MAFIA HOMICIDES AND LAW ENFORCEMENT

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Abstract. The concept of deterrence emerged during the Enlightenment owing to the works of Beccaria and Bentham, who posited that the realistic threat of punishment deters people from committing crimes. In the nineteenth century, however, under the influence of positivism, this concept was discarded, and the offender's constitution, mental disorders and/or socioeconomic conditions substituted deterrence as the primary crime determinants. Since the late 1960s, however, the deterrence theory has been revived, and new theoretical and empirical works have been dedicated to it. Despite this, the hypothesis that punishment is the key to crime control has not been consistently endorsed by empirical evidence. The present study intended to test this hypothesis by analysing the evolution of intentional homicide rates in Italy's Mezzogiorno. In the past, this region has been well-known for its much higher rates compared to other European countries and the rest of Italy. Importantly, Mezzogiorno has also been the cradle of the most famous and feared crime organisations, the Mafia-type gangs. Since the 1990s, however, the fight against Mezzogiorno's crime has benefited from more severe sanctions and better-organised enforcement. We analysed the impact of these changes using interrupted time series regression models on series spanning a 40-year period. Our findings support the hypothesis that more robust law enforcement significantly affects intentional homicide rates by making the threat of punishment more realistic.

1. Introduction: Naissance and decline of the concept of deterrence

The concept of deterrence – namely, discouraging a criminal act through fear of the consequences – has been characterised by a long history but also by an oscillating endorsement.

In the eighteenth century, Cesare Beccaria posited that a citizen, confronted with the choice between law-abiding and law-breaking, would inevitably choose the former as long as the government imposes on the latter a sanction as severe, sure and swift as to remove the advantage associated with the illicit opportunities. Ultimately, while self-interest, which resides in everyone, would urge individuals to take advantage of illicit opportunities, the threat of certain and swift punishment would restrain them from doing so.

Jeremy Bentham, in turn, affirmed that human behaviour is "under the governance of two sovereign masters, pain and pleasure". Consequently, man will choose the course of action that has the greater sum of benefits over costs. Bentham, unlike Beccaria, tried to identify the various configurations of benefits and costs. Thus, people will be attracted by the benefits coming from crime – the pleasures of the senses, wealth, and power over other people – but will be restrained by the threat of costs such as imprisonment, loss of reputation, the feeling of guilt, etc.

Despite these differences, Beccaria and Bentham shared a typical Enlightenment tenet. Namely, that, since *all* men are endowed with free will and reason, *all* men can calculate the benefits and costs of crime and choose between law-abiding and law-breaking on that ground. This tenet has been subject to criticism during the nineteenth century and up to the present.

The so-called *moral statisticians*, such as André-Michel Guerry and Adolphe Quetelet, did not reject the free will tenet but thought that, at the level of large numbers, crime and other social pathologies should be regarded as the product of the socioeconomic environment rather than an individual choice. This shift in focus redirected criminological studies from deterrence to social conditions.

Later, positivist criminologists, such as Cesare Lombroso and his followers, posited, in conflict with the idea that all men are endowed with reason and free will, the existence of anthropological differences between criminals and non-criminals.

Other positivists, such as Enrico Ferri, shifted the root of crime from biological to psychological-social features but maintained the rejection of free will and supported the hypothesis of the heterogeneity of criminals and crime factors.

Late nineteenth-century contributions continued to focus on social conditions, but they followed two distinct criminological perspectives. The first one was inspired by Èmil Durkheim's study on *anomie* and suggested that crime results from the breakdown of the social standards necessary for regulating human behaviour. Crime, being a social fact, does not stem from individual conscience but from previous social facts. All this left no room for the concept of deterrence.

The second perspective, exemplified by the work of Willem Bonger, advanced a Marxist theory of crime, in which crime emerged from the unequal distribution of resources and the egoistic impulses generated by a capitalist society. Consequently, punishment was regarded as class violence rather than as a tool of crime prevention.

In the twentieth century, the two aforementioned perspectives – namely, anomie and Marxist criminology – spawned new approaches. Anomie generated the *relative deprivation* theory, which posited that social pressure to succeed materially in the face of scarce legitimate opportunities leads to crime. For decades, deprivation theory has been the dominant frame of reference for criminological studies. Since it focused on culture and economic structure, this theory did not at all encourage an investigation of the role of deterrence.

