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EVIDENCE FROM THE ITALIAN REGIONS

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An Analysis of the Determinants of Corruption: Evidence from the Italian Regions

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Abstract

This paper will address the causes of corruption. A number of theoretical and empirical studies have tried to uncover economic, social, cultural, political variables that correlate with the incidence of corruption in cross-section analyses. Within this literature we focus on four hypotheses concerning the causes of corruption that seem more suited to the Italian context. A first hypothesis suggests that countries with higher levels of income and education are less corrupt; a second hypothesis posits that places with more government revenues or regulations will have higher levels of corruption, as these places will have more assets to steal and more rules to subvert. A third strand of the literature states that as voters become more diverse along income lines, then voting will inevitably focus on redistribution rather than on the honesty of government officials hypothesis. Finally, a recent hypothesis suggests the existence of a systematic link between corruption and electoral rules. Majoritarian systems have more direct accountability because voters seek consensus among individuals (under plurality rule) rather than among parties (broader coalitions of voters), which should restrict rent extraction. Furthermore, majoritarian elections are more effective in deterring political rents since the outcome of an election is generally more sensitive to the incumbent's performance.

Our analysis provides a comparative evaluation of the explanatory power of these theories for a panel of the Italian regions in the period 1980 to 2002.

Keywords: Public corruption; Italian regions.

JEL classification: K4; O1; H0.

1. Introduction

The interaction between politicians, bureaucracy and groups of citizens directly linked to politicians to reap high benefits through special laws or through political appointments (the so-called *clientelismo*) is a characteristic of the Italian political system since the foundation of the kingdom of Italy in 1861 (Cazzola, 1988). Only in the 1980s yet corruption began to be considered a serious problem most likely because of the growing number of bribes in the relations between citizens, politicians and public administration and an attitude of greater intolerance towards it was spread in the public opinion. Del Monte and Papagni (2007) shows that corruption crimes increased steadily between the mid-1970s and the first half of the 1990s, especially in Southern regions, and slightly decrease after 1993 as a consequence of the so-called *Mani Pulite* campaign undertaken by the judiciary system, that probably reduced people's expectations on the profitability of corruption. Del Monte and Papagni (2007) provides an empirical analysis of corruption in Italy focusing both on the determinants and on the dynamics of the phenomenon. We move further in this direction by reconsidering and extending the set of the hypotheses about the causes of the corruption in the Italian regions and by improving substantially the measures of the explanatory variables and the related dataset.

A number of theoretical and empirical studies have tried to uncover economic, social, cultural, political variables that correlate with the incidence of corruption in cross-section analyses. Within this literature we focus on four groups of hypotheses concerning the causes of corruption. A first hypothesis suggests that countries with higher levels of income and education are less corrupt (Lipset, 1960); a second hypothesis posits that places with more government revenues or regulations will have higher levels of corruption, as these places will have more assets to steal and more rules to subvert (Glaeser and Shleifer, 2003). A third strand of the literature states that as voters become more diverse along income lines, then voting will inevitably focus on redistribution rather than on the honesty of government officials hypothesis (Mauro, 1995; Alesina et al., 2002). Finally, a fourth hypothesis suggests the existence of a link

between corruption and electoral rules (proportional vs. majoritarian system). Our analysis provides a comparative evaluation of the explanatory power of these theories for a panel of the Italian regions in the period 1980 to 2002. The paper is organized as follows. In Section 2 we develop an empirical framework for the analysis. We present data and variables in Section 3. Section 4 discusses the results. Section 5 offers some concluding remarks.

2. The determinants of corruption: a review of the literature

We focus on four strands of the literature on the determinants of corruption that we have selected as the most appropriate to interpret the local characteristics and the evolution of the phenomenon in the Italian regions.

The first hypothesis is loosely based on Lipset (1960). Lipset develops a theoretical model which posits that countries with higher levels of income and education are less corrupt. The key element of this hypothesis is that voters with more education and income are both more willing and capable to monitor public employees and to take action when these employees violate the law. Empirical research has shown that political involvement rises with income and education. This positive relationship may be because political attention is a luxury good, or because education makes it easier to learn about politics (Glaeser et al., 2004). Furthermore, education may indoctrinate individuals towards having a higher value of staying politically involved (Putnam, 1993). Higher levels of income and education will also increase the ability of private individuals to punish malfeasance by members of the government.

