Transparency and corruption. Evidences from the case of the Italian regions.

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ABSTRACT:

Transparency is regarded as a value to which public-policies have to be inspired in order to curb corruption by major international organisations. There is a vast body of literature supporting the claim that the availability and accessibility of information play a vital role in contrasting corruption. However a number of studies provide evidence that an increase in the level of transparency does not necessarily imply a decline in corruption unless specific circumstances take place (Bac 2001; Bauhr and Grimes 2014; Bauhr and Nasiritousi 2012; Kolstad and Wiig 2009; Lio et al. 2011; Mahmood 2004) and that greater transparency can have the exact opposite effect or generate other unwanted consequences (Bac, 2001; Bauhr & Grimes, 2014; Bauhr & Nasiritousi, 2012; Kolstad & Wiig, 2009). Bastida and Benito (2007) demonstrate that the less corrupt a country is, the higher its level of budget transparency is, entailing that is not transparency which curbs corruption but rather the other way around.

In this latter perspective the present study tries to contribute to the debate about transparency and corruption through the analysis of a case related to the diffusion of corruption in the twenty Italian regions. Contrary to most part of the existing studies this research paper is not based on the use of a perception-based index of corruption, but on an objective measure of the phenomenon. The study demonstrates that in regions with higher levels of corruption public administrations compliance to the transparency legislation is lower compared to regions with inferior corruption levels.

INTRODUCTION

Tanzi argues that if *corruption could be measured, it could probably be eliminated* (Tanzi, 1998, p. 576), however given the relevance of this phenomenon many have tried to quantify it – academics, NGOs, private enterprises. Most of the measures developed are survey-based indicators – such as the Corruption Perceptions Index developed by Transparency

International – which in their earlier version only accounted for corruption perceptions while current ones also assess actual experience of respondents with acts of corruption. Criticism has been raised regarding the reliability and adequacy of these indicators (see, e.g.:Golden & Picci, 2005; Knack, 2006; Kurtz & Schrank, 2007) for a number of different reasons. Yet, the development of these corruption measures has allowed the production of a vast and ever-growing body of literature enquiring for its causes and consequences as well as remedies against it.

Within this context the present research aims to enquire the relation between corruption and transparency. To this end the case of the Italian public administrations is investigated, but contrary to most of the aforementioned literature the case analysis is conducted using a non-survey based indicator of corruption. In particular the study uses Golden and Picci's index of corruption (Golden & Picci, 2005) hypothesising that where corruption is higher transparency is lower.

As of 2012 the Italian legislator has put much effort in the fight against corruption aligning the Italian legal system with the International Treaties of which it is a signee, as for instance the United Nations Convention Against Corruption (UNCAC) and the Council of Europe Criminal Law Convention on Corruption. Among the measures adopted in this remarkable endeavour, the establishment of the national anti-corruption authority and the enforcement of a transparency law – which will be examined in depth later – are worth mentioning here. Despite these efforts the corruption level in the country is still high and significantly above the average level of western developed countries whatever ranking is used to assess it, and this makes the Italian case particularly interesting.

The paper discussion is organised into 4 sections: the first reports the analysis of the relevant literature on corruption and transparency, while in the second the research method and

objective are described. The third section illustrates the data analysis and discussion and finally in the last section the concluding remarks are presented.

LITERATURE REVIEW

Although corruption is not difficult to recognise when it is observed, the different forms it can take on complicate the task of those who try to define it. Transparency International defines it as: "*the abuse of entrusted power for private gain*". Similar definitions can be found in the literature where this phenomenon is described in terms of use/abuse/misuse of public office/powers for private gain (among others: Campos & Pradhan, 2007; Golden & Picci, 2005; Kaufmann, 2002; Kolstad & Wiig, 2009; Lambsdorff, 2005; Lindstedt & Naurin, 2010; Tanzi, 1998; Treisman, 2007). The beneficiary of the private gain may as well be a single person or a group of persons such as families, friends or political parties (Tanzi, 1998; Treisman, 2007). Bribery, embezzlement, patronage are just some of the forms that corruption can assume ranging from petty – or bureaucratic – to grand – or political – corruption.

