribution of the public spending for health, housing and community amenities. Thus, the policy implications of this paper are that the governments must rely an enforcement of efficiency and rule of law for those components of the public spending that create opportunities for the organized crime.

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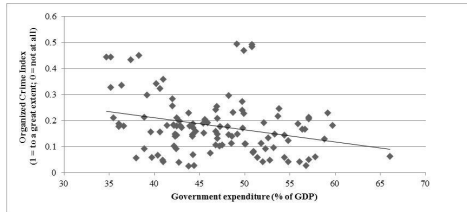
**Appendix** *List of countries in the sample.*

[Table A.1. about here]

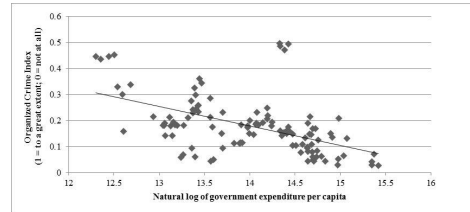
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(a)



(b)

Figure 1. Organized crime versus public spending

**Table 1. Government expenditure by function**

<b>Function:</b>	<b>Expenditure in:</b>
Defense	Military defence; Civil defence; Foreign military aid; RandD Defence; Defence n.e.c.
General Public Services	Executive and legislative organs, financial, fiscal and external affairs; Foreign economic aid; Basic research; RandD General public services; General public services n.e.c.; Transfers of a general character between different levels of governmentPublic debt transactions.
Public order and safety	Police services; Fire-protection services; Law courts; Prisons; RandD Public order and safety; Public order and safety n.e.c.
Economic affairs	General economic, commercial and labour affairs; Agriculture, forestry, fishing and hunting; Fuel and energy; Mining, manufacturing and construction; Transport; Other industries;Communication; Other industries; RandD Economic affairs; Economic affairs n.e.c.
Environment protection	Waste management; Waste water management; Pollution abatement; Protection of biodiversity and landscape; RandD Environmental protection; Environmental protection n.e.c.
Housing and community amenities	Housing development; Community development; Water supply; Street lighting; RandD Housing and community amenities; Housing and community amenities n.e.c.
Recreation, culture and religion	Recreational and sporting services; Cultural services; Broadcasting and publishing services; Religious and other community services; RandD Recreation, culture and religion; Recreation, culture and religion n.e.c.
Health	Medical products, appliances and equipment; Outpatient services; Hospital services; Public health services; RandD Health; Health n.e.c.
Education	Pre-primary and primary education; Secondary education; Post-secondary non-tertiary education; Tertiary education; Education not definable by level; Subsidiary services to education; RandD Education; Education n.e.c.
Social protection	Sickness and disability; Old age; Survivors; Family and children; Unemployment; Housing; Social exclusion n.e.c.; RandD Social protection; Social protection n.e.c.

**Table 2. Description of variables and sources**

<b>Variable</b>	<b>Description</b>	<b>Sources</b>
<i>Dependent variable</i>		
Organized Crime Index	In your country, to what extent does organized crime (mafia-oriented racketeering, extortion) impose costs on businesses? [1 = to a great extent; 0 = not at all]	The Global Competitiveness Index Historical Dataset, World Economic Forum
<i>Control variables</i>		
GDP per capita	Natural Log of GDP per capita (US \$)	The Global Competitiveness Index Historical Dataset, World Economic Forum
Employment	Percentage of population aged 20 to 64 employed	EU Labour Force Survey, EUROSTAT
Entrepreneurship	Self-employed workers (% of total employed)	World Development Indicators, World Bank
Schooling	Tertiary education enrollment, gross %	The Global Competitiveness Index Historical Dataset, World Economic Forum
Urbanization rate	Urban population (% of total)	World Development Indicators, World Bank
Rule of law	Perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence [-2.5 weak perception, 2.5 strong perception]	The Worldwide Governance Indicators, World Bank
<i>Policy variables</i>		
Government expenditure	General government expenditure (% of GDP)	EUROSTAT
Defense	Government expenditure for defense (% of GDP)	EUROSTAT
General public services	Government expenditure for general public services (% of GDP)	EUROSTAT
Public order and safety	Government expenditure for public order and safety (% of GDP)	EUROSTAT
Economic affairs	Government expenditure for economic affairs (% of GDP)	EUROSTAT
Environment protection	Government expenditure for environment protection(% of GDP)	EUROSTAT
Housing and community amenities	Government expenditure for housing and community amenities (% of GDP)	EUROSTAT
Recreation, culture and religion	Government expenditure for recreation, culture and religion (% of GDP)	EUROSTAT
Health	Government expenditure for health (% of GDP)	EUROSTAT
Education	Government expenditure for education (% of GDP)	EUROSTAT
Social protection	Government expenditure for social protection (% of GDP)	EUROSTAT
Government efficiency	Perceptions on how efficiently does the government perform [1 = extremely inefficient; 7 = extremely efficient in providing goods and services]	The Global Competitiveness Index Historical Dataset, World Economic Forum



