Organized crime and regional development. A review of the Italian case

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April 2009

> " The one true measure of crime
> is the damage done to the nation"
> Cesare Beccaria, 1809, page 37.

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Abstract. This paper offers a review of the effects of organized crime on regional economic development, with particular reference to the case of Italy. After reviewing the empirical studies that analyse the relationship between crime and economic development, the paper examines the regional distribution and the social costs of some crimes (in particular extortion) that can be linked to *mafia* type criminality.

Jel: K42, K 49, R 59.

Keywords: Organized crime; Italy; economic development; costs of crime.

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1. Introduction

Why do individuals commit crimes? What are the determinants of criminality? In what ways do economic, social or cultural conditions bear on crime levels? How do illegal markets function? These are some of the questions which, at least since the 1960s, scholars have attempted to reply to by using methods and instruments typical of economic studies (Becker, 1968; Ehrlich, 1973; Stigler, 1970). Theoretical analyses have been flanked by a wide range of empirical literature aimed at examining the socio-economic determinants of crime: a great deal of research has been aimed, for example, at analysing the relationship between unemployment and crime or regarding the influence of social and cultural variables on crime rates (Gordon, 1971; Freeman,1994; 2000; Levitt, 2001). At the same time as the micro-economic analysis of crime, a wide branch of research directed more specifically at analysing the structure and the behaviour of organized crime and the way the illegal markets work has been developed (Schelling,1980; Fiorentini and Peltzman, 1995).

In the United States, the economic analysis of organized crime has analysed the organisation and functioning of the illegal markets in depth, in particular the drugs market, and the efficiency of deterrent policies. The contributions since the 1980s from Peter Reuter (1983; 1985), for example, have been fundamental. To this author we owe some definitions of organized crime that are widely used in the literature on this theme and which, because of their generality, have often been used to delineate diverse criminal phenomena, including those of the mafia type[1].

If the subjects cited have been widely analysed in economic literature, comparatively less attention has been paid, however, to examining the socio-economic effects of crime. What effects does crime have on productivity, on investments and on the localisation of firms? What costs does crime impose on society and on the economy? In Italy's case, more so than in other countries, such questions are particularly relevant and full of implications. The historical presence of mafia organisations in the regions of Southern Italy is, in fact, considered a strong blocking factor to regional development. Although the affirmation that the criminal presence negatively influences economic performance finds a wide, almost unanimous consensus in public opinion, quantitative research on the Italian case is relatively limited. Almost paradoxically, such questions are more frequently encountered in sociological studies than in strictly economic studies.

By reviewing some of the principal empirical studies, this paper proposes to examine the impact of the criminal organisations on regional

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[1] A vast collection of definitions on organized crime has been collected by Klaus von Lampe and is available, together with a rich bibliography on the subject, on the www.organized-crime.de website (see, furthermore, Lampe 2008, 2006).

economic development, with particular reference to the case of Italy. The paper is structured as follows: section 2 contains a review of the literature on the relationship between crime and economic development; section 3 examines the regional distribution and the social costs of some crimes (in particular extortion) that can be linked to mafia type criminality; finally, some observations close the paper.

2. Crime and economic development

Crime imposes significant costs on society. The costs are varied: there are those sustained by the victims, those relative to the expense of protection and prevention or those for the police and the judicial apparatus. Such costs fall directly on both private individuals and on the community. Estimating these costs is a complex, but useful operation, both for actuating alternative suppressive strategies as well as for evaluating the efficiency of the measures applied (Brand e Price, 2000).

In a wider sense, crime imposes costs that, diversely to those precedent, are not represented by direct monetary payment but consist, rather, of "notional costs" that society as a whole sustains in the form of lost opportunities for development, a reduction in the rates of growth or lost investment. Such costs can be compared to "negative externality" that bear on everyone, not only those directly interested by criminal phenomena.

In the case of the mafia, "external costs" derive, for example, from the infiltration of the mafia into the Institutions, from the appropriation of part of public expenditure, from the distortion of markets or from the creation of a local socio-institutional climate that is unfavourable to investment by legitimate firms. These costs can be translated, for example, into lower productivity, loss of investments, the flight of companies or, more in general, in a lower than potential rate of productivity growth. In brief therefore, the total costs that crime impose include those sustained directly by private citizens (private costs), the payments for the collective measures of prevention and suppression (public costs) and the "external", notional or "social" costs.

Estimates of the social costs of crime have been elaborated for some countries: the United Kingdom, for example (Brand and Price, 2000), or for those of Central America (United Nations, 2007). At an international level, an analysis of the effects of crime on economic development is offered by Van Dijck (2007), who builds a composite index of organized crime for 150 countries. The analysis underlines how crime tends to depress economic growth through the presence of corruption and a weakening of the Institutional systems, in particular those necessary for long-term economic growth. In Italy's case (where the presence of mafia organisations has undoubtedly caused significant costs for the community), surprisingly, the analyses aimed at estimating the costs of crime are very few in number. The

aim of this work is to offer a sampling of such studies, together with some data relative to the incidence of crime in the Italian regions.

## 2.1. Crime and economic development

If the costs of crime can be notable, what is the relationship between crime and economic development? Is the presence of organized crime a cause of economic under-development or does it represent, rather, one of the effects? The argument that crime negatively influences regional economic performance can be found in many works, both economic and sociological; this argument (intuitive, generally) is almost always expressed, however, by description and is rarely based on quantitative bases. To have some idea of the relationship between crime and development it is possible to consider some simple correlations. Fig. 1 illustrates the correlation between the number of crimes of criminal association, including those of the mafia type, and the per capita GDP in 103 Italian provinces, while Fig.2 considers homicides, instead.

