



COUNTING THE COST OF CRIME IN ITALY

**Claudio Detotto
Marco Vannini**

WORKING PAPERS

2010/13



**CENTRO RICERCHE ECONOMICHE NORD SUD
(CRENoS)
UNIVERSITÀ DI CAGLIARI
UNIVERSITÀ DI SASSARI**

Il CRENoS è un centro di ricerca istituito nel 1993 che fa capo alle Università di Cagliari e Sassari ed è attualmente diretto da Stefano Usai. Il CRENoS si propone di contribuire a migliorare le conoscenze sul divario economico tra aree integrate e di fornire utili indicazioni di intervento. Particolare attenzione è dedicata al ruolo svolto dalle istituzioni, dal progresso tecnologico e dalla diffusione dell'innovazione nel processo di convergenza o divergenza tra aree economiche. Il CRENoS si propone inoltre di studiare la compatibilità fra tali processi e la salvaguardia delle risorse ambientali, sia globali sia locali. Per svolgere la sua attività di ricerca, il CRENoS collabora con centri di ricerca e università nazionali ed internazionali; è attivo nell'organizzare conferenze ad alto contenuto scientifico, seminari e altre attività di natura formativa; tiene aggiornate una serie di banche dati e ha una sua collana di pubblicazioni.

**www.crenos.it
info@crenos.it**

CRENoS - CAGLIARI
VIA SAN GIORGIO 12, I-09100 CAGLIARI, ITALIA
TEL. +39-070-6756406; FAX +39-070- 6756402

CRENoS - SASSARI
VIA TORRE TONDA 34, I-07100 SASSARI, ITALIA
TEL. +39-079-2017301; FAX +39-079-2017312

Titolo: COUNTING THE COST OF CRIME IN ITALY

ISBN: 978 88 84 67 594 1

Prima Edizione: Luglio 2010

© CUEC 2010
Via Is Mirrionis, 1
09123 Cagliari
Tel./Fax 070 291201
www.cuec.it

Counting the cost of crime in Italy

Claudio Detotto

Marco Vannini

DEIR and CRENoS, University of Sassari

Abstract

The aim of this paper is to gauge the cost of crime in Italy by concentrating on a subset of offences covering about 64% of total recorded crime in year 2006. Following the breakdown of costs put forward by Brand and Price, we focus on the costs in anticipation, as a consequence and in response to a specific offence. The estimated total social cost is more than € 38 billion, which amounts to about 2.6% of Italy's GDP. To show the usefulness of these measures, we borrow the elasticity estimates from recent studies concerning the determinants of crime in Italy and calculate the cost associated with the surge in crime fuelled by unemployment and pardons. Indeed, in both cases such costs are substantial, implying that they should no longer be skipped when assessing the relative desirability of public policies towards crime.

Keywords: Cost of crime, Cost–Benefit Analysis, Investments in public security.

JEL Codes: K00, D61, H50

***Acknowledgement:** This work was supported by Grant 200613722 from MIUR-PRIN. We thank seminar participants at the “Cost of crime” workshops held at the University of Sassari and CRENoS in 2007 and 2009 for comments and suggestions. Special thanks are due to Walter Enders and Giovanni Mastrobuoni. Data were provided, among others, by Osservatorio Sicurezza Fisica (OSSIF) and Comando Carabinieri per la Tutela del Patrimonio Culturale. We are grateful to all of them but retain the sole responsibility of any deficiencies and errors.*

1. Introduction

Crime is a social phenomenon whose origin is remote and has been known since the first form of society. Nowadays, crime is a widespread activity that affects society and human living at all latitudes, but despite its pervasiveness the systematic measurement of its impact on society is far from being a major concern of policy makers. They prefer instead to allocate resources and design policies according to the perceived “social alarm”, which is more often than not the result of particularly hateful episodes and the associated media coverage rather than the true social cost of criminal activity (see Weatherburn and Indermaur, 2004).

The interest in the economic analysis of crime inspired by Becker’s seminal paper (1968), with the criminal as a rational agent that maximizes individual utility subject to a budget constraint, has sprung a huge literature concerned primarily with the theoretical and empirical analysis of the factors affecting criminal choices and behaviour. But this is just one side of the coin. Crime is a social bad, which affects the welfare of victims and non-victims in a number of ways: damaged or stolen goods, lost wages, injuries, traumatic shocks, mental stress, wider detrimental effects on the economic performance of crime ridden areas, and so on.

In Italy, we observe a widespread fear of crime and risk of victimisation that has pushed crime to the top of the political agenda. Recent measures, like pardons and de-penalization of specific offences, have generated very short-lived positive effects and reinforced the idea that many sentences need not be fully served or, worse, that the criminal justice system will eventually accommodate any mounting wave of crime. No wonder then if communities claim the adoption of new and tougher policies against crime, including self-defence in the form of citizens groups to patrol troubled areas. In this context, it would be crucial to be able to answer, to name but a few, questions like ‘What is the relative seriousness of different crimes?’, ‘Is crime less of a problem than other critical social ills?’, ‘How much do people spend for fear of crime?’. Without such information, public policies will continue to be driven by the media “crime of the week”, and attention will continue to focus on violent crimes that struck public opinion for their brutality rather than on observed and unobserved crimes with high social costs.

Besides, we need to consider the further source of distortions represented by the (incautious use of) official crime statistics, which being affected by a variable underreporting bias across offences can induce misperception about the effective crime rates and generate false myths as to what offence is on the rise. As is well known, official data

come from Police registers or Justice Investigations; in this way, they depend both on people propensity to report crime and on the ability of the Criminal Justice System at large to identify criminal activities. Major explanations of the underreporting phenomenon seem to be fear, institutions mistrust, police inefficiency, low incentives. For these reasons, reported crimes represent just the tip of a (sometimes big) iceberg.

