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Economic Aspects of the complementarity between Corruption and Crime: Evidence from Italy in the period 1996-2005.

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Abstract

This paper empirically investigates the connection between corruption and crime. Such linkage has been often underestimated because corruption has been often analyzed as a white-collar crime. In fact it is not characterized by violence. Recently a theoretical connection has been suggested to highlight that corruption and crime can be considered strategic complements. This paper, therefore, delves into the link between corruption and crime investigating empirically this relation for Italian regions in the period 1996-2005. Results show that current crime is positively associated with past levels of corruption. This somehow confirms the complementary relationship between the two illicit phenomena.

Keywords: Corruption, Crime, Complementarity, investment

Jel codes: K42; J47.

Introduction

Corruption has recently drawn attention of the economists. Although early analyses date back to 70s, only in the last decade several empirical models of corruption have been produced. However, in spite of this growing interest, a shared definition of corruption is still missing. McChesney (2010) defines corruption as “..governmental actor’s use of resources that nominally he does not own but he effectively does own, to enrich himself personally”. In other words, the author links the phenomenon of corruption to the

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existence of a set of property rights owned by the government but in fact delegated to public officials. In this vein, in what follows, we define corruption as an illicit informal contract between a public bureaucrat and a private actor (namely a corruptor) in which the corrupted official accepts some monetary amount or other economic benefits from the second in order to concede discretionarily the exploitation of a specific right or some public funding. In this respect, corruption can be also defined as the illicit side of rent-seeking.

Economic studies on corruption mainly focus on the causes and consequences of corruption. Among these studies, one approach tries to find out how some institutional characteristics impact on corruption, while the second approach aims to single out the impact of corruption on the economy and, in particular on economic growth. In this paper, however, we are interested in another consequence of corruption, namely the impact of corruption on emergence of crime. Drawing a theoretical perspective from Kluger et al. (2005), we assume that corruption and crime can be considered strategic complements, and therefore we try to empirically investigate this relationship between crime and corruption. This theoretical model is grounded on the classical theory of crime developed by Becker (1968) that points out that rational individuals take into account the certainty and the severity of the expected sanctions and punishment. In other words, to assure an efficient legal enforcement, not only the cost of a given crime has to be high but also the criminal has to be aware that, if caught, he will be surely convicted. Taking this as pillar, Kluger et al. (2005) delve into the relationship between corruption and the severity of the penalty. The authors point out that in weak government environments, characterized by badly-paid and dishonest law enforcers and where corruption is pervasive, harsh sanctions and punishment not only do not suffice to deter crime but they also may lead to an increase in crime rates. According to the authors, further increases in the severity of the sanctions have the paradoxical effect of lowering the cost of corruption in comparison to its profitability. In other words, in the presence of harsher criminal sanctions, bribing a public official is more advantageous. Longer and harsher sentences alone, in fact, do not prevent individuals from committing crime but they may encourage these individuals to find a way-out from punishment throughout a bribe. This situation, however, causes a reduction in the efficiency of the judicial system and, consequently, an increase of crime rates. If corruption is widespread, in fact, criminals do not

perceive imprisonment as a predictable possibility and, therefore, the opportunity cost of committing crime decreases significantly. Our work draws insights from the previous theoretical study and empirically investigates on the relationship between crime and corruption in Italy in the period 1996-2005. The period embraces the socio-economic adaptation after the biggest corruption scandal in Italian history, namely the «Mani Pulite» inquiry which has been followed by a period of economic sluggishness emerged after the 2001 financial crisis. In particular we estimate a panel data model with both random and fixed effects OLS estimators. The dependent variable is the current level of crime and the main explanatory variable is the past actual level of corruption measured as the actual number of public servants prosecuted for corruption. Results show a positive association between current level of crime and past level of corruption. The estimation is robust across different specifications including some control variables drawn from the prevailing literature on economic determinants of crime.

In the end, the main novelty we would claim for this work is the empirical evidence of a robust association between past corruption and current level of crime. This brings to light a relationship between crime and corruption in line with the theoretical predictions expounded above. Stated succinctly, crime increases in the presence of corruption. In brief, this paper contributes to two strands of literature. First, we contribute to the literature on determinants of crime, with a special focus on Italy. Second we contribute to the growing literature which studies the detrimental impact of corruption on economic growth. In fact, unpacking the complementary relationship between corruption and crime let us to highlight another channel through which corruption could affect negatively economic growth. Needless to say, the negative relationship between crime and growth is undisputed in the economic literature of growth.