Fig. 1. Correlation between criminal association (per 10,000 inhabitants) and per capita GDP in the Italian provinces
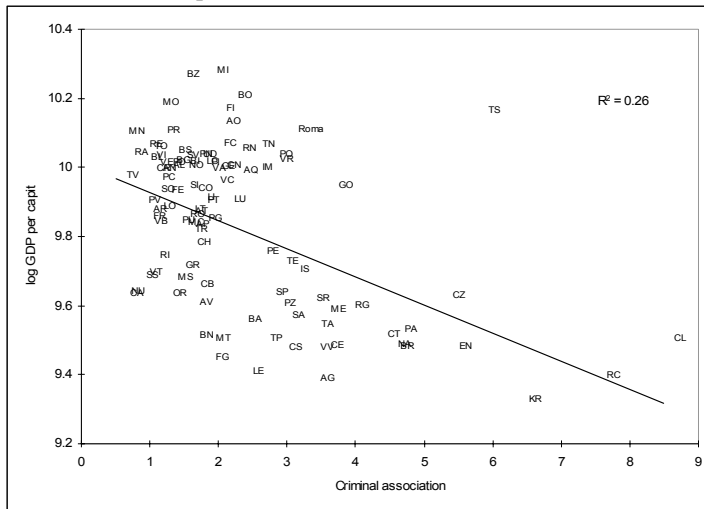
Data refers to 2000-2005 averages. Source: Elaborated from ISTAT data, "Territorial information system on justice".

Fig. 2. Correlation between homicide (per 10,000 inhabitants) and per capita GDP in the Italian provinces.
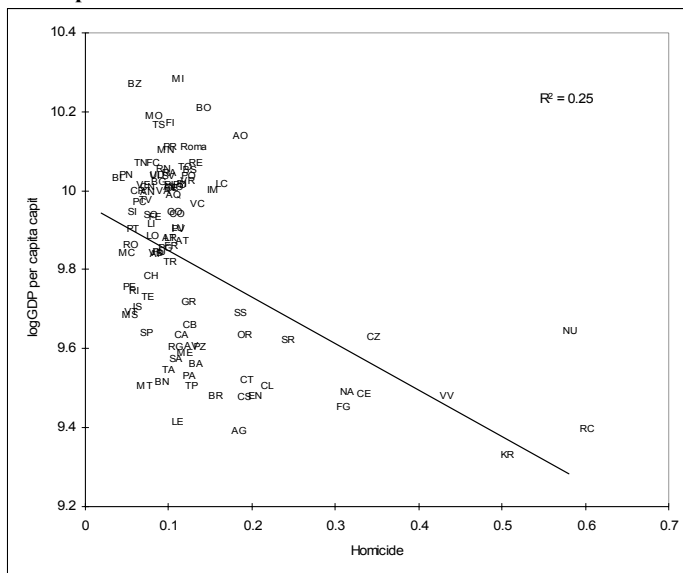
Data refers to 2000-2005 averages. Source: Elaborated from ISTAT data, "Territorial information system on justice".

As is evident, the correlation between the variables is negative, although not particularly high (R^2 0,25). It should be noted, however, that correlation results as positive if one considers the total numbers of provincial crimes, instead of homicides or criminal association, measured against the number of crimes committed per 10,000 inhabitants. The negative relationship, therefore, is encountered only for certain types of crime – criminal association, homicide, but also, as we shall see later, extortion – which can be reasonably linked to the presence of organized crime. It must be underlined, however, that the existence of a correlation does not, in itself, demonstrate anything other than a simple statistical link between two variables, saying nothing about a possible cause[2]. The examination of the empirical relationship between crime and development needs, therefore, more rigorous analysis.

From the macroeconomic point of view, a formalisation of the impact of crime on local income is provided in some essays by Centorrino and Signorino (1993; 1997). In the first of these works, the authors offer a simple model of Keynesian derivation in which, commencing from an equation of aggregate demand, a "multiplier of the criminal expenditure" is

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[2] In principle, thus, another variable, not considered in the analysis, cannot be excluded, that is that both influences therefore generate a spurious correlation.

obtained[3]. A brief exposition then follows. The initial hypotheses can therefore be presented thus:

- the illegal sector coincides with the market (traffic) <u>of drug</u>;

- resident producers of illegal goods and services do not exist, therefore such products are the work of residents abroad;

- The demand for consumer goods is distinguished between a legal component and another for illegal goods and services.

Formally, the function of aggregate consumption is:

$$C = C_L + C_I = a + bY \qquad (1)$$

where consumption C is distinguished as consumption of legal or illegal goods, a is the autonomous consumption and b the marginal propensity to consume. The equation of the aggregate demand in the closed economy can be written, as per usual, as:

$$Y = a + bY + I + G - C_I \qquad (2)$$

in (2), I is investment, G public spending and C_I illegal consumption, which constitutes a subtraction from the circular flow of income both because, as hypothesised, the illegal goods and services are produced by non-residents (they are therefore imported), and because, since they are illegal, are not counted as part of national income. From (2) we can easily derive an equation of the level of equilibrium of income and, consequently, estimate the impact that, through the multiplier $1/(1-b)$, an increase in consumption of illegal goods generates on income. Such an effect is clearly depressive, in that illegal consumption, considered as imports, remove income from other categories.

The extension proposed by Centorrino and Signorino (1993), consists of the hypothesis that income deriving from the illegal sector is ascribable to people resident within the economy and that such income represents a fraction of the consumption of illegal goods:

$$Y_I = \gamma C_I \qquad \text{with } 0 < \gamma < 1 \qquad (3)$$

where Y_I is the income ascribed to the illegal sector and γ indicates the share of consumption. The function of consumption of the illegal sector can therefore be written in the following manner:

$$C_I = \alpha + \beta Y_I = \alpha + \beta \gamma C_I \qquad (4)$$

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[3] The authors declare that they have taken the plan of the model analysis from Peter Reuter's analyses (1984), that refer to the case of the United States and the narcotics market.

and, by substituting this in (2) the following multiplier of spending is obtained:

$$M = \frac{1-\beta\gamma}{1-b}$$

where the total impact on aggregate income depends on the value of spending of the illegal income preceptors within the economy, and their propensity to consume. The limits of this model consist, other than the difficulties of estimating the parameters, of the fact that the illegal sector is made to coincide with the drug market, from which the model results as hardly empirically applicable in the case of Italy.

A more advanced conceptual scheme, with notable empirical implications, on the relationship between crime and development is offered in some essays in Centorrino and Signorino's work (1997) in which, among other things, the impact of the " mafia tax" on the economy's financial and credit systems is analysed, and estimates on money-laundering are proposed.