We said before that criminal activities have a strong impact on the community, but of course it is reasonable to expect that different types of crime produce different social costs. A crime offence produces costs both to victims, such as stolen and damaged goods, productivity losses, physical harms, fear and psychological distress, and to no-victims (i.e. neighbourhoods and society in general), e.g. risk of victimization and government expenditures for bringing offenders to justice. If the aggregate costs of each category of crime could be estimated, than it would be possible to compare crimes in monetary terms. This would open the possibility of designing policies calibrated on the measured harm to society of different offences and to introduce cost-benefit considerations in the allocation of public resources to enforce the law. In short, understanding the aggregate burden of crime seems the *condicio sine qua non* for value for money interventions and informed prioritization of crime reduction programs.

Against this general backdrop and an ongoing harsh debate on the best set-up of Italy's Criminal Justice System, our aim here is to generate some meaningful numbers concerning the social burden of crime of a large subset of notifiable offences for this country.

To this end, we scrutinize and integrate information from a host of sources, including official statistical offices like ISTAT and EUROSTAT, governmental organizations and private and public agencies, research centres, banking associations, chambers of commerce that systematically collect data concerning crime and its impact.

The remainder of the paper is organized as follows. In section 2 we provide a brief overview of the most recent studies and methodologies for costing crime. Then, in section III, we present our estimation procedure and, in section IV, we describe the data used in the study. Section V illustrates the main results. In section VII, after carrying out some simple exercises involving our cost measures (in section VI), we draw the conclusions.

2. Previous studies

Aside from earlier studies in the United States, the economic literature has devoted significant attention to costing crime only in the last twenty years. The first attempts to measure the crime costs consider mainly out-of-pocket expenses (such as stolen or lost property, medical costs, and lost wages) of street crime offences. In the Report of the Wickersham Commission (1929), established under President Hoover to investigate the causes of criminal activities and the widespread violations of national alcohol prohibition, the focus is on the cost of organized crime to the US. The analysis identifies four categories of losses caused by criminal acts: those due to crimes against the person, against property, against the administration of justice, and against the community.

In more recent studies, the focus is on the determination of the total burden of crime, at the national or regional level, considering a larger set of crime offences and cost components.

The two basic approaches found in the literature to estimate the crime costs follow either the “bottom up” or the “top down” method. The former, taken by Cohen (1988) and Brand and Price (2000), attempts to piece together the various component crime costs, such as direct/indirect and tangible/intangible costs. They call “direct” costs all expenditures incurred by victims, while the “indirect costs” are the losses borne by the community in general. Tangible costs are those that involve monetary payments such as loots, lost wages, damaged properties and public expenditures for security. Official surveys are used to estimate the hidden crime rate (using the inverse of the propensity to report crime) and the costs occurred (for example, asking the value of stolen or damaged properties). Intangible costs normally refer to fear, suffering, pain and diminished quality of life.

In the literature, there exist three different methodologies (see Cohen (1988), Anderson (1999), Brand and Price (2000)) to measure the intangible costs. Combining the direct and indirect costs for several crime categories in the US, Cohen (1988) uses the jury award data to estimate the monetary value of pain and suffering for physical and mental injuries. He argues that jury awards approximate the social value of the pain and suffering of victims. Furthermore, Cohen combines crime-related death rates with the value of life estimates to determine the values for the risk of death. The annual cost of the set of offences considered is \$ 92.6 billion. Unfortunately, although the amount of criminal injury compensation is intended to reflect the degree of pain and suffering by victims, it is not so clear how this is gauged. Therefore,

it may happen that the criminal injury compensation does not reflect social preferences.

Anderson's work (1999) is the first to estimate the total annual cost of criminal activity, considering direct and indirect expenses of a huge number of crime types for the US. The author uses labour market data to measure the indirect costs. He compares the amounts that individuals are willing to accept to enter a dangerous work environment, with indirect costs of violent crime that causes similar injuries. He finds that the net annual burden of crime in the US exceeds \$ 1 trillion.

Brand and Price (2000), in an influential research undertaken on behalf of the Home Office, calculate the total cost of crime to England and Wales using survey data. They estimate a total expenditure of £ 60 billion per year. In this analysis, the intangible costs are estimated using data on compensation for traffic accidents. The authors combine crime-related injuries with similar damages and distresses caused by road accidents.

The novelty of Brand-Price's contribution, however, rests on the breakdown of the total cost associated with individual crime incidents. They identify three cost components: in anticipation, as a consequence and in response to crime. Many scholars now follow this approach. Mayhew (2003) and Roper and Thompson (2006) apply this method to determine crime costs respectively in Australia and New Zealand. The main advantage of the Brand and Price approach is the detection of crime categories by their time location, which reduces the complexity of the analysis and removes the risk of cost categories overlapped. Unfortunately, this feature is also one of the main limits of this approach because certain types of costs can refer to more than one category; for instance, in Brand and Price's analysis, the costs of incapacitation are included in the costs in response to crime, although they may be interpreted as costs in anticipation given that their aim is in part to deter criminal activity.

In general, the "bottom-up" approach allows a disaggregation of crime cost components giving more information and details for policy makers and analysts. However, this approach is far from being fully comprehensive: there exist a huge number of cost components and it is quite impossible to measure and estimate all of them. Furthermore, it is very difficult to define a proper cost transfer function to estimate the intangible crime costs.