The paper is structured as follows: firstly, we present data about crime and corruption in Italy detailing the peculiarities of the Italian case. Eventually, we set up a model to delve into the relationship between crime and corruption. In doing so, we ground on an established literature on determinants of crime. Thirdly we explore some non-linearities. Concluding remarks close and highlight some lines for future research.

Related literature on the consequences of corruption

The literature on corruption mainly probes into its causes and its consequences as carefully reviewed by Lambsdorff (2006). Among the causes it is possible to draw a distinction between political, institutional and social determinants of corruption. Goel and Nelson (2010) have widely studied the institutional and political features which may bring about corruption. They find out that both government size and its scope are positively correlated with corruption. On the other hand, the size of the public sector cannot be associated with corruption.

However, the most debated issue about corruption is perhaps the impact that this phenomenon has on economic growth. On the one hand, it is maintained that in the presence of an inefficient bureaucratic system corruption contributes to “greasing the wheels of the system”. However, this hypothesis found very little support in empirical studies. Among others, Aidt (2009) shows that this idea is deeply unfounded.

On the other hand, the great majority of the literature agrees that corruption is detrimental for economic growth of a country. The idea that high levels of corruption bring about a lower economic performance has been widely accepted [see among others Myrdal, (1989), Krueger (1974) Shleifer and Visny (1993)]. The main argument is that public officials delay the concession of a service on purpose of getting a bribe. The bribe creates an extra-cost for private and private citizens.

However, despite the agreement on corruption slowing economic growth, there is still no consensus on how such detrimental impact takes shape. A growing strand of literature has been investigating the possibility that corruption hits the volume of the investments. In this view, corruption can be interpreted as a sort of tax which reduces the future returns of an investment and, consequently, it dissuades investors. Mauro (1995) finds out that corruption is negatively and significantly associated with the ratio of investment to GDP. These findings has been reinforced by Brunetti and Weder (1998) and Gymiah-Brempong (2002).

Secondly, corruption brings about a misallocation of public expenditure towards less productive sectors and, at the same time, it reduces the quality of the public services. Above all, public expenditures in education are reduced. Mauro (1998) finds a negative and significant association between corruption and public expenses in education. This result has been confirmed by the analysis of Gupta, Davoodi and Alonso-Terme (2002) and Esty and Porter (2002).

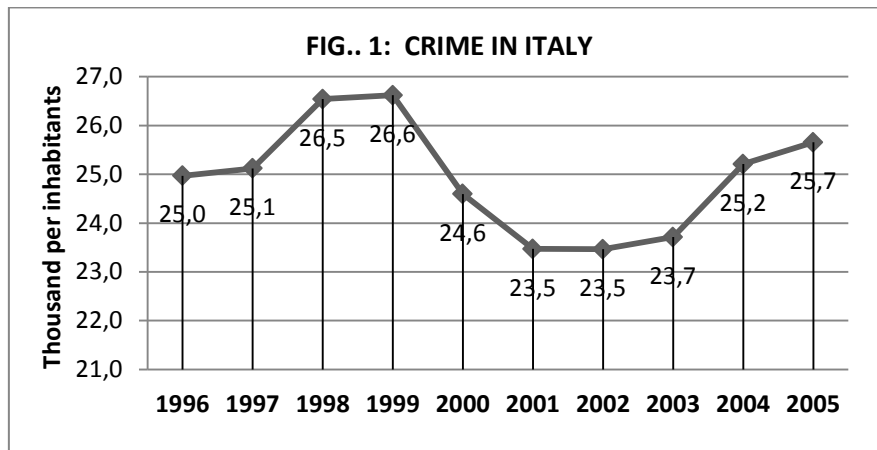
In other words, as Caruso (2009) suggests, a corrupted bureaucracy has an interest in directing a large quota of public expenditure towards sectors, such as the sanitary system and public infrastructure, that provide larger rooms of rents. Mauro (1997) also suggests a positive association between corruption and public investments and Esty and Porter (2002) and Tanzi and Davoodi (1997) theorize that corruption brings to over-investment in public infrastructure.

Thirdly, corruption originates a loss of productivity. In fact, if profit-making is perceived to depend on the favor of some corrupted public servants and not on the productive efficiency, entrepreneurs have fewer incentives to improve their productivity. This hypothesis has been confirmed by the analysis of Bandeira et al. (2001). These authors, grounding on the work of Burki and Perry (1998) and on the empirical model of Garcia et al (2001) investigate the association between factor productivity and corruption in a sample of 81 countries. They conclude that corruption negatively affects economic growth by reducing capital productivity.