**Table 3. Summary statistics**

<b>Variable</b>	<b>Mean</b>	<b>S.D.</b>	<b>Min</b>	<b>Max</b>
<i>Dependent variable</i>				
Organized Crime Index (1 = to a great extent; 0 = not at all)	0.2	0.1	0.0	0.5
<i>Control variables</i>				
GDP per capita (ln)	10.2	0.7	8.7	11.6
Employment (rate)	63.3	6.3	48.8	75.1
Entrepreneurship (self-employed workers rate)	16.2	6.6	8.2	37.0
Schooling (tertiary education enrollment, gross %)	11.2	1.0	7.8	12.9
Urbanization (rate)	72.7	12.4	49.8	97.8
Rule of law (-2.5 weak perception, 2.5 strong perception)	1.1	0.6	-0.1	2.0
<i>Policy variables</i>				
Government expenditure	46.8	6.5	34.7	66.1
Defense	1.3	0.5	0.4	2.6
General public services	6.8	2.0	3.4	12.8
Public order and safety	1.9	0.5	1.0	3.3
Economic affairs	5.3	2.7	2.8	25.8
Environment protection	0.8	0.3	0.2	1.9
Housing and community amenities	0.8	0.4	0.2	2.6
Recreation, culture and religion	1.2	0.4	0.5	2.2
Health	6.4	1.5	3.0	8.8
Education	5.4	1.0	2.8	7.7
Social protection	17.1	3.9	10.7	25.1
Government efficiency (1 = extremely inefficient; 7 = extremely efficient in providing goods and services)	3.7	0.8	2.4	5.6

**Table 4. OLS estimates (dependent variable: Organized crime value).**

	(1)	(2)	(3)
Constant	-0.974 (4.425)***	-0.614 (3.346)***	-0.666 (2.208)**
Natural Log of GDP per capita	0.111 (4.406)***	0.065 (3.456)***	0.082 (5.683)***
Employment rate	0.005 (3.817)***	0.004 (4.629)***	0.005 (4.381)***
Entrepreneurship	-0.003 (2.627)*	-0.005 (3.974)***	-0.005 (5.472)***
Schooling	0.001 (1.874)*	0.002 (4.155)***	0.002 (3.961)***
Urbanization rate	0.001 (1.142)	0.001 (1.168)	
Rule of Law	-0.309 (10.339)***	-0.255 (10.470)***	-0.274 (13.453)***
Government expenditure	0.000 (0.067)		
Defense		-0.011 (0.933)	
General Public Services		0.003 (0.99)	
Public order and safety		0.027 (1.695)*	
Economic affairs		-0.003 (2.305)**	
Environment protection		0.041 (2.554)**	0.041 (2.879)***
Housing and community amenities		0.053 (5.128)***	0.049 (4.098)***
Recreation, culture and religion		-0.046 (3.216)***	-0.049 (3.646)***
Health		0.014 (2.58)**	0.016 (3.748)***
Education		-0.021 (3.481)***	-0.018 (3.178)***
Social protection		0.003 (1.15)	
Number of observations	112	112	112
R <sup>2</sup>	0.754	0.864	0.853
Adj R <sup>2</sup>	0.738	0.841	0.838
F-Test	45.69	33.05	58.69

Absolute *t*-statistics are displayed in parentheses under the coefficient estimates.