The "top down" method is an alternative approach that attempts to estimate the total cost from one source. Among such methods, three

approaches have been used to date: revealed preferences, stated preferences and life satisfaction.

In the economics of crime literature, the revealed preference approach has generally focused on estimating differences in property values that can be explained by differences in crime rates (Thaler, 1978, Rizzo, 1979, and Hellman et al., 1979). Gibbons (2004) finds that house prices in London are affected by criminal damages; practically, the costs incurred by local residents are calculated in terms of lower house values. Linden and Rockoff (2006) estimate the cost of sex assaults by examining housing prices nearby known sex offenders. The main disadvantage of this approach is the omitted variable problem: all possible explanatory variables should be included in order to isolate the effect of crime on property values, otherwise the estimates are biased.

The stated preference methodology is based on structured interviews, where respondents are asked to state their subjective evaluation of a public or private good, such as a reduction in crime. Ludwig and Cook (2001) estimate the benefits of reducing gun violence in the US, using the contingent valuation method. A reduction of gun assault by 30% is valued around \$24 billion. Using the same method, Cohen et al. (2004) and Atkinson et al. (2006) investigate the public's willingness-to-pay for reductions in several crime offences in the US and the UK, respectively. All contingent valuation estimates are higher than the aforementioned estimates of the costs of crime. These results are consistent with the idea that state preference methods can evaluate intangible costs, such as fear and psychological costs, better than other traditional methods.

Recently, a new approach to valuing crime is in use. Reported subjective well-being data are used to directly evaluate utility consequences of crime (Dolan, Loomes, Peasgood and Tsuchiya (2005), Cohen (2008)).

In general, the top-down approach captures more accurately the intangible costs than the bottom-up method, but the former estimation depends on the public's perception of the risks and the expected damage of the specific crime. Furthermore, the revealed preference analysis suffers from model identification problem. In theory, the "top down" and "bottom up" approaches should lead to the same estimates if the latter is all inclusive, but in practise the "bottom up" estimates are much lower than "top down" ones; Cohen (2008) justifies this difference by the limited capacity of "bottom up" approach to capture all costs of crime. Both approaches have advantages and disadvantages: on the one hand, the "top down" approach is likely to be more comprehensive but it does not allow for a disaggregation of the crime cost components; on

the other hand, the “bottom up” methods give more policy implications but they suffer from scarce data availability and complications concerning the measurement of the intangible components.

In Table 1, a selection of the most relevant studies is presented (Czabański, 2008; pp. 53): we can observe that crime diverts a significant portion of community resources. In the US, some analyses find that criminal activity generates a cost amounting to more than 10% of national GDP. In England and Wales, and New Zealand, the social costs reach 6% of GDP.

[TABLE 1 HERE]

An interesting benchmark for these figures is provided by a recent study of the International Monetary Fund (IMF) on the fiscal costs associated with the containment and resolution policies for about 40 financial crisis episodes. The authors (Laeven and Valencia, 2008) value these costs around 16% of GDP. According to this estimate, the annual cost of crime falls one third and two thirds of the average loss caused by a financial crisis.

To our knowledge, so far no one has attempted to investigate crime costs in Italy in a systematic way. Rey (1997) estimates the total revenues of several criminal offences, such as thefts, robberies, extortion, fraud, kidnappings, corruption. This approach considers just one dimension of the impact of crime, i.e. the benefits, but it neglects the dimension of the costs. Rey’s approach allows to compare the total revenues and per capita revenue among a set of offences, but it cannot compute which offences are more expensive in terms of social costs for the community. In fact, not all crime revenues are necessarily social costs. For example, drug revenues take into account the total value of drug trafficking that are mainly voluntary payments, so we cannot consider them as social cost for the community. Furthermore, Rey cannot estimate the cost of brutal crime, such as murder and sex assault, because no transfer of money is involved.

Asmundo and Lisciandra (2008) try to estimate the average and total social costs of protection racket in Sicily (Italy), using regional data. They consider the amounts paid for the criminal protection, what they call “costs as a consequence”, but they leave out other significant expenditures, such as costs in anticipation and costs in response to crime. Their findings show that the protection racket in Sicily accounts for over 1.4% of gross regional product.

3. Methodology

Following Brand and Price (BP), in this study we consider three different costs categories: the costs in anticipation of crime, as a consequence of crime and in response to crime. The first category covers all types of expenditures occurring before the criminal event; the second one refers to all expenditures directly connected to crime events; finally, the last one encompasses all costs incurred in response to crime.

Different social groups are associated with different costs of crime; for example, the costs incurred by a victim are different from those borne by those who are not victims; similarly, the perception of being victimized and the stress caused differs from individual to individual. As an extreme case, some actions can generate costs for individuals and profits for others; for instance, a theft is a cost to the victim while a revenue for the thief.

The aim of this study is to calculate the costs of crime not just for victims but for the society as a whole, excluding from the analysis the costs occurred by the criminals. We indicate hereafter such costs as “social costs”.

Often in economics, the concept of “social costs” is used to mean “external costs”; even if they are strongly related, some differences exist. In general, “external costs” are costs not voluntarily accepted by a person; “social costs” are costs that reduce the aggregate well-being of society. It is controversial whether crime costs must be treated as social or external costs.

On the one hand, many economists argue that the illegal transfers caused by some criminal offences (theft, robbery, fraud) are not social costs because they do not generate a loss in the social welfare function, but they are just a shift of resources from victims to offenders. On the other hand, public funds used in the fight against crime could be spent in more profitable areas; this is an inefficiency that reduces the social welfare. In this sense, the cost of crime can be well considered a social cost.