In sum, the following analysis is an attempt to highlight another channel of detrimental impact of corruption on economic growth. The channel is an increase in crime rate. The association between crime and growth is undisputed because crime undermines the security of property rights and the confidence in the rule of law. They have been both proved to be crucial for long-run economic growth.

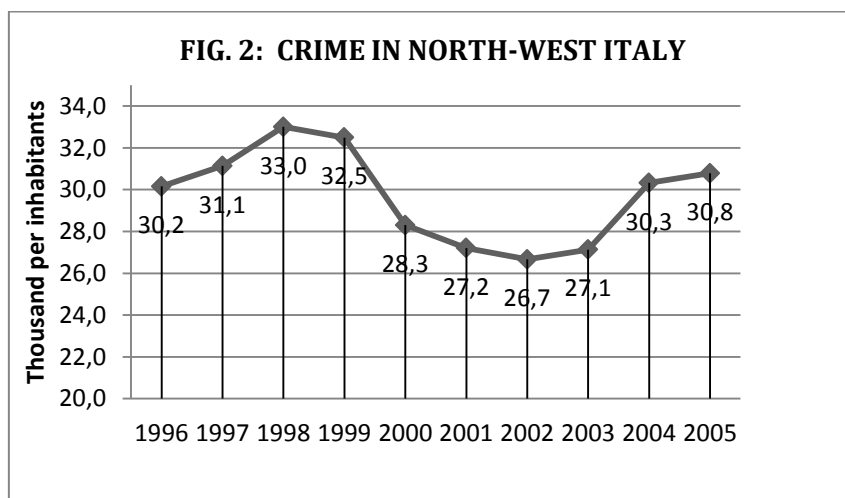
The Data and the empirical specification

As stated above, the main aim of our work is to study the association between crime and corruption in Italy. Therefore, in what follows, we present an empirical investigation on the effects of corruption on crime. Data are drawn from *Italian national statistical office* (ISTAT). All figures are collected on a regional basis. Italian administrative regions correspond to European NUTS II-level. First, as measure of crime, we use an index drawn from the *Italian National Institute of Statistics* (ISTAT). It reports the number of burglaries and robberies per thousand of inhabitants.

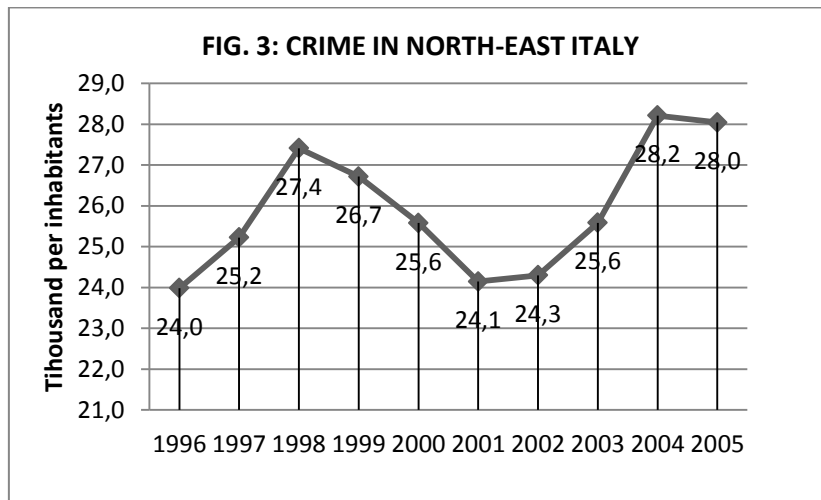


Source: ISTAT

Before focusing on the relation between crime and corruption, figures 1-5 present actual values of such index for whole Italy and its macro-regions for the period 1996-2004. There are, in fact, significant differences in the level of criminal activities among the Italian macro-regions. North-western regions present the highest number of reported crimes from 1996-2004. In these regions, despite a slight drop in the number of crimes reported in early 2000, the level of criminal activities has newly increased in the year 2004-2005.