In turn, Marxist criminology of the positivist era was followed by radical criminology. Radical criminology scholars have shared with their predecessors the assumption that crime was the outcome of capitalism. However, they have regarded the crime of the underprivileged classes not as a symptom of maladjustment but as an active protest against the system. Ultimately, in this perspective, punishment is not perceived as what counterbalances self-interest in breaking the rules but as the violence by which the dominant class preserves its supremacy.

Another influential twentieth-century theory, *labelling theory*, has regarded crime as a social product and the criminal as someone who has been accidentally and arbitrarily labelled as such. In this perspective, the purpose of the social sciences would have been to identify the paths and interactions leading to labelling rather than to study how deterrence could restrain crime.

2. The reemergence of deterrence

Despite the dominant role of relative deprivation theory, the late 1960s saw the publication of two seminal works on deterrence.

Gary Becker (1968), an economist, taking inspiration from Beccaria and Bentham, assumed that people will commit an offence if the utility of doing so exceeds the utility of not doing so. In this perspective, he hypothesised that the number of crimes committed by any person is a function of their probability of conviction, their punishment if convicted, and other variables, such as the income available to them through legal and other illegal activities.

Jack Gibbs (1968), a sociologist, believed that the only realistic approach to estimate the deterrence impact was to analyse the effect of the actual legal reactions to crimes in comparable social contexts, measuring these reactions in terms of severity and certainty of imprisonment. Gibbs' study, therefore, although of an empirical nature, was primarily inspired by Beccaria because, unlike Becker, it focused only on punishment, ignoring socioeconomic covariates.

Gibbs's and Becker's articles ignited great interest in testing the impact of deterrence. Deterrence has become the subject of numerous analyses, employing a variety of methods.

A substantial group of studies analysed deterrence in terms of perception, assuming that deterrence impacts crime as long as punishment is perceived as a real threat (Waldo and Chiricos 1972; Paternoster 1987). This approach implies focusing on the micro, individual dimension and making recourse to surveys directed to identify self-reported criminality.

Another substantial group of studies has used macro data. Within this group, it is possible to identify two distinct waves of studies (Nagin 2013). The first one has examined the relationship between deterrence and crime by comparing states and

other territorial entities based on their levels of punishment and crime rates (Ehrlich 1973; Geerken and Gove 1977). Punishment has been measured by the clearance ratio, the ratio of prison admissions to reported crimes (i.e. certainty of punishment), and the median time served (i.e. severity of punishment).

A second wave of macro studies has utilised longitudinal data to analyse deterrence and crime across states or other territorial units and over time. In these studies, deterrence has typically been measured by imprisonment rates, clearance ratios or severity of sentence (Entorf and Spengler 2000; Abramovaite *et al.* 2023).

3. Deterrence literature: some considerations

Literature on deterrence and crime has yielded inconsistent findings throughout its long history, largely due to the diverse methods employed.

The original formulation of the theory in the eighteenth century relied on postulates (the rationality of man's actions and free will) similar to those supporting the portrayal of *homo oeconomicus*, and neither Beccaria nor Bentham thought it necessary to corroborate their hypotheses with empirical evidence. Following the resurgence of the deterrence concept, numerous studies have provided sophisticated equations of the deterrence-crime link without empirical analysis. Several other studies provided hypotheses in the form of nonmathematical conceptual theories.

Twentieth and twenty-first-century empirical studies have reached contradictory conclusions about the impact of deterrence, and their methods have often been criticised. Comparative analyses have frequently overlooked the multifaceted reality of punishment, e.g. the fact that statutory penalties do not always correspond to the penalties imposed by the judge, and the penalties imposed can differ significantly from the penalties actually served. Macro studies comparing capital-punishment states with non-capital-punishment ones have often neglected the infrequent occurrence of capital punishment or the severity of non-capital sanctions. Other macro studies have compared societies in terms of penalties and crime rates, but have ignored the relevance of extralegal factors. For instance, comparisons between countries would be biased by their socio-cultural differences. Lastly, other studies have compared societies distant in time. For instance, comparing crime rates in eighteenth-century England – when capital punishment could be imposed for more than 200 offences – with those in the same country in the twenty-first century is nonsensical because it involves comparing two incomparable social contexts.