With particular reference to the macro-economic effects, it is hypothesised: *a)* that the mafia is an agent that effects a forced withdrawal from income in the economy, analogous to taxes; *b)* that the incomes received by the criminal sector have a depressive effect on the local economy. Considering that the "mafia tax" (e.g. extortion), added to legal taxation, leads the economic operators to elude or avoid paying taxes, then the depressive effect becomes even greater. In other words, the "mafia tax" leads to a reduction in individual income and, bringing about forms of evasion or elusion, a reduction in fiscal revenue. Schematically, hypothesising that a subject is taxed twice, we may reassume the above in the following expression:

$$Rd_i = \left\{1-\left[(t-e)+t_M\right]\right\}R_i$$

where for an individual *i,* the disposable income R_d is given by the total income R, less taxes t and the *mafia tax* t_M; indicating with *e* the share of legal taxes evaded because of the parallel mafia imposition, the term $t-e$ represents the share of lost fiscal revenue.

Given that, by definition, the total revenue of a tax on income is given by the sum of the taxes paid by each individual:

$$G = \sum_{i=1}^{n} tR_i = tY$$

where *Y* is the aggregate income, it follows that the "mafia tax" reduces the total fiscal income:

$$G' = \sum_{i=1}^{n}(t-e)R_i = (t-e)Y < tY$$

This last expression shows that a *fiscal gap*, due to lack of revenue, and generated by organized crime, exists. To this we add that the existence of organized crime reduces legal income, because of the depressive effects that it produces on the local economy. Based on such observations, Centorrino and Signorino (1997) then proceed to estimate an equation of the impact of criminality on total fiscal revenue, including in the estimate the effect deriving from income not produced in the economy because of the mafia's presence. According to the authors, who assume as the basis of their calculations the estimates on the economic turnover of crime available at the time, the loss of revenue due to income not produced in the economy would have been, in the year in question, equal to = 0.7% of GDP. To this should be added the lost fiscal revenue due to evasion induced by the same mafia presence.

The effect of crime on long-term economic growth has been analysed in a recent work by Peri (2004), in which the roles of several variables are examined, among which are a proxy of "social capital" and the level of crime (measured in numbers of homicides), on Italian economic growth. The study, which considers data from 95 Italian provinces, refers to the period 1951-1991. The aim of the work is to discover whether the lack of "social capital" is really, as some studies have hypothesised, sociological in character, as in Edward Banfield (1958) and Robert Putnam's (1993) highly influential works, and one of the reasons for the backwardness of the Mezzogiorno, or, that other factors, such as organized crime, have weighed more heavily instead.

The results of the econometric estimates carried out by Peri offer little empirical support for the sociological theses mentioned, demonstrating, instead, how crime has had a notable influence on regional development. In particular it can be seen how the correlations between the social capital index, employment rates and industrial growth are weak, while they become highly significant when one considers the crime rate. According to the study, some provinces on Sicily and in Calabria have seen a growth in employment lower than 1.2% circa, per year, for forty years, because of the high crime rate.

Into the strain of empirical research on the determinants of crime in Italy the contribution of Buonanno and Montolio (2006) fits, in which the role of social capital on crime rate is examined. Social capital is measured by various indicators: associations, voluntary work, voters in referendums and blood donors per 100,000 inhabitants; the crime rate is calculated on the basis of data for theft, robbery and auto-theft. The results obtained in the regressions demonstrate how the level of civic-mindedness and association (social capital) tend to associate with lower rates of crimes against property.

Although it presents notable points of interest, this work considers some crimes which (as their geographical distribution shows) are not typically mafia type crimes, and therefore hardly indicative of the relationship that exists in the regions of the Mezzogiorno hardest hit by the mafia phenomenon, between the immaterial factors of development, among which social capital and crime figure.

Moving on to the quantifications of the impact of crime on development and employment, the small quantity of research extant in Italy are often lacking from the methodological point of view, or are based on barely reliable data. One attempt to estimate, for example, was carried out in 2002 by the *CNC Foundation* and *Censis* (2003) in research with the theme "companies and confidence in the Mezzogiorno" as its object.

The survey, carried out through questionnaires distributed among a wide selection of southern companies, was aimed at learning the businessmen's perceptions about security conditions and the frequency of certain crimes. The questionnaire contained, in particular, a question aimed at quantifying the damage caused to the company by the presence of crime. On the basis of the replies obtained, through an inferential method, the surveyors proceeded to quantify the total costs of crime on the production system in the South, both in terms of lost production and in terms of lost jobs (for a description see Alleva and Arezzo, 2004). The elaborations carried out on these questionnaires led to the following estimates: a loss of wealth equal to approx. 7.5 billion Euros in 2001; a loss of jobs equal to 180, 561 job places, equal to 5.6% of the occupied job places in the companies the areas that participated in the survey. For an idea of such costs, one should consider that the lost production corresponded to 2.7% of the GDP of Southern Italy and to 0.6% of national GDP in 2001, while the unoccupied job places as a result of crime represented 2.8% of those in the South and 0.8% of national places in the same year. If the conclusions reached by the survey in question have been widely noted, its basic methodology has been frequently criticised, in particular the fact that the estimates have been deduced from sources representing subjective perceptions, and therefore potentially subject to great distortion (for example, La Spina, 2008). Successive research aimed at quantifying the levels and social cost of some crimes show, in fact, different results to those obtained by the Censis survey. We shall examine some of this research in the following sections.

2.2. The effects on productivity

The impact of organized crime on productivity at work has been amply investigated in literature, from the empirical profile, particularly. In this section we will offer a synthetic summary of some of the main works. In one of the first studies on the theme, Busetta and Sacco (1992), examined the relationship between productivity in the manufacturing sector, an index of the quality of the economic environment and an index of infrastructural

endowment. The quality of the economic environment is measured through the levels of unpaid credit and bank write-offs, the levels of unemployment and the number of homicides per 100,000 inhabitants. The work shows how the correlation between the quality of the environment and labour productivity in the manufacturing sector is both negative and statistically significant.

A rigorous econometric analysis was used by Felli and Tria (2000) in their work, which proposes two objectives: a) to examine in what way criminal behaviour is sensitive to public spending (transfers) and to the business cycle; b) estimate the effects of organized crime (mafia) on productivity in the private sector. The principal hypotheses are that, in the presence of public transfers, criminal activity (aimed, among other things, at obtaining ever greater shares of public spending), tends to increase, and that the negative effect of crime on the level of growth depends mainly on the low levels of productivity which, according to the authors, are "caused by the breaking down of the markets mechanisms and of the barriers that block new, competitive companies and the flow of foreign investment from entering" (Felli and Tria, 2000, p. 86).