\* Statistically significant at the 10% level

\*\* Statistically significant at the 5% level

\*\*\* Statistically significant at the 1% level

**Table 5. Description of alternative control and policy variables and summary statistics**

Variables	Description and source	Model	Mean	S.D.	Min	Max	N.Obs	Sources
<i>Control variables</i>								
Employment	Labour market efficiency [1 = extremely inefficient; 7 = extremely efficient]	(2.1)	4.5	0.4	3.5	5.5	112	The Global Competitiveness Index Historical Dataset, World Economic Forum
Entrepreneurship	Number of new limited liability corporations registered in the calendar year (natural log)	(2.2)	8.9	1.4	6.4	11.3	40	The Worldwide Governance Indicators, World Bank
Schooling	Average number of years of education received by people ages 25 and older	(2.3)	11.2	1.0	7.8	12.9	112	Barro and Lee (2013)
Urbanization rate	Population density (people per sq. km of land area), (natural log)	(2.4)	4.1	1.0	1.2	5.8	112	The Worldwide Governance Indicators, World Bank
Rule of law	Reliability of police services [1 = cannot be relied upon at all; 7 = can be completely relied upon]	(2.5)	5.1	0.9	3.3	6.7	112	The Global Competitiveness Index Historical Dataset, World Economic Forum
<i>Policy variables</i>								
Defense	Government expenditure for defense per capita (natural log)	(2.6)	26.2	1.7	22.5	29.4	112	EUROSTAT
General public services	Government expenditure for general public services per capita (natural log)	(2.6)	27.9	1.7	24.7	30.7	112	EUROSTAT
Public order and safety	Government expenditure for public order and safety per capita (natural log)	(2.6)	26.6	1.6	23.1	29.4	112	EUROSTAT
Economic affairs	Government expenditure for economic affairs per capita (natural log)	(2.6)	27.6	1.6	24.3	30.4	112	EUROSTAT
Environment protection	Government expenditure for environment protection per capita (natural log)	(2.6)	25.7	1.6	22.7	28.7	112	EUROSTAT
Housing and community amenities	Government expenditure for housing and community amenities per capita (natural log)	(2.6)	25.6	1.6	21.6	29.0	112	EUROSTAT
Recreation, culture and religion	Government expenditure for recreation, culture and religion per capita (natural log)	(2.6)	26.2	1.6	22.6	29.0	112	EUROSTAT
Health	Government expenditure for health per capita (natural log)	(2.6)	27.9	1.7	24.5	30.8	112	EUROSTAT
Education	Government expenditure for education per capita (natural log)	(2.6)	27.7	1.5	24.5	30.4	112	EUROSTAT
Social protection	Government expenditure for social protection per capita (natural log)	(2.6)	28.8	1.7	25.4	31.9	112	EUROSTAT

**Table 6. Robustness test: control and policy variables (dependent variable: Organized crime value).**

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-0.268 (1.760)*	-0.689 (2.529)**	-0.454 (2.402)**	-0.666 (2.208)**	0.412 (3.009)***	-0.520 (0.315)
Natural Log of GDP per capita	0.066 (4.502)***	0.092 (3.476)***	0.064 (4.361)***	0.082 (5.683)***		
Employment			0.005 (4.110)***	0.005 (4.381)***		0.004 (3.507)***
Entrepreneurship	-0.005 (4.928)***		-0.003 (3.755)***	-0.005 (-5.472)***		-0.003 (3.452)***
Schooling	0.002 (4.043)***			0.002 (3.961)***		0.001 (3.496)***
Urbanization						0.002 (3.647)***
Rule of Law	-0.222 (12.209)***	-0.252 (10.285)***	-0.261 (12.123)***	-0.275 (13.453)***	-0.06 (6.443)***	-0.258 (12.712)***
Defense						
General Public Services						
Public order and safety					0.0746 (4.322)***	
Economic affairs	-0.005 (3.221)***				-0.005 (2.356)***	-0.028 (1.998)**
Environment protection	0.038 (2.542)**			0.041 (2.879)***		
Housing and community amenities	0.065 (5.200)***		0.036 (2.891)***	0.049 (4.098)***	0.032 (2.104)**	0.064 (6.734)***
Recreation, culture and religion	-0.039 (2.785)***		-0.031 (2.270)**	-0.049 (3.646)***		-0.053 (3.135)**
Health	0.019 (4.383)***	0.029 (2.864)***	0.024 (5.651)***	0.016 (3.748)***		0.145 (9.233)***
Education	-0.023 (3.824)***		-0.019 (3.361)***	-0.018 (3.178)***	-0.043 (6.601)***	-0.074 (3.114)***
Social protection					0.009 (4.643)***	
Number of observations	112	40	112	112	112	112
R <sup>2</sup>	0.841	0.768	0.829	0.853	0.685	0.861
Adj R <sup>2</sup>	0.825	0.749	0.815	0.838	0.667	0.848
F-Test	53.64	58.6	62.24	58.69	38.17	62.98

Absolute *t*-statistics are displayed in parentheses under the coefficient estimates.