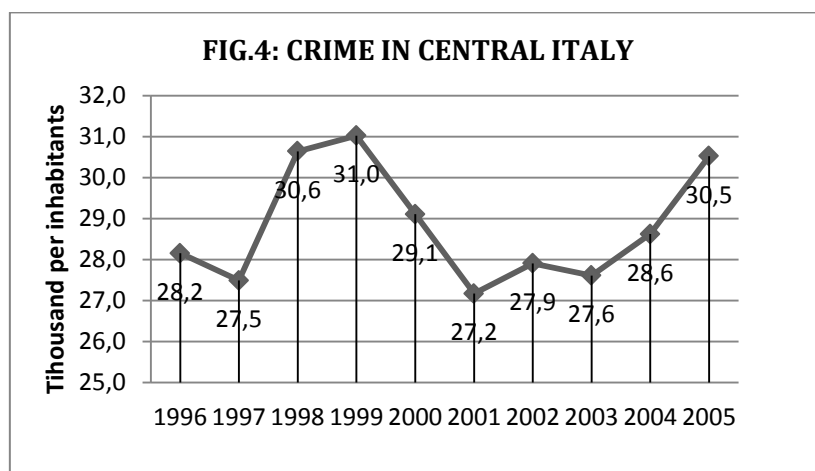


Source: ISTAT



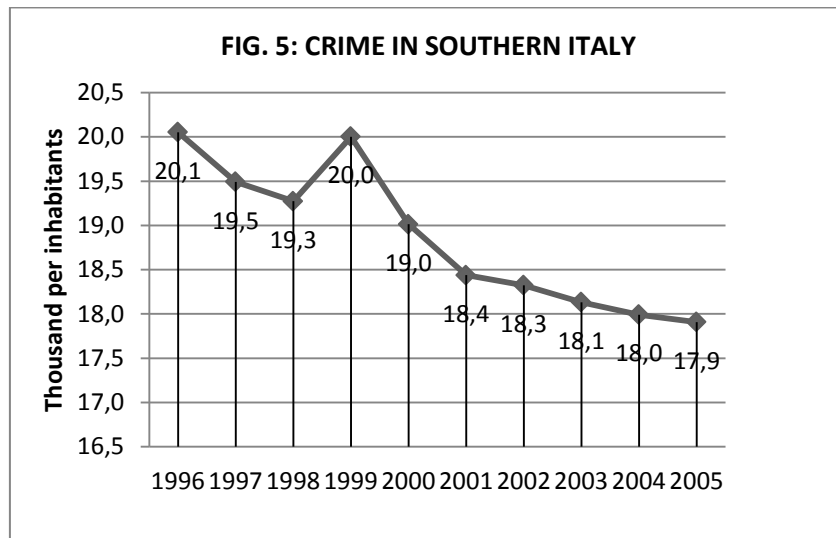
Source: ISTAT

The North-eastern region, instead, presents more irregular patterns in crime rate, as shows in the figure above. Despite, the general trend for the period 1996-2004 is positive, there has been a consistent decrease in the number of crimes reported from 1999 to 2001. After this year, the rate of crime has risen once again. Central regions also present an increasing level of crime. In particular, the trend for the period 1996-2005, although being irregular, is increasing.



Source: ISTAT

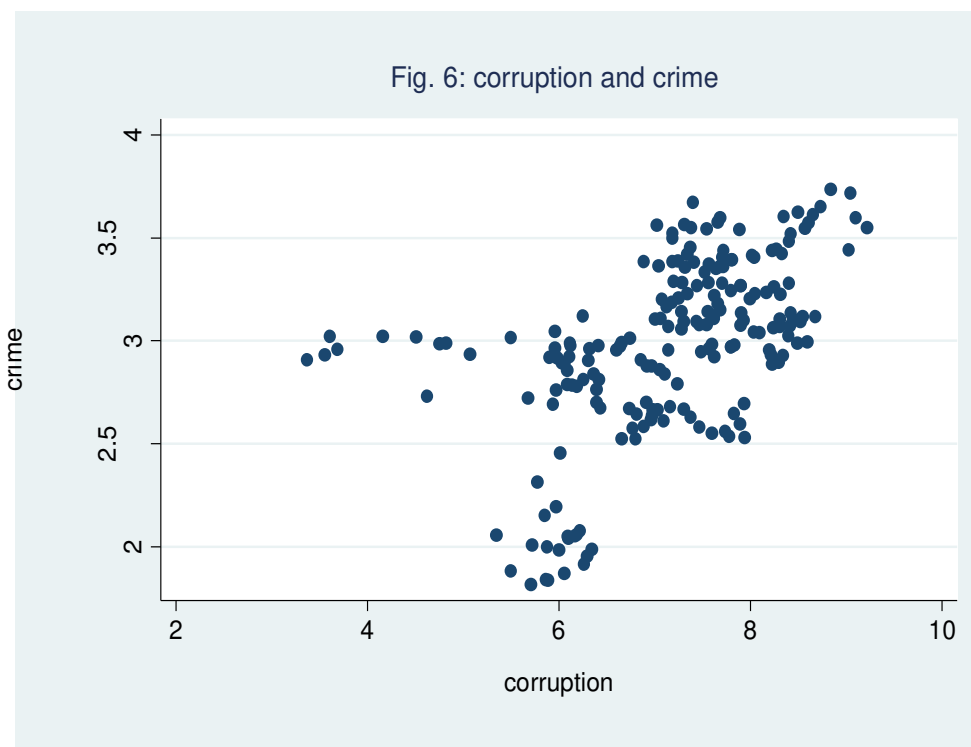
Southern regions, on the other hand, show a declining trend in crime. The actual number of crimes reported has constantly declined from 1996 to 2005.