To verify this hypothesis, the authors used a data panel, relative to the 20 regions for the period 1960-96, and different methods of estimation (SUR and GLS). The results obtained show how the crime rate (approximated by the rate of voluntary homicide) increases with the growth of public transfers ("external income") and is sensitive to the national business cycle. Furthermore, it is shown how productivity at work is depressed both by the crime rate and by the extent of non-market economic activities.

Successive analyses have been carried out by Ofria (1999) and Centorrino and Ofria (2001). In this last work, the relationship between productivity and a series of variables related to the socio-economic environment (among which the presence of crime) in the Italian regions for the years 1998-99 are analysed. The authors observe how the variables in context condition the performances of the companies in all sectors; in agriculture and construction in particular, the influence appears greater with respect those appertaining to the industrial sector in a strict sense.

Aside from the cited studies, Centorrino and Ofria have recently (2008) analysed the relationship between productivity and crime in the theoretical context proposed by Kaldor, which reformulates "Verdoorn's law" on productivity growth. In the work cited, the authors estimate some regressions in which productivity growth is explained by the growth in production, by the relationship between investment and GDP, and by a proxy of the crime phenomenon given by the ratio between mafia homicides and population.

The data utilised refer to the period 1983-2005 and consider four economic sectors. The equations estimated are the following:

$$\dot{p} = a + b\,\dot{y} + cCR$$

$$\dot{p} = a + b\,\dot{y} + c\,I/GDP + dCR$$

$$\dot{y} = e + fCR$$

where $\dot{p}$ is the rate of growth of labour productivity, $\dot{y}$ that of production, I/GDP the relationship between investment and GDP and CR the *proxy* for organized crime. The results obtained for the four southern regions most interested by the mafia phenomenon are summarised in Table 1.

Table 1. Significance of the crime proxy on the growth of productivity (with a negative coefficient)

Regions	Agriculture	Services	Construction	Industry
Calabria	***	*	*	*
Campania	**	*	***	***
Puglia	**	*	***	*
Sicilia	*	*	***	**

Note: The services sector includes retail/wholesale, repairs, hotels and restaurants, transport and communications. The coefficients for the crime proxy are negative. For significance: * indicates $1 < t < 2$, ** $2,1 < t < 2,5$, *** $t > 2,6$. Source: Centorrino and Ofria (2008, p. 174).

In general, the work shows the presence of crime of the mafia type negatively influences the rate of growth of productivity in the southern regions, in construction and non-tradable production particularly. In synthesis, the results obtained in the empirical research offer ample proof to sustain the thesis according to which the presence of organized crime influences labour productivity, contributing, in this way, to explaining the regional development disparities.

2.3. The effects on external investments

The hypothesis that the presence of organized crime influences the capabilities of the regions of the Mezzogiorno to attract investment from outside the area, particularly from abroad, is widely upheld by scholars. Sylos Labini (1985), for example, has underlined how criminal organisations impose "cuts", forcing activities to move elsewhere, discouraging those businessmen interested in investing in the South. This problem has also been underlined very clearly by the economist Mancur Olson (1984), according to whom Southern Italy has accumulated, over a period of time, a vast range of extra-governmental institutions that have corroded the economy, increasing the risks for investment. For this reason — Olson argues — whoever intends

to start a new business in that kind of environment, will need to confront a series of risks that he could easily avoid if he were to start the business in a less "risky" environment.

In other words, the presence of organized crime determines a socio-institutional environment (or *business climate*) in the Mezzogiorno that is unfavourable for business activities in that it is characterised by greater risks with respect to those encountered in regions with a lower incidence of crime. As the sociologist La Spina (2008, p. 18) notes: "Those with a business in the South already have a difficult time and, above all, those who could open a business in the South give up the idea, going elsewhere".

The above-cited observations are born out by some surveys, aimed at examining the perceptions of businessmen from the Centre-North and some foreign countries of the southern regions. Research carried out by Marini and Turato (2002), for example, on a panel of businessmen from the North-East of Italy interested in the process of internationalisation, has shown how almost all those interviewed (92.6%) considered the presence of crime as the main block for investments in the Mezzogiorno. Another survey, carried out on behalf of the Ministries of the Economy in 11 countries, confirms that businessmen perceive the Mezzogiorno as appearing an area lacking conditions of security (Gpf-Ispo, 2005).

In other terms, crime reflects negatively on the image of the Mezzogiorno, limiting the attractiveness of the area, even though the crime levels in the various regions, and even more so among the provinces, varies notably. Beyond such surveys, it is an intuitive fact that the presence of crime constitutes a block to potential investors, confirmed both in the declarations of politicians and by the investigations effected by magistrates.

Recently some studies, such as those of Basile (2001), Pazienza *et al.* (2005), Daniele (2007) and Daniele and Marani (2008), using data on certain crimes, have shown how crime negatively influences foreign direct investment (FDI) in Italian regions. Part of the analysis from Daniele and Marani's study (2008), directly aimed at estimating the effects of the presence of crime on FDI, follows.

In order to estimate the impact of organized crime on FDI, the authors used a dataset comprising observations for 103 provinces for the period 2000-2006. The empirical analysis was based on the following basic specification:

$$\text{FDI}_i = \alpha + \beta_1 \mathbf{X}_i + \beta_2 Crime_i + \varepsilon_i \qquad [1]$$

in which the dependant variable is the logarithm of FDI inflows in the provinces, $\mathbf{X}_i$ is a set of control variables, while *Crime* is a measure of

the incidence of crime. The control variables are lagged by a period. The level of crime (per 10,000 inhabitants) is measured by an index composed of four crimes (extortion, arson, attacks and criminal association) typically connected to mafia type crime. The equation is estimated both through the pooled OLS method, and by a LAD (*least absolute deviation*) estimator. The results of the LAD estimates are shown in Table 2.