\* Statistically significant at the 10% level

\*\* Statistically significant at the 5% level

\*\*\* Statistically significant at the 1% level

**Table 7. Robustness test: sub-groups of countries (dependent variable: Organized crime value).**

	High income: OECD	East Europe
Constant	-0.702 (2.601)**	0.843 (1.11)
Natural Log of GDP per capita	0.075 (3.611)***	0.046 (1.216)
Employment	0.005 (2.729)**	0.003 (1.575)
Entrepreneurship	-0.002 (0.923)	-0.005 (3.641)***
Schooling	0.007 (1.366)	-0.082 (1.295)
Rule of Law	-0.278 (9.324)***	-0.079 (0.813)
Environment protection	-0.01 (0.566)	0.042 (1.874)*
Housing and community amenities	0.046 (2.303)**	-0.004 (0.133)
Recreation, culture and religion	-0.029 (1.54)	-0.647 (1.526)
Health	0.032 (6.147)***	0.019 (2.124)**
Education	-0.018 (2.22)**	-0.036 (3.27)***
Number of observations	80	44
R <sup>2</sup>	0.833	0.853
Adj R <sup>2</sup>	0.809	0.808
F-Test	34.39	19.08

Absolute *t*-statistics are displayed in parentheses under the coefficient estimates.

\* Statistically significant at the 10% level

\*\* Statistically significant at the 5% level

\*\*\* Statistically significant at the 1% level

**Table 8. 2SLS estimates (dependent variable: Organized crime value)**

	(1)	(2)	(3)	(4)	(5)
Constant	-0.307 (1.286)	-0.257 (1.078)	-0.347 (1.505)	-0.461 (1.754)*	-0.779 (0.26)
Natural Log of GDP per capita	0.059 (2.888)***	0.050 (2.192)**	0.061 (2.965)***	0.066 (2.744)***	0.035 (1.092)
Employment	0.004 (2.283)**	0.005 (3.103)***	0.004 (2.433)**	0.004 (2.456)**	0.004 (3.087)***
Entrepreneurship	-0.005 (3.473)***	-0.003 (2.091)**	-0.004 (2.869)***	-0.004 (2.921)***	-0.006 (4.662)***
Schooling	-0.007 (0.952)	-0.009 (1.151)	-0.008 (1.003)	-0.002 (0.241)	-0.005 (0.849)
Rule of Law	-0.257 (8.378)***	-0.251 (7.603)***	-0.259 (8.368)***	-0.261 (8.122)***	-0.207 (5.918)***
Environment protection	0.008 (0.307)	0.021 (1.339)	0.022 (1.253)	0.014 (0.683)	0.019 (1.363)
Housing and community amenities	0.046 (2.784)***	0.041 (1.051)	0.045 (2.75)***	0.027 (1.285)	0.044 (2.752)**
Recreation, culture and religion	-0.014 (0.743)	-0.006 (0.327)	0.009 (0.165)	-0.032 (1.532)	-0.002 (0.096)
Health	0.024 (3.766)***	0.019 (1.973)**	0.023 (3.719)***	0.024 (2.425)**	0.015 (2.228)**
Education	-0.021 (2.25)**	-0.028 (2.997)***	-0.023 (1.840)*	-0.015 (1.603)	-0.027 (2.669)**
Number of observations		56	52	56	56
R <sup>2</sup>		0.826	0.857	0.823	0.77
Adj R <sup>2</sup>		0.79	0.822	0.783	0.719
<i>F</i> -first stage		3.21	2.44	2.14	6.77
Wu-Hausman Test ( <i>p</i> -value)		0.59	0.80	0.687	0.58
Sargan test ( <i>p</i> -value)		0.262	0.17	0.16	0.15
Endogeneity test for:	Environment protection	Housing and community	Recreation, culture and	Health	Education
Instruments	CO2 emissions (metric tons per	Urbanization rate	Urbanization rate	Population ages 65 and above (% of	Urbanization rate
	Renewable internal freshwater resources per capita (cubic meters)	Quality of infrastructure (e.g., transport, telephony, and energy)	Political stability index	Out-of-pocket health expenditure (% of private expenditure on health)	Government expenditure per student
	Forest area (% of land area)	Natural log of Electric power consumption (kWh)	Christians (% of total population)	Government expenditure (% of GDP)	School-aged population (% of total)
	Waste generated (Thousand tonnes)	Waste generated (Thousand tonnes)	Land area per capita (sq. km)	Maternal mortality ratio (per 100,000 live births)	
				Incidence of tuberculosis (per 100,000 people)	