Cohen (1988a), French et al. (1991), Miller et al. (1996), Brand and Price (2000), and Dubourg et al. (2005) side with the “external cost” perspective. Anderson (1999) takes the opposite view, excluding the transfers from his analysis.

This study estimates both the average and the total costs of a set of crimes. The average and total cost provide different information. While the former assess the scale of the crime impact; the latter estimates the impact of individual incidents.

The total costs are needed to compare the social burden of different crime categories or different social ills, while the average costs are used in cost-benefit analyses. The average costs help the policy makers to calibrate public policies; for example, the average cost is vital to compare the cost incurred to prevent a criminal event with the benefit obtained, represented by its avoided cost.

4. Data and preliminary analysis

We select eighteen categories of crime offence: bag-snatching, pick-pocketing, theft without contact, vehicle theft, motor vehicle theft, theft from vehicle, theft in dwellings, art theft, fraud, money counterfeiting, counterfeiting, mafia and no-mafia related homicide, prostitution, bank and other robberies, drug dealing. In order to give a rough idea of the size of the sample under study, they represent 64% of total recorded crimes in Italy during the 2006. Unfortunately, given the underreporting problem, this value does not represent the actual size of the sample on the total number of crime. Table 2 provides detailed definitions of the crime variables used in this study.

[TABLE 2 HERE]

The data come from Police report (Ministero dell'Interno, 2007) and represent the number of charges recorded during the year 2006. In Table 3, the second column indicates the number of recorded events. As shown in the third column of Table 3, theft without contact (36.7%), theft from vehicle (13.8%) and vehicle theft (11.2%) are the most common crime offences.

[TABLE 3 HERE]

In order to estimate the real number of criminal offences, we use mainly a national survey (ISTAT, 2004) whose aim is to define shadow rates and monetary values of several specific offences, such as thefts and robberies. Estimating how many victims report the offences among residents, we can determine the ratio between recorded and not recorded offences by crime type. By using this multiplier, we can then estimate the real number of incidences for each crime offence. For all crimes not cover by national survey, we employ previous studies, developed by

national government, European Institutions, trade associations and Italian research centres, in order to gauge crime incident levels.

More precisely, ISTAT's national survey covers the following crime typologies: bag - snatching, motor-vehicle theft, personal theft, pick - pocketing, theft from a vehicle, theft in dwelling, vehicle theft, and other robberies. For each of the aforementioned crimes, ISTAT publishes the reporting crime rate and the average value of the loss. The estimates related to counterfeiting and fraud events come from Centro Studi Temi (2006, 2007). Parsec Consortium (2005) evaluates the size of the prostitution market in Italy. Money counterfeiting data are published by Italian and European Central Bank. The Annual report of the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA, 2008) provides the social cost of drug abuse and addiction in Italy. Italian Police Corps for the Protection of Cultural Heritage (*Comando Carabinieri per la Tutela del Patrimonio Culturale*) give us the total number of art thefts and the average value of stolen goods in Italy. Finally, for what concerns bank offences, all information comes from OSSIF (Osservatorio Sicurezza Fisica; 2006a, 2006b, 2007) that evaluates banks costs for security and the annual value of losses.

Comparing the values in Table 3, we can observe high difference between the estimated number of incidents and the recorded offences. Particularly, the offences like prostitution, drug, counterfeiting, fraud, and theft from vehicle are heavily characterized by the underreporting problem. On the contrary, homicides and bank robberies are always reported.

The case of drug offences is disconcerting: from a low rate of recorded offences (about 2%), the "real" number of incidents exceeds 6.6 million that is 45.4% of the subset. A possible reason of this situation is that police focus on the most relevant drug trafficking, giving little or no importance to occasional or harmless consumers. We do not report the number of events of thefts-shop, money counterfeiting and art theft because the nature of these crimes makes it impossible to estimate.

Completed the estimation of incident levels, we focus on the determination of direct and indirect social costs for each crime type. In the first step of the analysis, the costs in anticipation of crime are estimated. These costs represent all types of expenditures occurring before the potential event, such as security expenditures (alarms, safes, strong doors) and insurance administration costs. Then, we employ ISTAT (2004) and the abovementioned national organizations' data to gauge the costs as a consequence of crime. This category refers to all

expenditures directly connected to crime events, such as stolen goods, damages, loss of life. Finally, we estimate the costs in response to crime, such as Police, Justice, and Prison costs.

Criminal Justice System cost comes from the national budget (Italian Ministry of the Interior), and it yields € 5 billion a year. We split this large amount of money proportionally between administrative, civil and penal proceeds, taking into account the annual number of proceeds for each category.

Then, we reallocate the total amount between all different types of offences considering their frequency and edictal sentence. The intuition is the longer the edictal sentences are, the more the efforts and the resources are needed to solve them.

The amount of public security expenditure comes from national and local budgets. Following the same strategy used for Criminal Justice System budget, we split the public security budget between the different crime and no-crime offences in proportion of criminal and civil proceedings. The criminal proceedings are 77.8% of all proceedings in the Italian Justice System, so we allocate the same fraction of the total amount spent for Police and Justice as costs in response to crime. This choice, which is clearly debatable, was adopted to bridge the lack of information on how Police and Justice allocate their efforts. Beside, public security is also involved in actions in anticipation of crime, but again we cannot estimate how many resources are spent for. These are points that should be addressed in the follow up of this research and can significantly improve our analysis and estimation.