Studies that avoided the previous weaknesses have not been immune to criticism. In particular, the numerous studies that measured deterrence by imprisonment rates inevitably obtained the combined effect of deterrence and incapacitation on crime rates rather than the effect of deterrence alone.

Regarding studies that focus on perceived deterrence, one cannot help but agree with their premise. Punishment cannot impact an individual's propensity to commit a crime unless it is perceived as a real threat. This perception differs for each individual. Therefore, micro studies would be potentially more accurate than macro ones. At the same time, it is also true that an analysis of deterrence centred on perception would imply either remaining within the boundaries of non-empirical models or making recourse to data from self-reported perceptions and self-reported criminality. And self-reported crime data present obvious weaknesses (Kleck and Sever 1980: 81 ff.). Ultimately, macro-level research is deemed superior to individual-level research that relies on self-reported data.

Having considered all the above, we believe that the most suitable method to analyse deterrence consists in:

- avoiding comparisons of contexts distant in time from each other;
- relying on objective facts, such as actual punishment and actual crime rates, more than on subjective interpretations of punishment and self-reported criminality;
- focusing on the impact on crime of specific changes in punishment within the same society: an approach meant to assure a substantial homogeneity of the extralegal factors and the legal system as a whole;
- using macro-level data;
- using panel models because they are intrinsically superior to cross-sectional models (Kleck and Sever 2018: 175).

4. Enforcement, deterrence, and Mafia homicides

Italy's homicide trend in Mezzogiorno[1] provides an excellent opportunity to test the effective impact of deterrence on crime. Differences in extralegal factors in Mezzogiorno are relatively limited. There are no differences across the Mezzogiorno regions in terms of the criminal justice system, while, in the past few decades, there have been significant nationwide changes in law enforcement and penalties. These changes provide an opportunity to analyse the deterrence-crime link. Lastly, time series concerning crime and enforcement are available. Mezzogiorno, the Mafia's original turf, has traditionally presented very high rates of intentional homicide (hereafter IH). In the early 1980s, a vast gap existed between the Mezzogiorno's IH rates and the rest of Italy's: 3 to 6 IHs per 100K population vs ~1. At that time, the average IH rate of the other West European countries was ~1.4, which was much lower than the rates in the Mezzogiorno but slightly higher than those in the rest of

[1] With "Mezzogiorno", we refer to the southern part of Italy, including Sicily but excluding Sardinia where Mafia-type organisations are sporadic.

Italy. Over the last years, however, Mezzogiorno seemed to have lost its criminal exceptionalism, no matter the Mafia-type families dominating the local context: 'Ndrangheta (Calabria), Camorra (Campania), Sacra Corona (Apulia), and Mafia proper (Sicily).

A factor in the alleged decline in homicidal violence might have been the more robust enforcement by the state. Since 1991, the Italian judiciary has performed an effective action against Mafia-type gangs by taking advantage of the (contentious) collaboration of Mafia's former affiliates (so-called *pentiti*), to whom reduced sentences and protection were granted. In 1992, after the Mafia killed two high-ranking magistrates overseeing anti-Mafia activities, new acts meant to strengthen the provisions to counteract Mafia-type crime were passed. Among other things, the acts expanded the possibility of seizing property and money of suspicious origin, serving as a financial and psychological deterrent to Mafia bosses. The new acts also provided a hard prison regime for Mafia-type criminals (1992). Since then, several Mafia bosses have been left behind bars until the end of their lives. Measures of law enforcement showed positive variations since 1992: Mezzogiorno's IH clearance rate grew from ~36% in the late 1980s to ~55% around 2020, while the ratio people-charged-with-IH / IH-number increased from 0.69 in 1991 to ~2 around 2020.

Ultimately, we hypothesise that:

H1. More robust law enforcement led to a decrease in Mezzogiorno's homicides by escalating the threat of punishment.