The second hypothesis that we select suggests that countries with more regulations will have higher levels of corruption, as they will have more assets to steal and more rules to subvert. If corruption is defined as crimes made by public officials for personal gain (Rose-Ackerman, 1975), then the economic theory of corruption follows closely the economic theory of crime (Becker, 1968). The potential criminal, in this case a government official, weighs the benefits of crime against its costs. National or state characteristics will influence the level of corruption as

they alter the benefits and costs of crime. The benefits of corruption come from government actors being able to allocate resources, including the right to bypass certain regulations, to private individuals. As such, the benefits to a political actor from being corrupt should be increasing in the size of government and in the individual's discretion over government actions (Glaeser and Shleifer, 2003; Adsera *et al.*, 2003). Greater numbers of regulations also increase the opportunities for helping private actors evade these regulations, therefore increasing the possibilities for corrupt practices.

Another set of theories on the determinants of corruption has focused on the effect of ethnic fragmentation on corruption and wasteful redistribution (Mauro, 1995 and Alesina *et al.*, 2002). Ethnic fragmentation impacts corruption by reducing the popular will to oppose corrupt politicians. If an area is torn apart by ethnic divisions and leaders tend to allocate resources towards backers of their own ethnicity, then members of one ethnic group might continue to support a leader of their own ethnic group, even if he is known to be corrupt. Furthermore, other forms of division, such as income inequality, may also reduce voters' desire to oppose corruption.

Quite recently Persson, Tabellini and Trebbi (2003) suggest the existence of a systematic link between corruption and electoral rules. Larger voting districts, and thus lower barriers to entry, are associated with less corruption, whereas larger shares of candidates elected from party lists, and thus less individual accountability are associated with more corruption. Individual accountability appears to be most strongly tied to personal ballots in plurality-rule elections, even though open party lists also seem to have some effect. Majoritarian systems have more direct accountability because voters seek consensus among individuals (under plurality rule) rather than among parties (broader coalitions of voters), which should restrict rent extraction. Furthermore, majoritarian elections are more effective in deterring political rents since the outcome of an election is generally more sensitive to the incumbent's performance. Then we expect that a higher degree of political fragmentation results in more corruption.

3. *The empirical determinants of corruption*

3.1 *Variables and data description*

The dependent variable. It is not easy to find an empirical counterpart to rent extraction by politicians. Real-world abuse of higher political office can show up both in outright corruption and, more generally, in misgovernance. As Tanzi (1998) observes, it is difficult to define corruption in abstract. Moreover, as corruption is generally illegal, violators try to keep it secret. Cultural and legal differences across countries make it hard to investigate corruption without taking country-specific features into account. Good proxies for political corruption should thus offer reliable information on the unlawful abuse of political power, as well as a strong level of comparability across different countries.

Following Rose-Ackerman (1975) and Glaeser and Saks (2006) we define corruption as crimes by public officials for personal gain; then we measure corruption as the number of regional government officials convicted for corrupt practices relative to the population over the 1980-2002 period. These conviction levels capture the extent to which prosecutors have charged and convicted public officials for misconduct in each of the twenty regions. The usual problem with using conviction rates to measure corruption is that in corrupt countries the judicial system is itself corrupt and fewer people will be charged with corrupt practices. We control for this problem of the existence of a general corruption spread through the whole system, even though in Italy the judicial system is centralized at national level and then relatively more isolated from local corruption. The crimes that we consider are based on the Italian Criminal Law as reported in the Annals of Judicial Statistics of the ISTAT (various issues). Generally, cross-countries studies on corruption rely on opinion surveys resulting in the Corruption Perceptions Index (CPI)

produced by Transparency International¹ or in alternative corruption measure like those presented and discussed in Kaufman, Kraay, and Zoido-Lobato`n (1999). While these measures contain valuable information, they suffer of a few shortcomings: first, the meaning of corruption is subjective and can vary greatly from one country to the other one; furthermore, the types of the corrupt activities could be substantially different in each country making comparative analyses even more difficult. In addition, they are computed on country’s basis and this *a fortiori* supports our choice of an alternative measure of corruption. Table 1 shows the average per capita convictions for the 1980-2002 period per 100,000. This ranking is reasonably in line with common opinions about the different extent of corruption in the Italian regions. With the exception of Liguria and Valle d’Aosta the Northern regions are less corrupt than the Center and Sourthern ones.