It is demonstrated that corruption has distortive effects on economy like poor economic growth (Mauro, 1995), twisted government spending (Gupta, De Mello, & Sharan, 2001; Mauro, 1998) or income inequality (Gupta, Davoodi, & Alonso-Terme, 2002; Gyimah-Brempong, 2002). Besides non-economic consequences have been identified, which are particularly severe for the poor developing countries, like higher infant and child mortality rates (Gupta, Davoodi, & Tiongson, 2001) and environmental degradation (Plummer & Cross, 2006). More generally, as recently highlighted in the OECD's Report "Boosting integrity, Fighting corruption", corruption has implications whose costs in terms of human suffering go beyond the mere monetary losses (OECD, 2014, p. 2).

The causes of corruption are as many as the forms the phenomenon can assume and what's more it is not always easy to disentangle causes and consequences – hence the related variables – which force affected countries in a vicious cycle (Lambsdorff, 2005).

Tanzi (1998), for instance, discriminates between direct and indirect causes; among the former are included discretion allowed to public officials over important decisions and problems in financing of political parties, while in the latter are reported the quality of bureaucracy and the absence of adequate institutional controls. Treisman (2007) in his review of the studies on this subject finds that the strongest evidence resulting from the literature on the causes of corruption is the one highlighting the correlation between high level of economic development – in terms of per capita GDP – and low perceptions of corruption. He also finds robust evidence that countries with a long history of liberal democracy are perceived as less corrupt. In this last respect Montinola and Jackman (2002) find that not only political competition affects the level of corruption, but that a threshold exists which explains why dictatorships are slightly less corrupt than partially or newly democratised countries.

Most of the studies enquiring causes and consequences of corruption are built on survey-based indexes of corruption (Andersen, 2009; Bauhr & Grimes, 2014; Gupta et al., 2002; Gyimah-Brempong, 2002; Lindstedt & Naurin, 2010; Lio, Liu, & Ou, 2011; Mauro, 1995; Montinola & Jackman, 2002) and not on objective measures of actual corruption. The best-known of these indexes is probably Transparency International's Corruption Perceptions Index (CPI) but other relevant indicators have to be mentioned here like the Economist Intelligence Unit's Business International index (BI), the World Economic Forum Global Competitiveness Index (GCI), the World Bank's Control of Corruption Index (CCI). While earlier version of these indexes only measured corruption perceptions, current indicators also assess actual experience of respondents with acts of corruption. Criticism has been raised regarding the reliability and adequacy of these indicators (see, e.g.:Golden & Picci, 2005;

Knack, 2006; Kurtz & Schrank, 2007) for a number of different reasons. Treisman (2007) in his review observes a puzzling dichotomy. As a matter of fact he finds that while perception based indicators are highly correlated with several factors commonly believed to cause corruption, these same indexes can be hardly correlated with corruption actual occurrences as measured by experience based indicators. He concludes hypothesising that this dichotomy might be due to the fact that subjective indexes do not actually measure corruption frequency but rather inferences made on the basis of conventional understandings of corruption's causes (Treisman, 2007, p. 213).

Transparency is regarded as a value to which public-policies have to be inspired in order to curb corruption by major international organisations (see for example: IMF, 2015; OECD, 2014; United Nations, 2003). The concept of transparency is not univocally used, as different authors have recently claimed (Bellver & Kaufmann, 2005; Harrison & Sayogo, 2014; Michener & Bersch, 2013; Williams, 2015). Williams (2015) for instance argues that although the concept of transparency is used in the literature in a variety of ways, still it is possible to identify two recurring elements: the provision of information – which is relevant, timely, reliable, complete and understandable for its recipients – and the strengthening of public official accountability towards relevant stakeholders (Williams, 2015, p. 805). Michener and Bersch (2013) highlight that the several definitions of transparency provided in the literature are not aimed at actually explaining the concept but rather at fitting the research purpose of the various authors (Michener & Bersch, 2013, p. 237). They also demonstrate that the use of the term often fails to fulfil one or both transparency necessary conditions which stem from the literal and figurative meaning of the word, and which are respectively the *visibility* condition and the *inferability* condition (Michener & Bersch, 2013, p. 234). Michener and Bersch argue that these conditions are jointly necessary as transparency entails that information is complete and findable (*visible*) as well as useful to draw accurate