H2. Although since the 1990s there has been a decline in homicides in Italy as well as in Europe, the decline registered in Mezzogiorno was significantly higher than that of other regions. This would support the hypothesis of a causal link between tougher enforcement against the Mafia and the decline in homicides in Mezzogiorno.

5. Data and methods

Our response variable measures the time series of intentional, completed homicides (henceforth IH), calculated as $ln((IH_{it} + \overline{\overline{IH}})/population)$. We considered total IHs and the Mafia-type IHs (on average, 27.4% of Mezzogiorno's IHs). Mafia-type homicides are those classified by the police as "eminently characterised by the force of the criminal organisations' associative bond". The label potentially applies to various criminal organisations but was designed to target the Mafia. Owing to the ambiguous nature of some IHs, some Mafia-type IHs are not correctly classified. Hence, the total number of IHs is a variable that must be taken into account. IH data were recorded by the police and operated by Istat, the Italian Statistical Office.

The 1983-2022 time series concern the Mezzogiorno provinces, ranging from 30 to 33 according to the period.

To investigate these data, we employed interrupted time series analysis (ITSA), which is named so because the intervention is expected to "interrupt" the trend over time of the outcome variable (Shadish, Cook, and Campbell, 2002). As a model designed to evaluate the effectiveness of policy changes, ITSA employs an aggregate entity (e.g., hospital, city, region, or county) as the treatment unit and summary-level measures (e.g., mortality or crime rates) as the outcome.

When we have only the treatment group, a single treatment period, and a set of entities under study, the general ITSA regression model (Linden 2015) assumes the following form (1):

$$Y_{ti} = \beta 0 + \beta 1 T_{ti} + \beta 2 X_{ti} + \beta 3 X_{ti} T_{ti} + \varepsilon_{ti} \quad (1)$$

where *Yti* is the outcome variable for each time point *t* and each individual-level *i*, $\beta 0$ is the intercept or starting level of the outcome variable, $\beta 1$ is the slope of the outcome variable until the intervention, $\beta 2$ is the change that occurs in the period immediately after the intervention, $\beta 3$ is the difference between pre-intervention and post-intervention outcomes. Therefore, a significant $\beta 2$ indicates an immediate treatment effect, and a significant $\beta 3$ a treatment effect over time.

Significant $\beta 2$ and $\beta 3$ are not conclusive proof of a causal link between the intervention and the response. The intervention-response link might result from an unmeasured confounder. However, we assume that any time-varying confounder should exhibit relatively slower variations. Consequently, it would be distinguishable from the expected sharp variation following the intervention.

Nevertheless, to verify the robustness of the results, researchers usually resort to control series regarding subjects unaffected by the intervention. However, the changes introduced to better combat the Mafia (i.e. the *intervention*) were applied nationwide. Therefore, it would be impossible to find territorial units formally unaffected by the intervention. Still, we assumed that the changes in enforcement aimed at combating the Mafia were inconsequential where Mafia gangs were substantially absent. Therefore, we checked whether the fall in homicides has also been shared by provinces where Mafia gangs have been substantially absent. In practice, we compared the homicide trend in the 15 provinces (all belonging to Mezzogiorno) that registered the highest rates of Mafia-type conspiracy during the period preceding the intervention (1983-1991) with the trend in the 15 provinces with the lowest rates (all bar one outside Mezzogiorno). To do this, we used a two-group interrupted time series model that assumes the following form (2):

$$Y_{ti} = \beta 0 + \beta 1 T_{ti} + \beta 2 X_{ti} + \beta 3 X_{ti} T_{ti} + \beta 4 Z_i + \beta 5 Z_i T_{ti} + \beta 6 Z_i X_{ti} + \beta 6 Z_i X_{ti} T_{ti} + \varepsilon_{ti} \quad (2)$$

where, in addition to form (1), *Zi* is a dummy identifying the individual's assignment (treatment or control), and *ZiTti*, *ZiXti*, and *ZiXtiTti* are all interaction terms.