Absolute *t*-statistics are displayed in parentheses under the coefficient estimates.

\* Statistically significant at the 10% level. \*\* Statistically significant at the 5% level. \*\*\* Statistically significant at the 1% level.

**Table 9. The role of government efficiency (dependent variable: Organized crime value).**

	(1)	(2)
Constant	-0.827 (3.907)***	-0.466 (2.740)***
Natural Log of GDP per capita	0.105 (6.619)***	0.067 (3.927)***
Employment	0.007 (4.691)***	0.005 (4.843)***
Entrepreneurship	-0.003 (2.783)***	-0.005 (4.466)***
Education		0.001 (4.419)***
Urbanization		0.001 (3.241)***
Rule of Law	-0.265 (10.161)***	-0.218 (9.288)***
Government expenditure		
Defense		
General Public Services		
Public order and safety		-0.004
Economic affairs		(2.815)***
Environment protection		
Housing and community amenities		0.062 (7.137)***
Recreation, culture and religion		-0.039 (3.499)***
Health		0.016 (4.404)***
Education		-0.028 (5.979)***
Social protection		
Government efficiency	-0.035 (2.339)**	-0.043 (3.688)***
Number of observations	112	112
R <sup>2</sup>	0.754	0.872
Adj R <sup>2</sup>	0.743	0.849
F-Test	65.26	37.58

Absolute *t*-statistics are displayed in parentheses under the coefficient estimates.

\* Statistically significant at the 10% level

\*\* Statistically significant at the 5% level

\*\*\* Statistically significant at the 1% level

**Table A.1. List of countries**

<b>Code</b>	<b>Country</b>	<b>Income group</b>	<b>IMF region</b>
AUT	Austria	High income: OECD	Advanced economies
BEL	Belgium	High income: OECD	Advanced economies
BGR	Bulgaria	Upper middle income	Emerging and Developing Europe
HRV	Croatia	High income: nonOECD	Emerging and Developing Europe
CYP	Cyprus	High income: nonOECD	Advanced economies
CZE	Czech Republic	High income: OECD	Advanced economies
DNK	Denmark	High income: OECD	Advanced economies
EST	Estonia	High income: OECD	Advanced economies
FIN	Finland	High income: OECD	Advanced economies
FRA	France	High income: OECD	Advanced economies
DEU	Germany	High income: OECD	Advanced economies
GRC	Greece	High income: OECD	Advanced economies
HUN	Hungary	Upper middle income	Emerging and Developing Europe
IRL	Ireland	High income: OECD	Advanced economies
ITA	Italy	High income: OECD	Advanced economies
LVA	Latvia	High income: nonOECD	Advanced economies
LTU	Lithuania	High income: nonOECD	Emerging and Developing Europe
LUX	Luxembourg	High income: OECD	Advanced economies
MLT	Malta	High income: nonOECD	Advanced economies
NLD	Netherlands	High income: OECD	Advanced economies
POL	Poland	High income: OECD	Emerging and Developing Europe
PRT	Portugal	High income: OECD	Advanced economies
ROU	Romania	Upper middle income	Emerging and Developing Europe
SVK	Slovak Republic	High income: OECD	Advanced economies
SVN	Slovenia	High income: OECD	Advanced economies
ESP	Spain	High income: OECD	Advanced economies
SWE	Sweden	High income: OECD	Advanced economies
GBR	United Kingdom	High income: OECD	Advanced economies



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