Finally, we estimate the total costs of the national prison system for each crime category. Using the data of the Department of Prison Administration (DAP), we estimate the annual cost per person convicted and we this value to determine prison costs for each crime offence. In 2006, the Prison Budget was about 3.8 billion euros and the total prison population amounted on average to 52,000 inmates.

5. Empirical results

The aggregate burden of the 18 types of crime is € 38 billion, which is equivalent to 2.6% of Italy's GDP (Table 4). This is a conservative indication, as we use the lower bounds of our estimates.

[TABLE 4 HERE]

The second column of Table 4 shows the total costs for all crime typologies. By comparing Tables 3 and 4 it is worth stressing the following: pick - pocketing and theft without contact have high frequency rates, but their social costs are quite low. On the contrary, bank robbery and homicide which represents a modest 1% of the total number of crimes amount to more than 9% of all crime costs.

Table 4 depicts the breakdown of the total social costs in the three categories, i.e. costs in anticipation, as a consequence and in response to crime. The costs as a consequence of crime represent the main part of total costs (60.5%), followed by costs in response (27.0%) and in anticipation (12.5%). However, it must be reminded that this result suffers from lack of data and is somewhat sensitive to changes in assumptions or to improvements in the quality of supporting data.

Counterfeiting and drug dealings show the highest total costs (more than € 7 billion). In the former case, the costs are mainly in terms of lower profits for firms, while the costs in response to crime are negligible. In the latter case, the costs as a consequence represent the social, rehabilitation and health services cost (€ 1.7 billion a year), productivity losses (€ 1.9 billion) and drug related deaths (1.3 billion of euros), while the costs in response value € 2.8 billion. Notably, expenditures on drug consumption (€ 4 billion a year) cannot be considered as social costs, because they are treated as voluntary transfers (Cohen, 2000).

The total costs of thefts in dwelling equal € 4 billion: the costs in anticipation show that the expenditures for home security are significant (€ 2.6 billion). Remarkably, the security expenditures are the largest item also in the case of theft from vehicle and bank robbery offences. On the contrary, the costs in response to crime are a significant proportion of the total in art theft, bag - snatching, pick - pocketing, other robberies, money counterfeiting, prostitution and mafia related homicide.

Turning to the average costs, the most expensive incidents are mafia and no mafia related homicide (3.3 and 2.7 million euros, respectively). This difference is due to the fact that the former has higher costs in response, such as *antimafia* activities and national funds for mafia's victims (Ministero dell'Interno, 2008). The cost per incident of bank and other robberies, prostitution, counterfeiting, theft in dwelling, and vehicle theft is well above the average (2,600 euros). As expected, street crimes, such as bag-snatching, personal theft, pick - pocketing and theft from vehicle, exhibit low costs per incident.

6. Two applications concerning unemployment and pardons

In this section, two applications of the measure of social costs of crime are presented. Using the elasticity estimates of previous contributions by Marselli and Vannini (2000), and Barbarino and Mastrobuoni (2008), we calculate the cost associated with the increased crime frequency implied by rising unemployment and pardons.

Marselli and Vannini (2000) studied the impact of unemployment on crime rates using Italian regional data for the period 1970-1994. By applying a panel approach, controlling for fixed effects and spatial dependence in addition to the classical factors suggested by the economic model of crime, they find that an increase in the unemployment rate by 1% induces an increase in homicides by 0.2, in robberies by 12, and in thefts by 118 per 100,000 persons. This is equivalent to having respectively 118 additional homicides, 7,000 more robberies and 70,000 more thefts. Recalling the costs per incident of these crime offences¹ (Table 4), the social cost associated with the one percent increase in the unemployment rate equals € 700 million.

As a result of the recent financial and economic crisis, during the last 12 months Italy's unemployment rate² has reached 9%. According to our estimates and assuming that Marselli-Vannini's elasticities are still valid, the social costs induced by the climb of unemployment are about 6 billion of euros. These costs seem to be very significant when compared to the government's anti-crisis measures³ of the last two years (8.6 billion) and throw doubts upon the adequacy of these measures to fight unemployment.

Addressing a different question, Barbarino and Mastrobuoni (2008) estimate the incapacitation effect of prison on crime. Exploiting the quasi-natural experiments associated with Collective Pardons that took place in Italy in the last fifty years, they are able to remove the simultaneity bias that affect most estimates of the incapacitation effect in the standard crime equations. In particular, studying the Collective Pardon passed in July 2006, which was granted to all inmates with residual penalties of not more than three years and that reduced the prison population by more than 40% in less than a month (22,000

¹ The social cost of a representative theft event is calculated as the weighted average cost of each type of theft.

² This statistic refers to the period from the second quarter 2008 to the second quarter 2009 (ISTAT).

³ Law 185/2008 and Law 5/2009.

inmates were suddenly freed), they find that the elasticity of crime with respect to prison population ranges, depending on the type of crime considered, between zero and 60 percent. Now, combining these elasticities with our estimates concerning the cost of crime, we find that the social costs associated with this legislative act amounts to about € 4.4 billion, with an average social cost of 170 thousands euros per recipient. Unfortunately, there is no perfect correspondence between the types of crimes studied in Barbarino-Mastrobuoni and our categories. Hence, the social costs are restricted to the following sub-sample: bank and other robberies, counterfeiting, motor vehicle and vehicle theft, money counterfeiting, no mafia related homicides and drug dealing. Nevertheless, considering an annual average expenditure per prisoner in the range 35,000 – 70,000 euros (Barbarino - Mastrobuoni, 2008), our cost-benefit analysis indicates a reduction in the net social benefits of about 2.5 - 3.5 billion of euros. To say the least, Collective Pardons do not represent a cost effective policy.