inference (*inferable*). Other authors contend that transparency can take on different forms (Heald, 2006; Meijer, 2013; Reynaers & Grimmelikhuijsen, 2015). Heald (2006) in particular identifies what he calls *varieties* of transparency starting from the assumption that transparency can assume different forms depending on its direction – upward, downward, outward and inward. In his argument these forms of transparency can be fruitfully observed considering the dichotomies between event versus process transparency; transparency in retrospect versus transparency in real time; nominal versus effective transparency (Heald, 2006, pp. 29-35).

Nobel prize J.E. Stiglitz argues that there are strong incentives to reduce transparency as secrecy is "*an artificially created scarcity of information*" which generates rents (Stiglitz, 2002, p. 488). Consistently with Stiglitz, Ellis and Fender (2006) demonstrate that economies which are less transparent are subjected over time to increasing level of corruption as a share of output. Reinikka & Svensson's case observation (Reinikka & Svensson, 2005) concerning a newspaper campaign in Uganda aimed at reducing diversion of public funds, suggests that processes which enhance voice and accountability should be high in both academics and policy makers agenda. Brunetti and Weder (2003) provide empirical evidence of a strong association between the level of press freedom and the level of corruption thus pointing out the central role that independent media may play in contrasting this phenomenon. Some authors (Kolstad & Wiig, 2009; Lindstedt & Naurin, 2010) highlight that for transparency to be an effective remedy against corruption: a) the recipients of the information should be enabled to access and process the same information – *publicity condition* ; b) the recipients of the information should also have a power and an incentive to act, through a sanctioning/rewarding system, based on the information provided – *accountability condition*. However a number of studies provide evidence that an increase in the level of transparency does not necessarily imply a decline in corruption, unless specific circumstances take place

(Bac, 2001; Bauhr & Grimes, 2014; Bauhr & Nasiritousi, 2012; Kolstad & Wiig, 2009; Lio et al., 2011; Mahmood, 2004) and that greater transparency can have the exact opposite effect or generate other unwanted consequences (Bac, 2001; Bannister & Connolly, 2011; Bauhr & Grimes, 2014; Bauhr & Nasiritousi, 2012; Kolstad & Wiig, 2009). Bastida and Benito (2007) demonstrate that the less corrupt a country is, the higher its level of budget transparency is, which means that is not transparency that curbs corruption but rather the other way round.

In this latter perspective the present study tries to contribute to the debate about transparency and corruption through the analysis of a case related to the diffusion of corruption in the twenty Italian regions.

RESEARCH METHOD AND OBJECTIVE

As previously mentioned the research purpose is to investigate the relationship between transparency and corruption. More specifically the study aims at assessing the influence of corruption on public administrations transparency and to this end the case of the public administrations in the 20 Italian regions is analysed.

The relevance of the Italian case arises from the significance of the problem in this nation, in absolute terms, as well as in comparison with other western developed countries. As a matter of fact, according to the Eurobarometer survey on corruption conducted in 2013, the 97% of the Italian respondents (EU average 76%) consider corruption a widespread phenomenon (European Commission Directorate-General for Home Affairs, 2013, p. 6). The 2014 European Commission Anticorruption Report, as well, highlights that in spite of the efforts made in recent years to contrast corruption, in Italy this phenomenon still remains a serious challenge (Commissione Europea, 2014). Furthermore in the last Transparency International's survey (Transparency Intrnational, 2015) Italy obtained a score equal to 44 out of 100, which is the second worst result among EU countries (only Bulgaria scored less than Italy) wherein the average value of the CPI index is 65.