Source: ISTAT

As measure of corruption we use the number of regional government officials prosecuted for corrupt practices relative to the population. The crimes that we consider are based on the Libro II, Titolo II (crimes against the Public Administration) of the Italian Criminal Law as reported in the *Annali di Statistiche Giudiziarie* of the ISTAT (various issues) and they have been firstly used in an econometric study in Fiorino et al. (2012).

In our analysis, the measure of corruption has been lagged of one year in order to consider the effect of past corruption on current crime. Moreover, we rule out the possibility of endogenous determination of both variables. The relationship between current crime and past corruption is showed in the scatter-plot diagram below. Both variables are logged. A positive correlation appears to be present. In the meantime, this scatter-plot suggests the possibility of a non linear relationship between crime and corruption.



Then, let us start our empirical investigation with a linear model. Eventually we shall explore some non-linearities. Therefore, in what follows, we examine the main hypothesis of this work by using the following panel data model. The OLS estimator is applied.

$$Crime_{it} = \beta_0 + \beta_1 corr + \beta_2 X + \varepsilon_{it}$$

where

$Crime = \text{property crimes}$, $i = 1, \dots, 20$, $t = 1996, \dots, 2005$ and X denotes a set of covariates listed in Table 1 below. Most variables have been logged and one-year lagged. This is a simple way to avoid endogeneity.

Table 1 - Descriptive Statistics

Variables (logged)	Obs.	Mean	St. dev.	Min	Max
Corruption, (t-1)	200	1952.71	1797.69	29	10087
School participation rate, (t-1)	280	4.492	.092	4.191	4.651
Unemployment rate, (t-1)	300	2.076	.576	.920	3.197
Gross fixed investment, (t-1)	300	9.106	1.028	6.595	11.067
Public expenses in security, (t-1)	402	6.641	1.039	4.093	8.262
Patents registered at the EPO (t-1)	297	3.420	1.197	-.142	5.281
Percentage population 25-34 years old	270	2.695	.103	2.318	3.055
				2.532	3.289
Percentage population 65 and over years old	270	2.951	.152		

The choice of covariates follows the prevailing literature. The first covariate is a measure of education. In fact, the association between education and crime is perhaps the most evident. As stated by an established literature [see among others Groot and van den Brink (2010), Lochner and Moretti (2004), Soares (2004), Gould et al. (2002), Miron (2001), Grogger (1998) and Buonanno and Leonida (2006/2009) for the Italian case], education is negatively associated with crime. Interpretation in this respect is two-fold. Firstly, higher levels of school participation increase the opportunity cost of committing crime by providing better returns from licit activities. Secondly, educated people are likely to consider the consequences of committing crime more consistently than less educated people so reducing their willingness to do it. Thirdly, someone maintains that a more educated society directly influences individual beliefs and preferences creating an ethic deterrent against crime.

A second control variable is the level of unemployment. The level of unemployment has been frequently used as proxy to estimate the set of economic opportunities within a society. The higher is the level of unemployment, smaller is the set of economic licit opportunities. However, its association with crime is still controversial. According to a classical interpretation, there is a positive association between crime and unemployment. In this view, the number of unemployed people is a proxy indicator of the general economic condition of a society. In other words, the larger is the number of unemployed people, the higher is the probability that an individual is going to earn a living by illegal activities. Put differently, the larger is the set of economic opportunities, the lower is the likelihood that individuals would commit crimes. Therefore, it measures the opportunity cost of committing crime. (see Freeman, 1999; Ehrlich, 1996, 1973). This hypothesis has found robust empirical evidence for property crime (Neumayer, 2005; Levitt, 2001) On the other hand, there is also a significant group of studies, particularly in reference with violent crime, which analyze the relationship between crime and unemployment according to an opportunity perspective. According to this idea, unemployment is interpreted as a proxy of social activity and, as a consequence, a negative association with crime is predictable. In other words, it is supposed that unemployment reduces the level of social activity of individuals and, consequently, its opportunity of committing crime. Such hypothesis has been proposed for both property and violent crime (Cantor and Land, 1985), but some evidence is available only for violent crime (e.g. Saridakis 2004; Levitt, 2001; Entorf and Spengler, 2000).