7. Conclusions

Previous studies of the burden of crime in Italy have focused on total revenues of selected criminal activities. To our knowledge, this is the first attempt at estimating the annual social costs of a large subset of criminal offences, covering both direct and indirect costs.

We find that the total burden of crime amounts to over € 38 million: 60.5 percent of the expenses are incurred as a consequence, 27% in response and 12.5% in anticipation of criminal events. Drug and counterfeiting show the highest total costs (more than € 7 billion for both); turning to the average costs, one homicide incident is worth 2.7 million euros (€ 3.3 million for mafia related murder).

The measures so obtained were used for two illustrative applications concerning the cost, in term of additional crime, of unemployment and pardons. Using the elasticity estimates of previous contributions by Marselli and Vannini (2000) and Barbarino and Mastrobuoni (2008), we found the following. The social cost associated with a one percent increase in the unemployment rate equals € 700 million; the social costs associated with a legislative act like the last Italian Collective Pardon amounts to about € 4.4 billion. We also detect a huge reduction in social welfare of about 2.5 - 3.5 billion of euros associated with this pardon policy.

It goes without saying that the analysis can be greatly improved by i) including measures of intangible costs (such as fear, psychological distress and risk of victimization) ii) adding more crime categories (such as wounding, sexual offences and common assaults) and iii) considering the wider economic distortions of chronic crime rates.

References

- Anderson, D.A. (1999) "The Aggregate Burden of Crime" *Journal of Law and Economics*, 42: 611-642.
- Asmundo, A., and Lisciandra, M. (2008) "The Cost of Protection racket in Sicily" *Global Crime*, 9: 221-240.
- Atkinson, G., Healey, A., and Mourato, S. (2005) "Valuing the Costs of Violent Crime: a Stated Preference Approach" *Oxford Economic Papers*, 57: 559-585.
- Barbarino, A., Mastrobuoni, G. (2008) "The Incapacitation Effect of Incarceration: Evidence from Several Italian Collective Pardons" *Carlo Alberto Notebooks* 999: 1-43.
- Becker, G.S (1968) "Crime and Punishment: An Economic Approach" *Journal of Political Economy*, 76: 169-217.
- Brand, S., and Price, R. (2000) "The Economic and Social Costs of Crime", Home Office Research Study n. 217, London: Home Office.
- Cohen, M.A. (1988) "Pain, Suffering and Jury Awards: a Study of the Cost of Crime to Victims" *Law and Society Review*, 22: 537-555.
- Cohen, M.A. (2000) "Measuring the costs and benefits of crime and justice" in *Measurement and Analysis of Crime and Justice, Criminal Justice 2000, Volume 4*, Office of Justice Programs, Department of Justice, Washington DC (US), 263-315.
- Cohen, M. A. (2008) "The Effect of Crime on Life Satisfaction" *Journal of Legal Studies*, 37: 325-353.
- Cohen, M.A., Rust, R.T., Steen, S., and Tidd, S. (2004) "Willingness to Pay for Crime Control Programs" *Criminology*, 42: 89-109.
- Centro Studi e Ricerche sulla legalità e Criminalità - Temi (2006), *Il Bel Paese delle Truffe*, Rome: Confesercenti.
- Centro Studi e Ricerche sulla legalità e Criminalità - Temi (2007), *Contraffazione e criminalità informatica: i danni all'economia e alle imprese*, Rome: Confesercenti.
- Czabanski, J. (2008) *Estimates of Cost of Crime: History, Methodologies, and Implications*, Berlin: Springer.
- Dolan, P., Loomes, G., Peasgood, T., and Tsuchiya, A. (2005) "Estimating the Intangible Victim Costs of Violent Crime" *The British Journal of Criminology*, 45: 958-976.
- Dubourg, R., Hamed J., and Thorns J. (2005) *Estimates of the Economics and Social Costs of Crime in England and Wales: Costs of Crime Against*

- Individuals and Households*, 2003/04, Home Office Online Report 30/05.
- EMCDDA (2008), *Evoluzione del Fenomeno della Droga in Europa. Relazione Annuale 2008*, Lisbon: European Monitoring Centre for Drugs and Drug Addiction.
- French, M.T., Rachal, J.V., and Hubbard, R.L (1991) "Conceptual Framework for Estimating the Social Cost of Drug Abuse" *Journal of Health & Social Policy*, 2: 1-22.
- Gibbons, S. (2004) "The Costs of Urban Property Crime" *Economic Journal*, 114: 441-463.
- ISTAT (2004) "La Sicurezza dei Cittadini. 2002. Reati, Vittime, Percezione della Sicurezza e Sistemi di Protezione", Collana: Informazioni n.18, Roma: Istat.
- Laeven, L., and Valencia F. (2008) "Systemic Banking Crises: A New Database" International Monetary Fund, IMF Working Paper, n.224.
- Ludwig, J., and Cook, P.J. (2001) "The Benefits of Reducing Gun Violence: Evidence from Contingent-Valuation Survey Data" *The Journal of Risk and Uncertainty*, 22: 207-226.
- Marselli, R., Vannini, M. (2000) "Quanto incide la disoccupazione sui tassi di criminalità?" *Rivista di politica economica*, Ottobre 2000: 273-299.
- Mayhew, P. (2003) "Counting the Costs of Crime in Australia: Technical Report" Technical and Background Paper Series No. 4, Australian Institute of Criminology.
- Miller, T., Cohen M.A., and Wiersema B. (1996) *Victim Costs and Consequences: A New Look*, Washington: National Institute of Justice.
- Ministero dell'Interno (2007), *Rapporto sulla Criminalità in Italia. Analisi, Prevenzione, Contrasto*, Rome: Ministero dell'Interno.
- Ministero dell'Interno (2008), *Attività 2007 del Comitato di Solidarietà per le Vittime dei Reati di Tipo Mafioso. Relazione Annuale*, Rome: Ministero dell'Interno.
- Olavarria-Gamb, M. (2007) "The Economic Cost of Crime in Chile" *Global Crime*, 8: 287-310.
- Osservatorio Sicurezza Fisica - OSSIF (2006a), *Rapporto sui Furti ai Danni delle Dipendenze Bancarie nel 2006*, Rome: Associazione Bancaria Italiana.