Table 2. Effects of crime on FDI inflows in 103 Italian provinces

			Dependent variable: ln FDI inflows		
const	-44.53**	-55.06**	-53.12**	-59.14**	-55.40**
	(-3.58)	(-4.23)	(-4.23)	(-4.848)	(-4.325)
Pop	1.295**	1.415**	1.303**	1.359**	1.533**
	(4.339)	(4.601)	(4.223)	(4.308)	(5.374)
GDPpc	3.747**	4.689**	4.624**	5.155**	4.600**
	(3.18)	(3.83)	(4.00)	(4.59)	(3.85)
Size of the economy (1)	0.2755	0.264	0.294	0.299	0.232
	(1.35)	(1.40)	(1.44)	(1.45)	(1.25)
Size of the economy (2)	0.008	0.004	0.003	0.0003	-0.0005
	(0.97)	(0.50)	(0.39)	(0.04)	(-0.07)
Industry	0.009**	0.0055	0.0073*	0.0068*	0.0053
	(2.62)	(1.46)	(1.95)	(1.83)	(1.41)
Infrastructure	0.0025	0.0017	-4.862e-05	-0.0020	0.0028
	(0.69)	(0.46)	(-0.01)	(-0.53)	(0.81)
Incentives	0.0276	0.0617	0.0531	0.0838	0.0437
	(0.24)	(0.58)	(0.50)	(0.78)	(0.417)
Extortion	-0.2945**				
	(-2.19)				
Association		-0.6712**			
		(-2.12)			
Arson			-0.0494		
			(-1.33)		
Attacks				-0.0659	
				(-0.78)	
Crime Index					-0.2873**
					(-2.5)
n	103	103	103	103	103
lnL	-173.6	-173.3	-173.9	-173.9	-172.6

Method: LAD estimations. t statistic in brackets - * denotes significance at the 10 % level ** denotes significance at the 5 % level. Source: Daniele and Marani (2008), to be consulted for a description of the data and methodology.

The results of the estimates show how the level of organized crime is both strongly and negatively correlated to FDI inflows in the Italian provinces. This supports the thesis according to which the presence of mafia type *gangs* discourages potential investors.

The negative effect on FDI clearly constitutes a notable cost imposed by crime on the southern regions. FDI can, in fact, be a significant factor for regional growth, and for which reason incentives to attract potential investors exist in many countries (including Italy). Daniele and Marani's study (2008), also considers a proxy of incentives to business among the variables (the variable *Incentives* in Table 2), that does not result as being correlated to FDI inflows in the provinces.

The results of the work suggest that, in the presence of an unfavourable socio-institutional environment, the politics for attracting investment are scarcely efficient. Improving conditions of security and legality appears, also in this case, as a fundamental pre-requisite for economic development in the Mezzogiorno.

2.4. Crime and unemployment

In this section we shall examine the connection between unemployment and crime. Studies on this subject hypothesise that this connection ranges from the condition of the labour market to crime: higher unemployment rates tend to determine an higher incidence of some crimes. One tends, however, to exclude the possibility that the existence of crime can reduce job opportunities in the local labour markets, creating unemployment. With reference to the case of Italy, only in Peri's study (2004), previously examined, is an influence (negative) of crime on employment hypothesised. Although unemployment is not, therefore, generally considered an effect (a "cost") of crime (rather, one of its determinants), we include this argument in this section for the particular relevance it assumes in empirical research.

The hypothesis according to which the condition of unemployment increases the probability that an individual will commit a crime has a solid theoretical basis. In the neo-classical approach, the choice of an individual between legal and illegal activities depends, in fact, on the expected returns: in the case in which the time and resources invested in an illegal activity have a greater return than those obtainable from alternative, legal work, the individual will have an incentive to become a criminal. Although it is purely abstract, this hypothesis finds fertile ground if considered in a concrete context where involuntary unemployment exists. Given that unemployment reduces the "opportunity costs" of delinquent activity, represented by the obtainable pay from legal activities and the losses deriving from an eventual jail sentence, it tends to increase the probability that an individual will choose delinquency. In this model, according to pure cost-benefit

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calculation, an unemployed individual receives greater net income from committing a crime than someone with a relatively high legal salary.

The idea that unemployment is in some way positively correlated to crime finds wide consensus in public opinion; however, empirical research often finds discordant results, which confirm how the choice of crime is influenced by a series of variables and not only by the expected income that it may generate. The international literature on this theme is vast, therefore we shall examine only a few of the most recent studies. First of all we shall examine some of the results obtained from research relative to the United States, in which the link between unemployment and crime has been widely analysed.

Among the most important works are those of Freeman (1994; 2000) who has examined in depth the relationship between the job market and crime. In one of his most recent studies Freeman (2000) observes how, in the United States, the number of detainees belonging to the workforce is very high, particularly if referring to black people. In 1993 (the year considered by the author), the number of detainees was, in fact, 1.9% of the male workforce; among black people the percentage rose to 8.8%. Furthermore, in the United States, the number of detainees grew notably over the years without, however, seeing a significant reduction in the number of crimes. According to Freeman, the rise in crime rates is, therefore, barely influenced by the increase in the number of incarcerations, while it is notably subject to the lack of job opportunities and the growth of individual imbalances in incomes, other than the reduction in real salaries received by people who are less educated, among whom there are, in large numbers, black people. In synthesis, the crime levels in the United States are significantly influenced by economic variables linked to the segmentations of the labour market and the income inequality.

A deeper discussion of the methodological aspects relative to the empirical studies on unemployment and crime is presented by Levitt (2001). Using panel data for the United States (annual data for the 50 States for the period 1950-1990), the author estimates the following equation:

$$Crime_{st} = \beta_1 Unemp_{st} + \beta_2 Unemp_{st-1} + \mathbf{X}_{st} + \theta_s + \gamma_t + \varepsilon_{st}$$

in which s corresponds to states and t indexes years. The variable *Crime* is measured in different specifications for violent crimes and those against property; *Unemp* is the state insured unemployment rate, also included as a lagged variable; $\mathbf{X}$ is a set of control variables that include, other than per capita income, some socio-economic indicators, including those relative to the demographic and ethnic composition. The estimates comprise fixed effects and annual dummies give the following results: an increase of 1% in the levels of unemployment is associated with an increase of between 1.4% and 2.7% in crimes against property, while no correlation between unemployment and violent crime is found.

The case of the United States is also examined in the work of Lin (2008), who compares the results obtainable from the regressions when different econometric methods are used. The data used by this author refer to the years 1974-2000, while the analysis is conducted by the OLS method and with that of instrumental variables (IV). The results show how an increase of 1% in the rate of unemployment is associated with an increase in crimes against property equal to 1.8% when the OLS method is used, while the elasticity rises considerably, reaching 4%, when the IV method is used. This second result explains 30% of the changes in crimes against property during the 1990s in the United States, and for which reason results as being more reliable than the first method, according to the author.