Furthermore, we have also included the gross fixed investments as a proxy for future economic opportunities. In fact, the volume of the gross fixed investments indicates how much the entrepreneurs are actually investing in a given region, so enlarging the set of future licit economic opportunities. A negative relationship between the level of investments and crime has been shown in Caruso (2009) for the case of organised crime in Italy. Eventually, we consider also the number of patents registered at the European Patent Office (EPO). This could be a good proxy for the level of innovation. Needless to say, productive innovation also can be expected to enlarge the set of economic opportunities in the future. Therefore, the future set of economic opportunities increases the current opportunity cost of crime. As measure of deterrence we use the public spending in security. Nevertheless, an established strand of literature points out that deterrence is codetermined with crime and that, as a consequence, a problem of simultaneity occurs. That is, more deterrence can be caused by more crime. Therefore, there is no robust evidence of crime reduction in the presence of higher deterrence (Benson et al., 1994; Cameron, 1988; Cloninger and Sartorius, 1979; Corman et al., 1987). Finally, we also take into account the association between crime and two groups of people, namely the quota of individuals who are between 25-34 years old and those being 65 and over. It is often maintained that crime declines with age. So controlling for age groups is common in literature on crime.

Discussion of the results

The results of the OLS regressions are reported in Tables 2-3 below. As mentioned above, the dependent variable is the number of property crime reported per thousand of inhabitants. The first column reports the simplest parsimonious uni-variate model. The other columns report different specifications with a set of covariates.

The main finding is that corruption positively affects the level of crime. Precisely, an increase of 1% in past corruption is followed by a rise of 0.05% in the level of crime. In spite of the magnitude of the elasticity, this association is positive and statistically significant across different specifications. As far as the covariates are regarded, our results confirm the established findings presented in the mentioned literature. Education, in fact, is significantly and negatively associated with crime. An increase of 1% in school

participation causes a decrease of 0.5% in the rate of crime. The association between unemployment and crime, on the other hand, is not significant. Gross fixed investments are significantly and negatively associated with crime. In details, 1% million more in the volume of the investments is associated with a decrease of 0.4% in the crime rates. The number of patents registered at the European Patent Office, is not significant. Furthermore, crime and past public expenditure in security are significantly and positively associated. An increase of 1% more in the level of deterrence is associated with a rise of 1.2% in crime levels. This confirms the idea according to which crime and deterrence are co-determined. In particular, this seems to hold even across different periods.

Finally, there is a significant and negative association between crime and the ratio of over 65 years old people to the total population. Specifically, an increase of 1% in the quota of elder people, drops crime rates of 1.3%. The association between the ratio of young adults to the total population is, instead, only weekly significant. Nevertheless, results show that if the percentage of young adults rises of 1%, crime levels rise by 0.7%. Results are confirmed if using the RE estimator in which dummy variables have been added for all regions.

Tab. 2 Results - corruption and crime in Italy 1996-2005.

	1 (FE)	2 (FE)	3 (FE)	4 (FE)	5 (FE)	6 (FE)	7 (FE)
Corruption, t-1	.063***	.085***	0.85***	.074***	.070***	.074***	.057**
	.027	.028	0.28	.028	.028	.028	.028
School participation rate at secondary level, t-1		-.874***	-.875***	-.836***	-1.059***	-1.083***	-.561*
		.325	.331	.326	.335	.333	.341
Unemployment rate, t-1			.000	.005	-.002	-.017	-.017
			.050	.049	.049	.048	.054
Gross fixed investments, t-1				-.363***	-.390***	-.330***	-.433***
				.142	.141	.144	.143
Public expenses in security, t-1					1.014***	1.149***	1.194***
					.425	.422	.429
Patens registered at the European Patent Office, t-1						-.001	-.008
						.020	.019
Percentage of population 25-34 years old							.708*
							.423
Percentage of population 65 and over years old							-1.299***
							.430
Time trend	yes	Yes	yes	yes	yes	yes	yes
Regional dummies	no	no	no	no	no	no	no

Constant	2.520***	6.195***	6.197***	9.335***	3.390	2.605	2.789
	.200	1.383	1.395	1.846	2.916	2.910	3.258
Obs	200	200	200	200	200	198	178
Groups	20	20	20	20	20	20	18
R square within	0.034	0.072	0.072	0.105	0.133	0.141	0.212
R square between	0.298	0.193	0.192	0.512	0.006	0.020	0.000
R square overall	0.277	0.186	0.185	0.473	0.006	0.021	0.001

Notes: *** significant at 1%, ** significant at 5%, *significant at 10%. For sake of readability statistically significant coefficients are in bold. Standard Errors in parenthesis.