In order to investigate the relationship between corruption and transparency two indexes are used. As for corruption the study uses the corruption index developed by Golden and Picci (2005). Their study portrays the spread of corruption in Italy using an indicator that, for each region, measures the corruption level in an objective fashion. Contrary to typical indices, which are based on surveys aimed at assessing the perception of corruption, the one devised by Golden and Picci is in fact an objective measure that consists of a ratio between the amounts of physically existing public infrastructure and the amounts of money cumulatively allocated by government to create these public works (Golden & Picci, 2005, p. 37). Comparing these two measures of public infrastructure allows to observe how much the government paid for the existing infrastructure in each region and to set a national average price for public constructions. The logic behind this indicator is that if the government paid for physical infrastructure more than the national average, then this indicates a waste of resources, mismanagement in the public contracting process and fraud (Golden & Picci, 2005, p. 39). The index does not capture the extent of corruption at a single point in time, but provides a proxy for the historically accumulated corruption in public works contracting in the years preceding the late 90's, the data used for its calculation consider in fact the public infrastructures existing in 1997.

For each region the respective corruption index reported in the Golden and Picci's study is related to a transparency measure which is obtained by computing data on the compliance of Italian public administrations' websites to the national transparency rules and standards set by the decree n. 33/2013 – so called Transparency decree. These data are retrieved from the Italian web portal "The Compass of transparency"[i]. Both the decree n 33 and "The Compass of transparency" are among those initiatives enacted to foster citizenry control over the use of public resources and the consistency of Italian public administrations activities to their statutory mission. The Transparency decree was issued by the Italian parliament and imposes

to all public administrations the disclosure of a large set of information concerning their organisation and management in a dedicated area of their websites that has to be labelled "*Amministrazione Trasparente*" – transparent administration. This section has to be organized into other 22 first level subsections (see table 2), which in turn have to be organized into another variable number of second level subsections.

The Compass of Transparency is instead an initiative launched by the Italian government, and it consists of a web portal which allows the real-time assessment of the compliance of public administrations websites to the prescriptions of the aforesaid decree. In particular this portal contains a section labelled "colora la trasparenza", which means give a colour to transparency, where it is possible to assess the compliance level to the "transparency decree" of public administrations website. The algorithm used by the portal verifies whether in the analyzed websites the "transparent administration" section is present and if its structure match the standard legal requirement for both first and second level subsections. The portal allows on demand evaluation of single public administrations as well as the assessment of groups of public administrations. In particular it is possible to obtain regional level or province level aggregated data which are then clustered by type of administration – e.g.: municipalities, schools, universities, hospitals, agencies and so on.

For the research purpose the presence of the "transparent administration" section is considered as a proxy of transparency. For each one of the 20 Italian regions the transparency level is obtained dividing the number of compliant public administrations by the number of total public administrations monitored in the region. At the time of data extraction the number of websites monitored was 10.967 which is more than half the total population of Italian public administrations; data are summarized in Table 3.

The study hypothesises that the transparency level will be lower in regions characterised by higher levels of corruption.

DATA ANALYSIS AND DISCUSSION

Data observation shows that in northern regions transparency indexes are higher compared to those of the southern and central ones. In particular while, on the one hand, all northern regions (Emilia Romagna, Friuli Venezia Giulia, Liguria, Lombardia, Piemonte, Trentino Alto Adige Valle d'Aosta, Veneto) obtain a transparency score that is higher than the national average (0.8413), on the other, all southern regions (Abruzzo, Basilicata, Calabria, Campania, Molise, Puglia, Sardegna, Sicilia) – except for Sardegna – obtain a score that is lower than the same measure. As regards central regions results are mixed with two regions (Toscana and Marche) scoring higher and two (Lazio and Umbria) scoring lower compared to the national average. The comparison of the mean values obtained by each sub-group of regions – north, centre and south – by means of the Wilcoxon test (table n. 4) allows to state that the differences among the three sub-groups are statistically significant.

This picture is consistent with Golden and Picci's findings which point out that corruption is higher in the south of the country, thus suggesting a negative relation between corruption and transparency. In order to measure the strength of this relation the correlation between the two was exploited and the results are reported in the table 5.