Table 1 - Regions with most and least convictions per capita (1980-2002)

	Average per capita convictions per 100,000 Pop.
Emilia-Romagna	34
Lombardia	35
Veneto	38
Marche	39
Piemonte	42
Umbria	44
Trentino- Alto Adige	46
Puglia	48
Toscana	49
Basilicata	49
Campania	52
Abruzzo	58
Friuli Venezia Giulia	60
Sardegna	60
Sicilia	61
Calabria	63
Liguria	76
Valle d'Aosta	82
Molise	88
Lazio	96

¹ This index measures the “perceptions of the degree of corruption as seen by business people, risk analysts and the general public” for 54 countries for the 1980-2003 period and is computed as the simple average of a number of different surveys assessing each country’s performance in a given year.

The explanatory variables. To test the hypothesis that richer and more educated voters are more willing and capable to monitor public employees and to take action when these employees violate the law (the Lipset hypothesis) we measure the region's economic development and level of education by using the logarithm of regional GDP per capita and the secondary school enrolment ratio for male and female population. The theory suggests this variable to be associated with less corruption. One problem with testing whether income and education affect corruption is that these variables might themselves be the result, not the cause, of corruption levels. Another concern is that education and income might be related to other unobservable factors that are the true explanation for variation in corruption across locations. We will use the IV methods to address the problems of reverse causality and omitted variable bias.

Since Italian regions do not present problems of ethnic heterogeneity, but shows relevant income differentials between the North and the South of the country we also try some other regional characteristics testing the hypothesis that as voters become more diverse along the income line, they will focus on the redistribution rather than on the honesty of government officials (Mauro, 1995; Alesina *et al.*, 2002). We expect that an increase in income inequality will positively affect the degree of corruption. We measure income inequality with the Gini index calculated using data on family income per regions.

Another set of theories on the determinants of corruption has focused on the presence of the state into the economy. More regulations and greater government size create a potential for corruption since there are more resources to steal and more rules to subvert. In other words, the size of public sector can increase the returns to bypassing regulations or to corrupting the legal system (as in Glaeser and Shleifer, 2003). To allow for this possibility we use the number of articles of regional laws or in alternative the number of regional laws.

The legal and political systems have been emphasized as a source of variation in corruption across countries. While in cross-regional analysis within a country the legal system is identical and unchanging over time, the political system presents a relevant degree of variation across

regions and over time. We use a political fragmentation variable measured as the Herfindhal index for concentration of seats of the majority supporting the regional government with respect to the overall legislature. This index ranges from 0 (a legislature in which each legislator belongs to a different party) to 1 (when all members belong to the same party) and shows different values across regions as they were run by either a single party majority governments or by coalition governments. Moreover, and more importantly, in 1995 the electoral system of the fifteen Ordinary Statute Regions was modified (through the law n. 43 passed on February 25). The mechanism to elect the members of the regional Council switched from a pure proportional representation system to a mixed one. Eighty percent of the legislators is elected on the basis of provincial lists (art. 1, par. 2 of the 1995 law) and the remaining twenty percent by a majoritarian system on the basis of regional lists (art. 1, par. 3). A top-up for the majority in two steps ensures that the absolute majority of the legislators is held by the coalition linked to the regional list that has obtained the relative majority of the votes. A dummy variable taking the value of 1 from 1995 on and 0 before would have captured the change from a proportional to a majoritarian electoral system. However the reform of 1995 concerned only the Ordinary Statute Regions while our sample includes also the five Special Statute Regions. Therefore we prefer to collapse into the index of political fragmentation the variations of the political systems across time and across regions.