Evidence for the United Kingdom, on the other hand, is presented by Carmichael and Ward (2001), who examine the effects of some variables relative to the efficiency of the judicial system and the socio-economic conditions on crime levels measured for different crimes (theft, breaking and entering, fraud and counterfeit goods). According to the authors, the crime rates are explained by the rate of unemployment more than by the other variables considered, such as the average length of incarceration, the average times for reaching a definitive sentence, the demographic density and the percentage of births outside matrimony.

The correlation between unemployment and crime has been highlighted in the Swedish case by Nilsson and Agell (2003) through an econometric analysis based on data referring to 289 municipalities (therefore very disaggregated). According to the authors, the reduction in the levels of unemployment registered in Sweden in the 1990s determined a reduction in the numbers of burglary and automobile theft equal to 15% and 20% respectively.

In Italy too is possible to see the existence of a correlation between unemployment levels and some crimes. If one considers data on a provincial level, for example, then unemployment is positively and highly correlated to extortions, homicides and attacks, while it is negatively correlated with thefts (table 3). Such correlations, it is useful to underline, do not implicate a causal connection among the variables. Rather, in the case under exam, it is possible that the correlation is due to the simple fact that both unemployment levels and the incidence of the crimes considered are greater in the Mezzogiorno compared to the rest of the country. Table 3 shows, moreover, how thefts are negatively correlated to the other crimes that are typical of organized crime: in other words, in the areas with a higher mafia presence fewer thefts are encountered, on average.

Table 3 Correlation between unemployment and some crimes in Italy. Data for 103 provinces, averages for the period 2000-2005.

	Unemployment	Extortion	Homicide	Attacks	Theft
Unemployment	1,00	**0,63**	**0,62**	**0,50**	**-0,32**
Extortion	**0,63**	1,00	**0,42**	**0,34**	-0,09
Homicide	**0,62**	**0,42**	1,00	**0,72**	-0,15
Attacks	**0,50**	**0,34**	**0,72**	1,00	**-0,20**
Theft	**-0,32**	-0,09	-0,15	**-0,20**	1,00

The crimes are calculated per 10,000 inhabitants. In bold type, significant values (except diagonal) at alpha level = 0.050 (bilateral test). Source: Calculations from Istat data.

The influence of unemployment levels on crime is not as easy to estimate as it might seem. Methodological questions can concern both the data to be considered (for example territorial disaggregation, types of crime to include in the regressions), and the eventual distortions deriving from omitted variables. The results of the empirical studies on the Italian case show, generally, the existence of a link between unemployment and crime; as may be imagined, such a link is verified, however, only for some crimes.

Campiglio (1990), for example, through provincial data relative to the 1981 census, finds a significant link between unemployment and robberies. Cellini and Scorcu (1998), analyse the principal economic determinants of crime rates (relative to homicides, robberies and thefts) between 1951 and 1994; other than unemployment the authors include economic variables such as consumption and wealth among the variables. The results show the existence of a strong link between consumption and homicides and robberies, while the unemployment rate mainly influences thefts; one also notes a structural break between the 1960s and 70s, which would indicate, for the phase successive to the "economic boom", a slowing down effect of economic activity on the crime levels.

The relationship between unemployment and crime is later examined from the econometric point of view by Marselli and Vannini (2000). The study, referring to the years 1970-1994, considers the rates for the crimes of voluntary homicide, theft and robbery, extortion and kidnapping for ransom. The estimates (panel with fixed effects) lead the authors to affirm that "an increase of one percentage point in the rate of unemployment determines an increase of approximately 118 crimes of theft, 12 robberies and 0.2 voluntary homicides per 100,000 inhabitants" (Marselli and Vannini, 2000, p. 296).

The impact of unemployment on crime has recently been examined by Buonanno (2006b), who uses data for the twenty Italian regions for the period 1993-2002. Crime is measured by property crime rate, theft rate and total crime rate. Numerous regressors are considered: other than the total unemployment levels, male, young people and long-term, some variables relative to the socio-economic and demographic characteristics of the

regions and a clear-up variable (to measure the efficiency of deterrence policies) are considered.

For example, indicators relative to the presence of foreign populations are considered, to the resident populations in cities with more than 250,000 inhabitants, to the per capita GDP and to the levels of secondary and university education. The results of the analyses of regression (carried out by the GMM method) show how the crime rates are explained by the per capita GDP and by the levels of urbanisation, while the effect of unemployment results as almost nil. Significant differences are encountered between the North and the South of the country. In the southern regions, diversely from the others, the socio-economic variables, including unemployment, exercise a significant influence on the crime rates.

In summary, although with some differences, the cited studies indicate the existence of a positive relationship between unemployment and crime, in particular for crimes against property. It must be observed, however, that in the various empirical works crime is measured by different crimes and that among these, those considered typical of organized crime are not considered. The relationship between crime and unemployment may, therefore, be influenced by omitted variables, that were not included among the regressors or, simply, by the fact that higher levels of crime are encountered in the regions of the South, where unemployment is higher and where the presence of organized crime has deeper roots.

Table 4 offers a synthesis of the arguments expounded in the present paragraph. The economic variables, both real and financial, are shown, on which crime produces effects, together with some of the studies that consider such effects with reference to Italy.

Table 4. Real and financial effects of organized crime: some studies

Variables	Effect	Studies
Multiplier of income	-	Centorrino e Signorino (1993)
Savings	-	Centorrino e Signorino (1993);
Productivity	-	Felli e Tria (2000); Centorrino e Ofria (2001; 2008)
Foreign investments	-	Basile (2001); Pazienza et al. (2005); Daniele (2007); Daniele and Marani (2008)
Employment	-	Peri (2004)
Tax evasion	+	Centorrino and Signorino (1997)
Unofficial credit and loansharking	+	Masciandaro (2000; 2002)

3. The spread of organized crime: extortion

That extortion is a crime congenital to the very existence of a mafia type organisation has been known for some time. Other than the numerous judicial enquiries, it is documented by effectively all the scholars of the subject such as, for example, Franchetti (1875), Catanzaro (1991) and Gambetta (1992) with reference to *Cosa Nostra*, Ciconte (1992) to the *'ndrangheta* or Monzini (1999) to the *camorra*. The collection of extortion

payments covers multiple purposes: on the one hand it ensures a regular flow of income to the mafia gangs; on the other it guarantees a capillary control of the territory that is made real by the exertion of an intimidatory power over the local businesses. In its most common form, typical of the mafia, the racket of extortion is a sort of tax imposed by the gangs for corresponding protection services.