6. Results

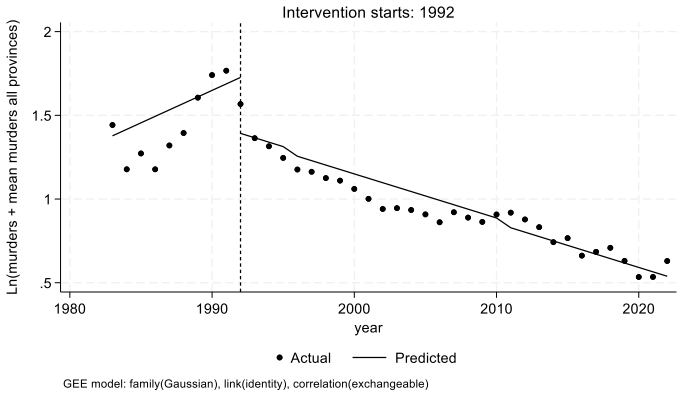
Table 1 and Figure 1 present the outcome of the ITSA[2] when the response variable is the time series of rates for all intentional homicides.

Table 1 - *Interrupted time series analysis (ITSA) with panel data. All Mezzogiorno provinces from 1983 to 2022. Homicide rates and intervention (1992).*

GEE population-averaged model	Number of obs	=	1,266
Group variable: Province	Number of groups	=	33
Family: Gaussian	Obs per group:		
Link: Identity	min	=	12
Correlation: exchangeable	avg	=	38.4
	max	=	40
	Wald chi2(3)	=	81.13
Scale parameter = 0.2999	Prob > chi2	=	0.000

Ln(homicides)	Coefficient	Robust std. err.	z	P>z
t	0.0388	0.0136	2.86	0.004
x 1992	–0.3341	0.0915	–3.65	0.000
x_t 1992	–0.0651	0.0146	–4.47	0.000
constant	1.3775	0.1276	10.8	0.000

Figure 1 - *Interrupted time series analysis (ITSA) with panel data. All Mezzogiorno provinces from 1983 to 2022. Homicide rates and intervention (1992).*



[2] We used the Stata module *xtitsa* by Linden (2015).

The intervention coincides with a sharp change in homicides. We observe that the slope of the time series is positive before the 1992 intervention (in the tables, t) and negative immediately after it (x), as well as in the long term (x_t) when compared to the pre-intervention period. All the coefficients are significant.

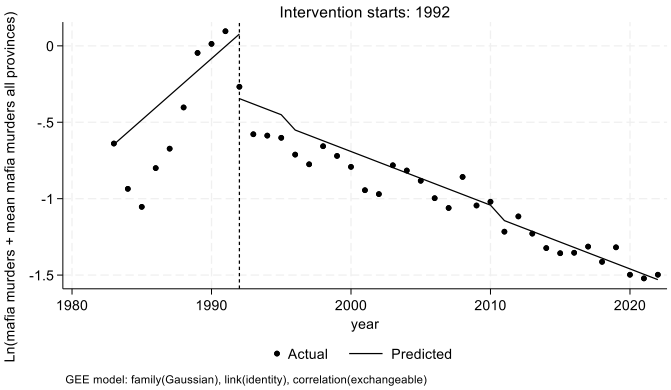
The outcome of the ITSA model when the response variable is the rates for Mafia-type intentional homicides (Table 2 and Figure 2) mirrors the outcome obtained with all intentional homicides. Again, there is a sharp fall in homicide rates immediately after the intervention and in the long term.

Table 2 - *Interrupted time series analysis (ITSA) with panel data. All Mezzogiorno provinces from 1983 to 2022. Mafia-type homicide rates and intervention (1992).*

GEE population-averaged model	Number of obs	=	1,266
Group variable: Province	Number of groups	=	33
Family: Gaussian	Obs per group:		
Link: Identity	min	=	12
Correlation: exchangeable	avg	=	38.4
	max	=	40
	Wald chi2(3)	=	81.13
Scale parameter = 0.9939	Prob > chi2	=	0.000

Ln(Mafia-type homic.)	Coefficient	Robust std. err.	z	P>z
t	0.0802	0.0293	2.74	0.006
x 1992	–0.4223	0.1757	–2.40	0.016
x_t 1992	–0.1153	0.0324	–3.56	0.000
constant	–0.6452	0.2325	–2.78	0.006