Finally, we include in our analysis the number of voluntary organizations divided by the population existing in the Italian regions in order to control for two different aspects that 1) the presence of voluntary organizations signals the degree of *civicness* of the population and therefore – as the degree of education - its propensity towards political participation (Putnam, 1993); 2) this variable can be also interpret as a measure of the population's attitude against the practices of corruption and then as a way to control for the degree of corruption generally 'accepted and tolerated' by the system as a whole, since in corrupt regions the judicial system is

itself corrupt and fewer people will be charged with corrupt practices. We then expect a negative sign of the coefficient of this variable.

The variable *Log income per capita* is the logarithm of the ratio between the regional gross domestic product in real terms (1995 base = 100) and the regional population. Data on GDP and population are taken from Crenos (2004). Data on the Voluntary Organizations comes from the Italian Federation of Voluntary Organizations (FIVOL). These data are available for the following years: 1985, 1990, 1997, 2001. The website of the *Camera dei Deputati della Repubblica italiana* is the source of data on regional legislative output. The regional election's results, used to measure the Herfindhal index of political concentration, are collected in Istat (1990) and Ministero dell'Interno (various years). We build the Gini index using micro-data on the households' disposable income coming from the *Survey of Household Income and Wealth* (SHIW), conducted by the Bank of Italy (1980; 1986; 1989, 1991, 1993, 1995, 1998; 2000; 2002).

Table 2 reports the summary statistics the correlation matrix for the above variables respectively.

Table 2 – Descriptive statistics

	CR/POP	EDU/POP	VO	FRAG	NART	PILPC	GINI INDEX
Mean	0.499102	40.48810	461.5698	0.668429	533.8902	14.42654	0.330753
Median	0.436345	45.29246	316.0000	0.670000	511.0000	14.01547	0.329242
Maximum	1.936.233	65.09166	5362.000	0.880000	1545.000	23.23958	0.479429
Minimum	0.000179	0.035970	11.00000	0.128000	73.00000	6.813372	0.236252
Std. Dev.	0.362773	17.68335	566.4374	0.131462	237.0049	4.115303	0.035792
Skewness	0.989581	-1.446372	4.009431	-1.046086	0.812719	0.240616	0.411282
Kurtosis	4.355.674	4.007789	29.39831	5.311061	4.239726	2.060113	3.742.983
Jarque-Bera	9.951.245	170.8598	13859.69	176.9519	76.09208	20.30177	2.124.515
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000039	0.000024
Observations	415	415	415	415	415	415	415
Cross sections	19	19	19	19	19	19	19

4. Empirical results

Our sample includes the Italian regions with the exception of Valle d'Aosta and Trentino Alto Adige for which the data set is incomplete. The first column of table 3 shows the OLS results. We first regress the logarithm of per capita income and the share of school attainment on our measure of corruption (column 1). Both variables are strongly significant, yet contrary to the theory they exhibit a positive sign. The adjusted R^2 is high, showing that the equation fits the variability of the corruption measure strongly. In column (2) we estimate the same equation adding the share of voluntary organizations. The general picture does not change as both the variables capturing education and economic development are again negatively significant. Furthermore, the VO shows a negative and strongly significant coefficient supporting our two hypotheses. In column (3) and (4) we also include in the regression the number of articles of regional laws and the political fragmentation variable. Both variables present the sign in line with the theoretical predictions. More regulation as well as more fragmentation appears to increase corruption. Finally, in column (5) we add the Gini index to measure the impact of income redistribution on the conviction rates. The coefficient turns out to be positive and significant suggesting that income inequality increases corruption.

The negative correlation between education levels and corruption is generally interpreted in the empirical work as an indication that the middle-class opposes corruption more because corrupt practices are more likely to benefit the lower class (Schlesinger and Meier, 2002 among others). The positive sign of income and education variables in our regressions seems to suggest though that corruption in the Italian regions concerns richer and more educated classes. This is clearly shown in the so-called *Mani Pulite* (Clean Hands) process that signed the passing from a system of political patronage to a system of corruption that involved legislators, bureaucrats and businessmen. In other words our results seems to suggests that corruption of the 1980s and of the early 1990s was typically a “white collars” phenomenon.