Normally the payment of extortion occurs with the periodic payment of sums of money; in some cases payment may be made in goods or services. Carried out for simple extortion or, more often, to exercise a monopolistic control of the local market, extortions can be classified in diverse types (Monzini, 1993):

1) anonymous extortions: of the predatory type, where the requests, occasional and anonymous, are generally accompanied by threats;

2) protection-extortions: aimed at creating a system of payments similar to taxation and typical of the mafia, tending to create a lengthy relationship between the extortionist and the extorted, and a kind of legitimisation of the mafia's system of control of the territory where the local gang exercises a monopolistic power;

3) Extortion of the workforce: known as labour racketeering, it is an intermediation that is exercised by controlling the local labour markets both from the standpoint of jobs sought and those offered.

The capillary control of the territory, the fear of reprisals and the economic sustainability of the extortion payment requested, often makes the victims fail to report the crime. In the areas particularly hit by the racket of extortion a sort of "forced marriage" is consequently created, between the extortionist and his victim, which makes it difficult to individuate the crime. For this reason the statistics based on the crimes reported notably underestimate the real dimension of the phenomenon of extortion.

According to Istat data, in the period 1000-2005 a little over 25,500 extortions were reported in Italy, of which 52% were in the regions of the Mezzogiorno. Such data clearly included all crimes of extortion, not only those attributable to mafia type organized crime. Despite this, if one looks at the number of extortions per 10,000 inhabitants one can see how, in the Mezzogiorno, the incidence is greater than in the rest of the country (Fig.3) and how, in the regions harder hit by the mafia phenomenon, the incidence of extortions is higher with respect to the national average, with peaks in Calabria, Campania, Apulia and, in a slightly lower measure, on Sicily (Chart 1).

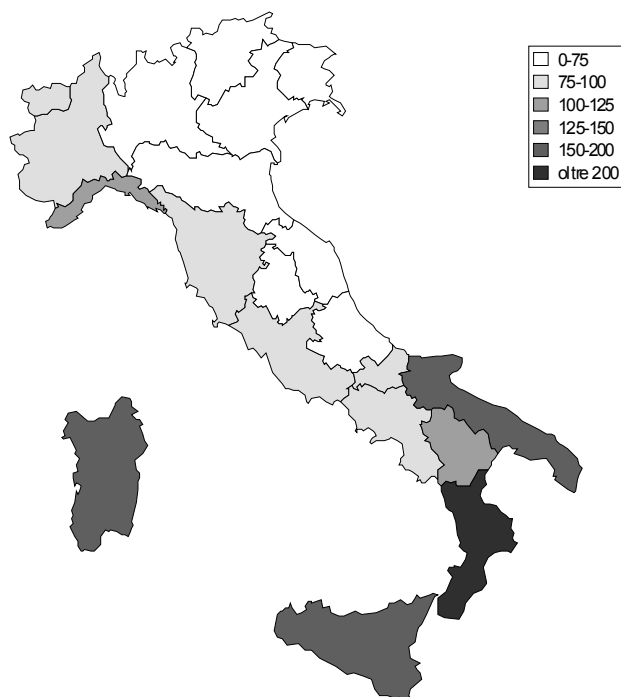**Fig.3 Extortion in Italy, per 10,000 inhabitants, cumulated 2000-05.**
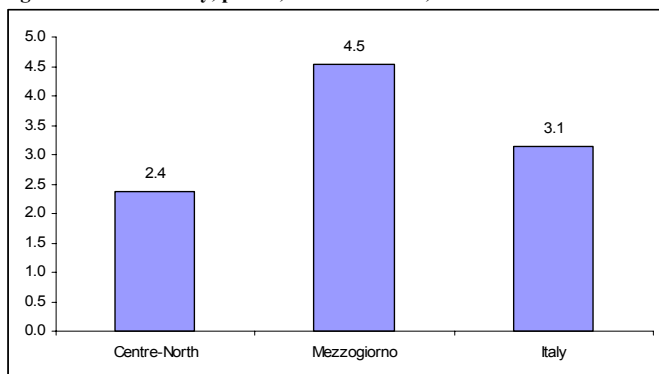
Source: Calculations from Istat data.

Chart 1. Regional distribution of extortion, 2000-05.

Legend:
- 0-50
- 50-75
- 75-100
- 100-125
- 125-150
- 150-200
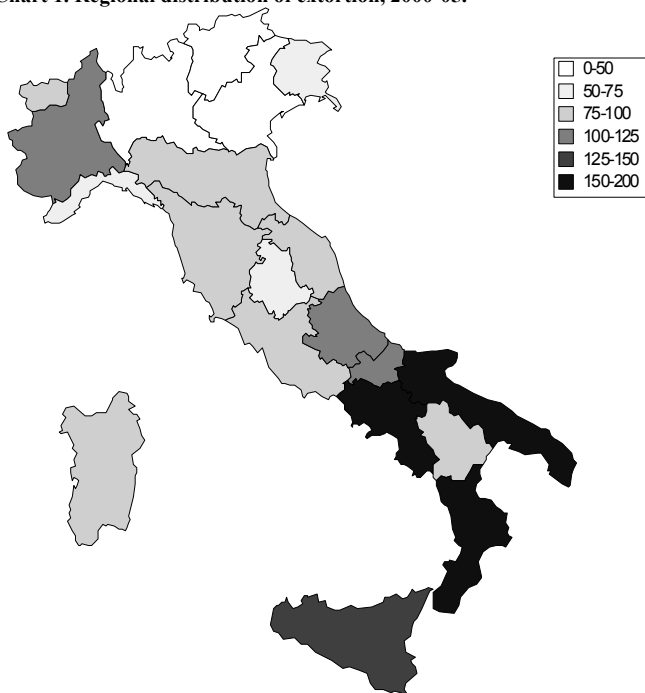
Extortion per 10,000 inhabitants - index Italy = 100. Source: Calculations from Istat data.