Figure 2 - *Interrupted time series analysis (ITSA) with panel data. All Mezzogiorno provinces from 1983 to 2022. Mafia-type homicide rates and intervention (1992).*



6.1 Robustness check

We assumed that the fall in homicide rates following the intervention could be attributed to the intervention itself. However, to verify the robustness of the results, we made recourse to the aforementioned two-group interrupted time series analysis. This shows (Table 3) that the changes regarding the controls were non-significant before and after the intervention (*t*, *x*, and *x_t*). Instead, the provinces with the highest rates of Mafia-type conspiracy presented an increase before the intervention (*z*), which was significantly higher than that of the controls (z_t). The Mafia-ridden provinces also exhibited a significant negative variation immediately after the intervention (*z_x*) and in the long term (z_x_t) when compared to the controls.

Table 3 – *Two-group interrupted time series analysis (ITSA) with panel data. All Mezzogiorno provinces from 1983 to 2022. Homicide rates and intervention (1992).*

GEE population-averaged model	Number of obs	=	1,200
Group variable: Province	Number of groups	=	30
Family: Gaussian	Obs per group:		
Link: Identity	min	=	40
Correlation: exchangeable	avg	=	40.0
	max	=	40
	Wald chi2(3)	=	108.03
Scale parameter = 0.1812	Prob > chi2	=	0.000

Ln(homicides)	Coefficient	Robust std. err.	z	P>z
t	0.0091	0.0117	0.78	0.4370
z	0.8227	0.1433	5.74	0.0000
z_t	0.0663	0.0216	3.06	0.0020
x 1992	–0.0205	0.0700	–0.29	0.7700
x_t 1992	–0.0171	0.0135	–1.27	0.2040
z_x 1992	–0.5917	0.1501	–3.94	0.0000
z_x_t 1992	-0.0930	0.0242	-3.85	0.0000
constant	0.6866	0.0860	7.98	0.0000

7. Conclusions

This study demonstrates that the fall in homicide rates corresponded to changes in crime policies. More effective enforcement and the parallel escalation in the probabilities of punishment and severity of penalties led to a marked decline in Mezzogiorno's homicides as a whole and Mafia-type homicides.

At the end of the four-decade period considered, the fall in homicides was such that Mezzogiorno's rates became only fractionally higher than the rest of Italy's rates and neatly lower than the average IH rate for the other West European countries. This ended the long-lasting Mezzogiorno's exceptionalism in terms of homicidal violence.

From a theoretical perspective, the present analysis, based on actual changes in law enforcement and crime rates, demonstrates that a decrease in crime followed an increase in enforcement. The decrease in homicides was, in turn, non-significant in those provinces where the new anti-Mafia measures have been relatively inconsequential owing to a substantial absence of Mafia gangs.

All this evidence emerged from a macro-level analysis using panel data. A micro-level investigation would likely reveal a range of individual reactions to a change in enforcement. Any verification of the eighteenth-century scholars' tenet that deterrence affects crime because all men rationally calculate the costs and benefits of law-breaking is probably beyond the reach of an empirical macro-investigation such as the present one. However, this study's findings allow us to conclude at least that more robust enforcement results in an average decrease in homicide rates. This more robust enforcement encompasses, firstly, the positive variations in the homicide clearance rate and in the number of people charged with IH. The role of *pentiti* cannot be overlooked, although it is more difficult to quantify it. In any case, the *pentiti*'s contribution led to positive variations in the IH clearance rate and in the number of people charged with IH. The seizure of property and money of suspicious origin decreased the benefits in the Mafia's activities, but did not affect the *mafiosi*'s freedom. Instead, the positive variations in clearance rate and in people charged with IH had an incapacitation effect on criminals through incarceration, and it also produced a higher potential deterrence because it increased the risk of being brought to justice and receiving harsher penalties (e.g. hard prison regime). In turn, people belonging to criminal organisations are expected to be particularly sensitive to deterrence because they plan crimes "in a cool state of blood". Ultimately, everything suggests that the fall in homicides was also the outcome of the rational assessment of the risk of having to account for them.

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