Tab.3 - corruption and crime in Italy 1996-2005. - dependent variable: actual level of crime

	1	2	3	4	5	6	7
	(RE)	(RE)	(RE)	(RE)	(RE)	(RE)	(RE)
Corruption, t-1	.063***	.085***	.085***	.074***	0.070***	.074***	.057**
	.027	.028	.028	.028	0.028	.028	.028
School participation rate at secondary level, t-1		-.874***	-.875***	-.836***	-1.059***	-1.083***	-.561*
		.325	.331	.326	.335	.333	.341
Unemployment rate, t-1			.000	.005	-.002	-.017	-.017
			.050	.049	.049	.048	.054
Gross fixed investments, t-1				-.363***	-.390***	-.330***	-.433***
				.142	.141	.144	.143
Public expenses in security, t-1					1.014***	1.149***	1.194***
					.425	.442	.429
Patens registered at the European Patent Office, t-1						-.001	-.008
						.020	.019
Percentage of population 25-34 years old							.708
							.423
Percentage of population 65 and over years old							1.299***
							.430
Time trend	yes	yes	yes	yes	yes	yes	yes
Regional dummies	yes	yes	yes	yes	yes	yes	yes
Constant	3.064***	6.775***	6.435***	8.638***	6.051***	5.124***	5.464***
	.247	1.403	1.374	1.635	2.164	2.160	2.505
Obs	200	200	200	200	200	198	178
Groups	20	20	20	20	20	20	18
R square within	0.034	0.072	0.072	0.105	0.133	0.141	0.212
R square between	1.000	1.000	1.000	1.000	1.000	1.000	1.000
R square overall	0.955	0.957	0.957	0.958	0.960	0.961	0.966

Notes: *** significant at 1%, ** significant at 5%, *significant at 10%. For sake of readability statistically significant coefficients are in bold. Standard Errors in parenthesis.

Robustness check: some nonlinearities

So far we have assumed a linear association between corruption and crime. However, figure 6 above suggests also some non linear association between corruption and crime. Therefore, for sake of robustness, we investigate further the relationship between these two variables using the following model.

$$Crime_{it} = \beta_0 + \beta_1 corr + \beta_2 corr^2 + \beta_3 X + \varepsilon_{it}$$

In doing so, we are testing the hypothesis that corruption does not affect crime levels proportionally but the higher the levels of corruption are, the greater is its impact on crime rates. The results, listed below in tables 4-5, give validity to our hypothesis. Interpretation of these results, however, is a slippery floor. In fact, the effect of corruption on crime turns to be not significant suggesting that at relatively low levels of corruption the predicted relationship does not appear to take shape. Put differently, low level of corruption does not provide enough information on our research inquiry. On the other hand, widespread corruption brings about a less restrained environment which boasts higher levels of crime. In details, we estimate that an increase of 1% in corruption rates causes a rise of 0.01% in crime level.

Tab. 4 - Corruption and crime in Italy 1996- 2005.

	(1) FE	(2) FE	(3) FE
Corruption, t-1	-.132	-.077	-.165
	.120	.120	.115
Corruption, squared	.015**	.011	.015**
	.008	.008	.008
School participation rate at secondary level, t-1	-.1086***	-.883***	-.029
	.331	.334	.361
Unemployment rate, t-1	-.024	.002	-3.701***
	.048	.048	1.282
Gross fixed investments, t-1	-.267**	-.264	-3.69***
	.147	.145	.142
Public expenses in security, t-1	1.099***	3.322***	3.081***
	.421	.931	.921
Public expenses in security t-1, squared	-.191***	-.191***	-.179***
	.071	.071	.073
Patens registered at the European Patent Office, t-1	-.015	-.020	-.028
	.021	.021	.020
Percentage of population 25-34 years old			-1.925**
			.947
Percentage of population 65 and over years old			-.583
			.457
Percentage of population 25-34 years old x Unemployment rate			1.364***
			.472
Time trend	yes	yes	yes
Regional dummies	no	no	no
Constant	3.088	-4.144	1.367

	2.906	3.939	4.264
Obs	198	198	178
Groups	20	20	18
R square within	0.157	0.191	0.295
R square between	0.302	0.009	0.003
R square overall	0.031	0.011	0.001

Notes: *** significant at 1%, ** significant at 5%, *significant at 10%. For sake of readability statistically significant coefficients are in bold. Standard Errors in parenthesis

In addition, we also examine the presence of a non linear relationship between crime and public expenses in security. We assume that if low increases in the ratio of public expenses in security to GDP may be co-determined with crime so returning a positive association, conversely, significant increases in security expenses may lead to a drop in crime rates. Precisely, we calculate that raising the quota of public expenses in security to GDP leads to a decrease of about 0.2% in crime rates. Put differently, it seems that security spending affects negatively actual crime only when it surpasses a threshold.