Chart 2. Regional distribution of arson attacks, 2000-05.

Arson per 10,000 inhabitants - index Italy = 100. Source: Calculations from Istat data.

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In synthesis, if the data on reported events show the existence of significant regional differences, on the whole they notably underestimate the phenomenon. It is possible to hypothesise, however, that there are other crimes that are symptomatic indicators of the activity of extortion: damage, for example, suffered by commercial activities (La Spina and Lo Forte, 2006). The intimidatory acts that are committed by criminals to induce businessmen reluctant to pay extortion may cause little damage to the companies, and are therefore not reported. In other cases, however, the intimidation may be far more serious and turn into attacks or arson. If the data relative to arson attacks in the Italian regions are calculated, one can observe how these are higher in number in the southern regions. In this case too, the regions hardest hit result as being Calabria, Apulia and Sicily, while the data for Campania is in line with the national average (Chart 2).

In synthesis, the official data on some crimes – such as extortion – can be insufficient, although still useful, to illustrate the "geography of crime" of the mafia type. Other than in the data, the spread of the extortion carried out by the mafia is, often, also underestimated in the inquiries carried out by research institutes by posting questionnaires. This occurs for a variety of reasons, first among them being the low percentage of response from

those interviewed. A recent enquiry conducted by the National Chamber of Commerce (2007), for example, based on the data collected from the distribution of 60,000 questionnaires to companies in the different Italian regions, had a response rate of 6.3% (3,750 questionnaires). The rate of response also showed significant regional differences: it was, in fact, higher in the Centre-North than in the South, where the racket of extortion reaches its highest levels. For example, the percentage of response was 9.5% in Trentino, Veneto and Friuli, 9% in Lombardy and in Emilia-Romagna , 3.3% in Calabria and little more than 2% in Sicily and Campania. According to the results of the enquiry, 15% of the Sicilian respondents had declared receiving threats with the final objective of extortion, while the percentage was 12% in Calabria. Such results are, therefore, far lower than the data provided by other research or the results of judicial enquiries.

According to an enquiry conducted by the Association *Sos Impresa*, of the Confederation of Commercial Activities (2007; 2008), there are between 160,000 and 180,000 business people in Italy who are caught up in the phenomenon of extortion, most of whom are in the southern regions. The 'racket of *pizzo*[4]' involves 70% of Sicilian business people, 50% of those in Calabria, 40% of those in Campania and 30% of those in Apulia, for a total of over 120,000 business people involved in these four regions. Always according to the same Association, the phenomenon is particularly widespread in some areas and affects 80% of businesses in Catania and Palermo, 70% of businesses in Reggio di Calabria and 50% of those in Naples, the North Bari and Foggia areas. In total, extortion accounts for gains of 5.5 billion Euros. Although such estimates must be considered prudently because of the lack of a controllable methodology in the elaboration of the data, recent judicial enquiries show how the mafia imposition at Palermo and in other areas of Sicily is capillary, while in Calabria the racket of extortion strikes companies both small and large, like those involved in some public works, such as the construction of the Salerno-Reggio Calabria motorway[5].

The judicial enquiries show how the mafia exercises the activity of extortion by saturation collecting, which strikes all the commercial activities present in the territory controlled by the mafia family. The sums requested are highly variable: according to recent research conducted in Sicily, the sums range from a minimum of 32 Euros a month to a maximum of approximately 27,000 Euros, according to the size of the business; on average the sum paid is 881 Euros (Asmundo and Lisciandra, 2008). Table 5

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[4] In South Italy, *pizzo* is a slang term for extortion.
[5] According to a recent analysis carried out by Anas, the companies involved in the construction of the 5th macro-section of the Salerno-Reggio Calabria motorway (a macro section that runs from Gioia Tauro to Scilla, in the province of Reggio Calabria) suffered 100 intimidatory attacks in 1,210 days, on average one attack every 12 days (R. Galullo, *Sull'autostrada della malavita*, Il Sole 24 Ore, 7th February 2009, page 12).

shows some data on the entity of the *pizzo* paid in Naples and Palermo for some types of commercial and business activities.

Table 5. Amount of extortion paid in Palermo and Naples (Euro)

Economic activities	Palermo	Naples
Market stall	1,00*	5-10*
Shop	200-500	100-200
Elegant shop or shop in city centre	750-1.000	500-1.000
Supermarket	5.000	3.000
Construction site	10.000	

* Daily amounts. For others, monthly amounts. Source: Confesercenti (2008).

Confirmation of the extent of the racket of *pizzo* comes from a study by the Fondazione Chinnici (La Spina, 2008), relative to the Sicilian case. The results of this study, made reliable by the methodology used in it, show how extortions strike 58% of the businesses in the region (maximum estimate), generating an annual cost to the productive system of approximately one billion Euros, corresponding to 1.3% of Sicily's GDP in the year 2006. This is, as is evident, a very large figure, which indicates how the direct costs that crime imposes on the productive systems in the regions of the South are extremely high.

4. Conclusive remarks

The economic analysis of crime constitutes a very wide branch of research. Within it are found analyses of the micro-economics, aimed at investigating, also from the theoretical point of view, themes concerning the motivations that make individuals commit crimes, the methods of functioning of the illegal markets and the strategies of the criminal organisations. These are themes widely examined by a large quantity of literature, American above all, mostly aimed at examining the illegal substances market. The socio-economic determinants of crime have been examined in empirical research: there are, for example, numerous studies aimed at investigating what the effects of unemployment are, of the inequalities among incomes or the level of education on crime rates.

The empirical aspects regarding the effects that crime produces on the economy of a society are, however, less widely examined. Estimates of the cost of crime have been carried out in some countries: these allow us to quantify the direct and indirect social costs of crime, such as those suffered by its victims and those born by the police and judicial machinery. Research aimed at analysing the 'external' social costs of crime, such as those on

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local economic development, on unemployment or investment are rare, however. This is evident in the case of Italy, where, excepting a few important exceptions, the economic analysis of crime, and in particular empirical analysis, constitutes a line of research that is still scant.

To analyse and estimate the costs that crime imposes on the economy would be, in our opinion, very important. Other than being relevant from the standpoint of knowledge, analyses of this kind would make an important contribution to the research on the causes of the economic lagging behind in many areas, such as the Mezzogiorno of Italy for example, and to the definition of policy measures for their development.

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