- Osservatorio Sicurezza Fisica - OSSIF (2006b), *Rapporto sulle Spese del Settore Bancario per la Sicurezza Anticrimine nel 2006*, Rome: Associazione Bancaria Italiana.
- Osservatorio Sicurezza Fisica - OSSIF (2007), *Rapporto sulle Rapine ai Danni delle Dipendenze Bancarie*, Rome: Associazione Bancaria Italiana.
- Parsec Consortium (2005), *Prostituzione straniera e traffico di donne a scopo di sfruttamento sessuale. Analisi delle trasformazioni correnti nei principali gruppi nazionali coinvolti e nuove strategie di intervento di protezione sociale. Il caso dell'area metropolitana di Roma*, Rome: Sintesi del Rapporto Finale del Progetto per una Ricerca-azione.
- Rey, G.M. (1997) *Economic Analysis and Empirical Evidence of Illegal Activity in Italy*, Contributi Istat No.6/1997, Roma: Istat.
- Roper, T., Thompson, A. (2006) "Estimating the Costs of Crime in New Zealand in 2003/2004", Working Paper, New Zealand treasury.
- Weatherburn, D., and Indermaur, D. (2004) "Public Perceptions of Crime Trends in New South Wales and Western Australia" *Crime and Justice Bulletin*, 80: 1-8.
- Wickersham, G.W. (1931) *Report on the Cost of Crime*, Washington: Government Printing Office.

Table 1. Total costs of crime in different countries

Country	Year	Cost of crime as % of GDP	Source
US	1993	6.8%	Miller et al. (1996)
England and Wales	1999	6.5%	Brand and Price (2000)
US	1999	11.9%	Anderson (1999)
Australia	2002	4.2%	Mayhew (2003)
Chile	2002	2.1%	Olavarria-Gambi (2007)
England and Wales	2003	3.5%	Dubourg et al. (2005) [only for households and individuals]
New Zealand	2003	6.5%	Roper and Thompson (2006)

Table 2. Definitions of the analysed crime categories

Crime category	Definition
Art theft	theft of art object or artefact
Bag-snatching	Street robbery
Motor vehicle theft	Theft of motor vehicle
Personal theft	Theft without contact
Pick-pocketing	Stealing of money and valuables without noticing the theft at the time
Theft from a shop	Stealing from shop
Theft from vehicle	Theft of money and valuables from vehicle
Theft in dwelling	Theft of money and valuables from house
Vehicle theft	Theft of vehicle (car, bus, truck, etc.)
Bank robbery	Seizing property through violence or intimidation in bank
Other robberies	Seizing property through violence or intimidation in shop, house or street
Counterfeiting	Illegal imitation of a artefact and product
Drug dealing	Offence of possession, production and trade of drugs
Fraud	Intentional deception made for personal gain or to damage another individual
Money counterfeiting	Illegal imitation of money
Prostitution	Incitement, aiding and exploitation of prostitution
Mafia related homicide	Intentional homicide by organized crime
No mafia related homicide	Other intentional homicide

Source: Police Data, 2006

Table 3. Recorded offences and incidents, by crime type (Ministero dell'Interno, 2007)

Crime category	Recorded Offences (000s)	%	Number of incidents (000s)	%
Art theft	1.2	0.1%	N/A	N/A
Bag-snatching	21.5	1.2%	57.1	0.4%
Motor vehicle theft	95.3	5.4%	174.0	1.2%
Personal theft	606.5	34.6%	2,341.6	16.1%
Pick-pocketing	156.1	8.9%	374.4	2.6%
Theft from a shop	100.9	5.8%	N/A	N/A
Theft from vehicle	227.6	13.0%	1,012.7	6.9%
Theft in dwelling	141.2	8.1%	507.8	3.5%
Vehicle theft	184.4	10.5%	328.7	2.3%
Bank robbery	3.2	0.2%	3.2	0.0%
Other robberies	47.5	2.7%	111.4	0.8%
Counterfeiting	2.0	0.1%	500.0	3.4%
Drug dealing	32.0	1.8%	6,600.0	45.4%
Fraud	106.9	6.1%	2,500.0	17.2%
Money counterfeiting	23.9	1.4%	N/A	N/A
Prostitution	1.3	0.1%	7.5	0.1%
Mafia related omicide	0.1	0.0%	0.1	0.0%
No mafia related omicide	0.7	0.0%	0.7	0.0%
Total	1,751.6	100%	14,568.4	100%