At first correlation was computed considering all the twenty regions. As the corruption index is high for less corrupt regions and vice versa, corruption data was multiplied by -1 so as to obtain higher indexes of corruption for higher levels of corruption. As it can be observed – table 4 - the resulting value for r is as par as -0.52. Data observation in the scattered plot (figure 1) however showed that Umbria presented a transparency index unexpectedly low considering the respective corruption index, thus the correlation was computed again excluding this region. As a result not only the correlation is higher (r = -0.77) but also the associated R^2 and *p-value*.

The negative influence of corruption on the compliance to the "transparency decree" thus confirm the study hypothesis.

The study findings point out once more the problem of a country divided into two areas, north and south, which is consistent with that depicted in Putnam's study (Putnam, Leonardi,

& Nanetti, 1994), where northern regions are characterised by a higher civic mindedness or, as Putnam's puts it, a higher social capital. Furthermore the same results are consistent with those studies on the Italian north-south divide which points out that in the regions wherein there is a higher social capital public administrations are more efficient (Arpaia, Doronzo, & Ferro, 2009; Giordano, Tommasino, Casiraghi, & Cannari, 2009; Nifo & Vecchione, 2015; Pavan, Reginato, & Fadda, 2014; Putnam et al., 1994). The demonstrated negative influence of corruption on transparency recalls the importance for transparency to be effective that both the *publicity* and *accountability* conditions (Kolstad & Wiig, 2009; Lindstedt & Naurin, 2010) are satisfied.

In recent years the Italian legislator has made remarkable efforts to contrast corruption, yet its level in the country remains outstanding. Much of these efforts however have been directed to the production of norms that considerably heighten the bureaucratic burden for public administrations by providing for a number of poorly coordinated obligations which run the risk of inducing formal acquiescence while leaving things unchanged. On the contrary scant attention has been devoted to the provision of preventive measures such as the strengthening of public administrations internal control systems, which represent the *first line defence* against corruption, but also reflect the attitude of political bodies toward corruption (Tanzi, 1998, p. 575).

As already mentioned the study uses an index of corruption which is based on data related to historically accumulated corruption in public works contracting in the years preceding the late 90's, which might cast doubt about its ability to portray current levels of corruption. However the Italian ranking in the Transparency International reports as of 1997 until 2015, suggests that the situation has not changed significantly. Besides, a recent study (Nifo & Vecchione, 2015) on the quality of Italian institutions at regional and provincial level confirms the existence of a gap between northern and southern regions which is particularly ample as regards corruption. What's more the study is not aimed at assessing the current level of corruption, but rather at evaluating its impact on transparency. Golden and Picci's index

allows the observation of an entrenched level of corruption thus making possible to assess its impact on the fulfilment of the recently set transparency legal provisions.

CONCLUSIONS

Corruption is a widespread phenomenon whose causes and consequences have been widely investigated in the social science literature. As of the mid 90's, when Transparency International started publishing its worldwide surveys on the perception of corruption, many studies based on international comparisons have been published on this topic. Together with the CPI index other corruption indicators have been developed by both NGOs, as for instance the World Bank, and private organisations. These survey based indicators have been subject to criticism as regards their reliability and adequacy (see, e.g.:Golden & Picci, 2005; Knack, 2006; Kurtz & Schrank, 2007) for a number of different reasons. In particular Treisman (2007) argues that subjective indexes do not actually measure corruption frequency but rather inferences made on the basis of conventional understandings of corruption's causes (Treisman, 2007, p. 213). To overcome these limitations Golden and Picci (2005) developed an objective indicator which compares the amounts of physically existing public infrastructure with the amounts of money cumulatively allocated by government to create these public works.

The present research used this indicator in order to analyze the relation between corruption and transparency and assess the influence of the former on the latter. To this end the case of the Italian public administrations was used and a transparency measure was developed basing on the compliance of public administrations to the transparency provisions issued in 2013 by the Italian legislator.