Finally we question the possibility of interactions between unemployment and the percentage of people being 25-34. In our baseline models, unemployment is not significant. However, introducing an interaction term between unemployment and percentage of young adults (25-34 years) relative to the total population, both unemployment and the interaction term turn to be significant. In particular, an increase of 1% in the number of unemployed people produces a decrease of 3.7% in the rate of crime so confirming the opportunity perspective expounded in the previous section. The interaction term between unemployment and the 25-34 age group shows a positive association with crime. Interpretation is clear-cut. People aged between 25-34 are more likely to commit crimes if unemployed. Evidently, the quota of 25-34 age group on the total population turns to be negatively associated with crime. It is not simply the age which increases the likelihood of crime, but younger adults are more likely to commit crimes presumably if unemployed. This confirms the findings presented in Britt (1997). Otherwise the larger is the quota 25-34 years old people the lower is the level of actual crime. These results hold for both fixed effects and random effects estimation as shown in tables 4 and 5.

Tab. 5
Results – corruption and crime in Italy 1995-2005

	1 (RE)	2 (RE)	3 (RE)
Corruption, t-1	-0.132	-0.077	-0.165
	.120	.120	.115
Corruption, squared	.015**	.011	.015**
	.008	.008	.008
School participation rate at secondary level, t-1	-1.086***	-.883***	-.029
	.331	.334	.361
Unemployment rate, t-1	-.024	.002	-3.701***
	.048	.048	1.282
Gross fixed investments, t-1	-.267**	-.264**	-.369***
	.147	.145	.142
Public expenses in security, t-1	-.015***	3.322***	3.081***
	.021	.931	.921
Public expenses in security t-1, squared		-.191***	-.179***
		.071	.073
Patens registered at the European Patent Office, t-1	-.015	-.020	-.028
	.021	.021	.020
Percentage of population 25-34 years old			-1.925**
			.947
Percentage of population 65 and over years old			-.583
			.457
Percentage of population 25-34 years old x Unemployment rate			1.364***
			.472
Time trend	yes	yes	yes
Regional dummies	yes	yes	yes
Constant	5.593***	-1.578	3.642
	2.159	3.411	3.787
Obs	198	198	178
Groups	20	20	18
R square within	0.157	0.191	0.295
R square between	1.000	1.000	1.000
R square overall	0.962	0.964	0.970

Notes: *** significant at 1%, ** significant at 5%, *significant at 10%. For sake of readability statistically significant coefficients are in bold. Standard Errors in parenthesis

Summary of the results

In conclusion, our empirical analysis has confirmed our hypothesis. Corruption and crime are correlated. In particular, it seems that corruption increases future crime. Main empirical findings have shown that:

1. There is a robust and positive association between crime and corruption. As pointed out by Kugler et al. (2005) crime and corruption appear to be complements. In particular, we are interested in verifying that corruption reinforces crime. An increase of 1% in corruption levels produces an increase of 0.05% in crime levels. However, we also find out that the relationship between corruption and crime appears to be non-linear. That is, the higher the levels of corruption are, the greater is its impact on crime rates.
2. There is a robust and negative association between crime and education. Raising of 1% in school participation reduces crime of 0.5%
3. There is significant and positive relationship between the ratio of public expenses in security to GDP and crime. Nevertheless, supposing a non linear relationship between these two variables, we find out that greater levels in security expenses, instead, drop crime.
4. There is a robust and negative association between crime and the volume of fixed gross investment. Raising the volume of gross fixed investment of 1% generates a decrease of 0.4%. in crime rates. That is, perceived future economic opportunities reduce crime.

Concluding remarks

The main novelty we would claim for this work is the empirical evidence of a positive association between past level of corruption and current level of crime. That is, corruption and crime appear to reinforce each other. This result constitutes further evidence on the detrimental impact of corruption on economic development of societies. Moreover, the clear-cut negative association between crime and investments confirm the detrimental impact of illicit behaviors on economic development. These results shed new light on an illicit phenomenon that is widespread in Italy.

Further research should analyze more in details the impact of corruption on long-run determinants of economic growth. In fact, since corruption divert public investments towards sectors where short-term returns can emerge, public investments in education and related sectors are lowered so affecting negatively future level of innovation and labor productivity.

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