Table 3 – OLS results

	(1)	(2)	(3)	(4)	(5)
Constant	-2.935 (0.000)	-3.906 (0.000)	-3.574 (0.000)	-3.780 (0.000)	-3.597 (0.000)
Log income per capita	1.22 (0.000)	1.630 (0.000)	1.380 (0.000)	1.441 (0.000)	1.268 (0.000)
Share School attainment	0.006 (0.000)	0.006 (0.000)	0.006 (0.000)	0.006 (0.000)	0.006 (0.000)
Share VO		-0.543 (0.000)	-0.519 (0.001)	-0.4831 (0.0017)	-0.363 (0.0048)
Frag			0.445 (0.0183)	0.362 (0.0624)	0.0002 (0.0016)
Art				0.0002 (0.0024)	0.424 (0.0229)
Gini Index					0.6760 (0.0017)
Obs.	437	437	437	437	415
Adj.R ²	0.65	0.67	0.68	0.69	0.68
F	38.67 (0.000)	39.98 (0.000)	40.341 (0.000)	40.034 (0.000)	38.01827 (0.000)

p-value in parenthesis

The OLS estimates only establish a correlation between corruption and the covariates: income and education may influence corruption, but these variables might be affected by reverse causation. As the OLS estimates may be biased, to deal with the reverse causality between education, income and corruption, we apply the Instrumental Variables method using as instruments a number of lags of income and education equal to the number of variables included in each regression. The overidentification test maintains that the instruments used in the second stage equations are exogenous. Either in OLS or in IV estimates we include regional fixed effects to avoid bias from omitted regional specific variables (as for example the difference in the attitude towards corruption practices in each region); furthermore they are corrected for the heteroskedasticity. Taken as a whole, estimates via the IV method do not show differences with the OLS results.

Table 4 – IV results

	(1)	(2)	(3)	(4)	(5)
Constant	-3.088 (0.000)	-3.865 (0.000)	-3.20 (0.000)	-3.49 (0.0001)	-4.154 (0.000)
Log income per capita	1.290 (0.000)	1.751 (0.000)	1.221 (0.000)	1.319 (0.0005)	0.8737 (0.0107)
Share of School attainment	0.005 (0.000)	-0.0016 (0.5715)	0.002 (0.858)	0.0015 (0.653)	0.005 (0.092)
Share of Voluntary Organization		-0.665 (0.0002)	-0.648 (0.0181)	-0.553 (0.0009)	-0.445 (0.0077)
Fragmentation			0.842 (0.0004)	0.637 (0.1061)	0.6819 (0.0405)
Number of articles of regional laws				0.0003 (0.060)	-1.49E-05 (0.9402)
Gini Index					5.413 (0.000)
Obs.	399	361	361	361	327
Adj. R ²	0.58	0.54	0.55	0.57	0.45

p-value in parenthesis

5. Concluding remarks

A number of theoretical and empirical studies have tried to uncover economic, social, cultural and political variables that affect the degree of corruption in cross-section analyses. Within this literature we focused on four hypotheses concerning the causes of corruption. A first hypothesis suggests that countries with higher levels of income and education are less corrupt; a second hypothesis posits that places with more government revenues or regulations will have higher levels of corruption, as these places will have more assets to steal and more rules to subvert. A third strand of the literature states that as voters become more diverse along income lines, then voting will inevitably focus on redistribution rather than on the honesty of government officials hypothesis. Finally, a fourth hypothesis suggests that government fragmentation reduces political accountability and increases the degree of corruption.

Overall, our analysis shows that education and economic development are positively correlated with corruption by suggesting that corruption in the Italian regions concerns richer and more educated classes. This is clearly shown to the so-called *Mani Pulite* (Clean Hands) process that marked the passing from a system of political patronage to a system of corruption that involved

legislators, bureaucrats and businessmen. More regulation as well as more fragmentation appears to increase corruption by supporting the view that bigger governments and governments with more regulations are more corrupt. the share of voluntary organizations has a significant effect on corruption. More income inequality increases corruption suggesting that voters are more interested in redistribution rather than in monitoring the honest behavior of public officers. Finally, the increase of regional share of voluntary organization as a measure of the degree of civiness reduces the corruption rate.

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