The study found a strong negative correlation between corruption and transparency highlighting the detrimental effect of corruption on public administrations compliance to the disclosure obligations provided for by the transparency legal provisions.

While there is a vast body of literature demonstrating the significance of transparency in curbing corruption, the inverse relation has received scant attention and it is generally taken for granted. Furthermore as corruption is a plague affecting especially poor developing countries much of the focus in the literature is on them. The present research on the contrary analysed one of the main western developed countries which appears dramatically divided into two macro regions: the less corrupt and more transparent north and the more corrupt and less transparent south. These findings are consistent with previous studies on the Italian north-south divide and highlight the vicious circle wherein southern regions have been stuck since the formation of the Italian Kingdome by the end of 19th century. Within this circle, corruption finds a fertile ground in the minor economic development which gives rise to clientelism and rents, which in turn foment, as Stiglitz (2002) argues, the political incentives for information not to be disclosed.

Transparency is an important device in the anti-corruption toolbox, but as the study demonstrated its action can be dampened by the same misbehaviours it tries to contest. Furthermore, as a number of studies argue, greater transparency not necessarily imply a decline in corruption, unless specific circumstances take place (Bac, 2001; Bauhr & Grimes, 2014; Bauhr & Nasiritousi, 2012; Kolstad & Wiig, 2009; Lio et al., 2011; Mahmood, 2004). Among these circumstances the Italian case recalls the attention on the respect of the *accountability condition* (Kolstad & Wiig, 2009; Lindstedt & Naurin, 2010) which requires for transparency to be effective that controls and sanctioning systems are in place so as to provide a "reasonable assurance" that those who misbehave will be caught and punished.

TABLES AND FIGURES

Table 1: Regional indexes of corruption

Region	Corruption index
Abruzzo	0.956
Basilicata	0.533
Calabria	0.409
Campania	0.362
EmiliaRomagna	1.611
FriuliVenezia Giulia	1.077
Lazio	0.817
Liguria	0.669
Lombardia	1.161
Marche	1.312
Molise	0.583
Piemonte	1.638
Puglia	0.722
Sardegna	0.838
Sicilia	0.607
Toscana	1.613
TrentinoAlto Adige	1.236
Umbria	1.783
Valle d'Aosta	0.855
Veneto	1.220

Source: (Golden & Picci, 2005, p. 46)

Table 2: Level I subsections as of decree n. 33/2013

Classification – level I subsections
1. General arrangements
2. Organisation
3. Consultants and independent contractors
4. Personnel
5. Performance
6. Controlled entities
7. Activities and procedures
8. Provisions
9. Controls over enterprises
10. Tender notice and contracts
11. Subsidies, contributions, grants, economic benefits
12. Budgets and Financial reports
13. Real estates and properties management
14. Controls and reports on the administration management
15. Provided services
16. Administration's payments
17. Public works
18. Land use planning
19. Environmental information
20. Qualified private health care organisations
21. Emergency and extraordinary interventions
22. Other contents

Table 3: Transparency compliance at regional level

Region	Number of PAs	Total PAs	Compliance ratio (%)
Abruzzo	322	392	82.14
Basilicata	151	188	80.32
Calabria	179	244	73.36
Campania	650	831	78.22
EmiliaRomagna	527	592	89.02
FriuliVenezia Giulia	212	233	90.99
Lazio	560	694	80.69
Liguria	261	300	87.00
Lombardia	1680	1926	87.23
Marche	304	343	88.63
Molise	131	163	80.37
Piemonte	1330	1453	91.53
Puglia	395	498	79.32
Sardegna	445	513	86.74
Sicilia	506	658	76.90
Toscana	444	515	86.21
TrentinoAlto Adige	298	330	90.30
Umbria	130	170	76.47
Valle d'Aosta	76	85	89.41
Veneto	737	839	87.84
TOTAL	9338	10967	85.15

	National average	North[ii]	Centre	South
Mean values	84.13	89.16	83.00	79.67

Data retrieval as of 24th January 2016 from http://www.magellanopa.it/bussola/page.aspx?s=cruscottobussola&qs=I/LavitAEpUzr|ZVIfNgwQ==

Table 4.: Wilcoxon rank sum test and Welch two sample T-test

Regions sub-groups	W	p-value	t	p-value
North vs. South	64	0.0001	6.2994	0.0001
North vs. Centre	29	0.0283	2.1984	0.1073
Centre vs. South	22	0.3677	1.0855	0.3314

Figure 1: Corruption and transparency scattered plot (all regions)

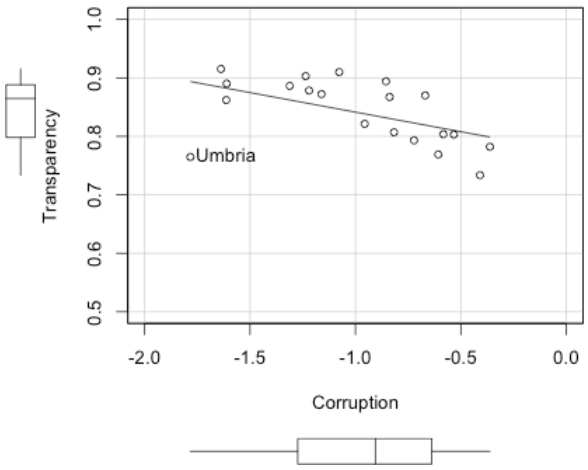

Figure 2: Corruption and transparency scattered plot (19 regions: Umbria excluded)

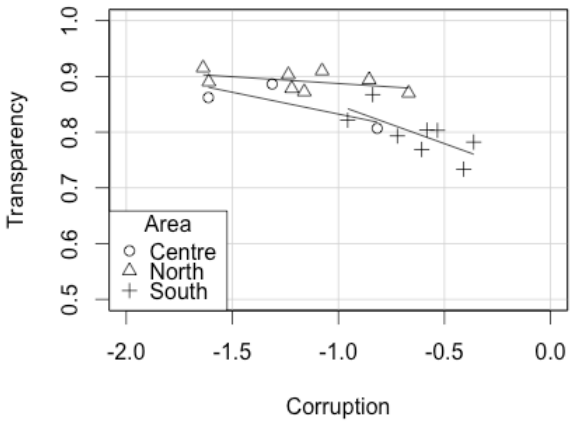

Table 5: Correlation table

Region	Transparency	Corruption
Abruzzo	0.8214	-0.956
Basilicata	0.8032	-0.533
Calabria	0.7336	-0.409
Campania	0.7822	-0.362
Emilia-Romagna	0.8902	-1.611
Friuli-Venezia Giulia	0.9099	-1.077
Lazio	0.8069	-0.817
Liguria	0.8700	-0.669
Lombardia	0.8723	-1.161
Marche	0.8863	-1.312
Molise	0.8037	-0.583
Piemonte	0.9153	-1.638
Puglia	0.7932	-0.722
Sardegna	0.8674	-0.838
Sicilia	0.7690	-0.607
Toscana	0.8621	-1.613
Trentino-Alto Adige	0.9030	-1.236
Umbria	0.7647	-1.783
Valle d'Aosta	0.8941	-0.855
Veneto	0.8784	-1.220

Correlation analysis			
n	***r***	**R^2**	***p-value***
20 (all regions)	-0.52367	0.233914	**
19 (excluding Umbria)	-0.77323	0.574234	***

Notes: The significance level is marked with "*": "***" corresponds to a p-value between zero and 0.01; "**" corresponds to a p-value between 0.01 and 0.05; "*":correponds to a p-value between 0.05 and 0.10

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Notes

[i] See www.magellanopa.it

[ii] North includes: (Emilia Romagna, Friuli Venezia Giulia, Liguria, Lombardia, Piemonte, Trentino Alto Adige Valle d'Aosta, Veneto). Centre includes: (Lazio, Marche, Toscana, Umbria). South includes: (Abruzzo, Basilicata, Calabria, Campania, Molise, Puglia, Sardegna, Sicilia).