Table 4. Average and total cost estimates, by crime type

Crime category	Total cost (€ million)	%	Cost per incident (€)	Costs in anticipation (€ million)	%	Costs as a consequence (€ million)	%	Costs in response (€ million)	%
Art theft	25.1	0.1%	N/A	0.0	0.0%	6.0	0.0%	19.1	0.2%
Bag-snatching	32.9	0.1%	577.0	0.0	0.0%	17.3	0.1%	15.7	0.2%
Motor vehicle theft	441.3	1.1%	2,536.5	63.3	1.3%	302.7	1.3%	75.3	0.7%
Personal theft	851.2	2.2%	363.5	0.0	0.0%	637.1	2.7%	214.0	2.1%
Pick-pocketing	124.1	0.3%	331.5	0.0	0.0%	58.4	0.3%	65.7	0.6%
Theft from a shop	3,024.4	7.9%	N/A	718.0	15.0%	2,212.0	9.5%	94.4	0.9%
Theft from vehicle	927.9	2.4%	916.3	631.8	13.2%	252.5	1.1%	43.7	0.4%
Theft in dwelling	4,089.0	10.7%	8,052.6	2,651.8	55.3%	1,102.6	4.8%	334.6	3.2%
Vehicle theft	2,225.3	5.8%	6,769.7	84.9	1.8%	1,930.7	8.3%	209.8	2.0%
Bank robbery	1,053.0	2.7%	324,809.1	648.8	13.5%	65.1	0.3%	339.0	3.3%
Other robberies	4,270.9	11.1%	38,330.0	0.0	0.0%	177.2	0.8%	4,093.7	39.6%
Counterfeiting	7,083.8	18.5%	14,167.6	0.0	0.0%	7,000.0	30.2%	83.8	0.8%
Drug dealing	7,858.4	20.5%	1,189.2	0.0	0.0%	5,075.0	21.9%	2,783.4	26.9%
Fraud	3,675.9	9.6%	1,470.4	0.0	0.0%	3,000.0	12.9%	675.9	6.5%
Money counterfeiting	141.7	0.4%	N/A	0.0	0.0%	6.7	0.0%	135.1	1.3%
Prostitution	366.2	1.0%	48,820.3	0.0	0.0%	165.0	0.7%	201.2	1.9%
Mafia related omicide	360.4	0.9%	3,306,236.3	0.0	0.0%	167.5	0.7%	192.9	1.9%
No mafia related omicide	1,776.6	4.6%	2,679,690.9	0.0	0.0%	1,018.8	4.4%	757.9	7.3%
Total	38,322.3	100%	2,630.5	4,798.7	100%	23,188.5	100%	10,335.1	100%

Ultimi Contributi di Ricerca CRENoS

I Paper sono disponibili in: <http://www.crenos.it>

- 10/12 *Fabrizio Adriani, Luca G. Deidda*, “Competition and the signaling role of prices”
- 10/11 *Adriana Di Liberto* “High skills, high growth: is tourism an exception?”
- 10/10 *Vittorio Pelligra, Andrea Isoni, Roberta Fadda, Iosetto Doneddu*, “Social Preferences and Perceived Intentions. An experiment with Normally Developing and Autistic Spectrum Disorders Subjects”
- 10/09 *Luigi Guiso, Luigi Pistaferri, Fabiano Schivardi*, “Credit within the firm”
- 10/08 *Luca Deidda, Bassam Fattoub*, “Relationship Finance, Market Finance and Endogenous Business Cycles”
- 10/07 *Alba Campus, Mariano Porcu*, “Reconsidering the well-being: the Happy Planet Index and the issue of missing data”
- 10/06 *Valentina Carta, Mariano Porcu*, “Measures of wealth and well-being. A comparison between GDP and ISEW”
- 10/05 *David Forrest, Miguel Jara, Dimitri Paolini, Juan de Dios Tena*, “Institutional Complexity and Managerial Efficiency: A Theoretical Model and an Empirical Application”
- 10/04 *Manuela Deidda*, “Financial Development and Selection into Entrepreneurship: Evidence from Italy and US”
- 10/03 *Giorgia Casalone, Daniela Sonedda*, “Evaluating the Distributional Effects of the Italian Fiscal Policies using Quantile Regressions”
- 10/02 *Claudio Detotto, Edoardo Otranto*, “A Time Varying Parameter Approach to Analyze the Macroeconomic Consequences of Crime”
- 10/01 *Manuela Deidda*, “Precautionary saving, financial risk and portfolio choice”
- 09/18 *Manuela Deidda*, “Precautionary savings under liquidity constraints: evidence from Italy”
- 09/17 *Edoardo Otranto*, “Improving the Forecasting of Dynamic Conditional Correlation: a Volatility Dependent Approach”
- 09/16 *Emanuela Marrocu, Raffaele Paci, Marco Pontis*, “Intangible capital and firms productivity”
- 09/15 *Helena Marques, Gabriel Pino, Juan de Dios Tena*, “Regional inflation dynamics using space-time models”
- 09/14 *Jaime Alvarez, David Forrest, Ismael Sanz, Juan de Dios Tena*, “Impact of Importing Foreign Talent on Performance Levels of Local Co-Workers”
- 09/13 *Fabio Cerina, Francesco Mureddu*, “Is Agglomeration really good for Growth? Global Efficiency and Interregional Equity”
- 09/12 *Federico Crudu*, “GMM, Generalized Empirical Likelihood, and Time Series”
- 09/11 *Francesca Mameli, Gerardo Marletto*, “Can national survey data be used to select a core set of indicators for monitoring the sustainability of urban mobility policies?”
- 09/10 *Emanuela Marrocu, Raffaele Paci*, “They arrive with new information. Tourism flows and production efficiency in the European regions”
- 09/09 *Oliviero A. Carboni*, “An Empirical investigation of the Determinants of R&D Cooperation”

Finito di stampare nel mese di Agosto 2010
Presso **studiografico&stampadigitale Copy Right**
Via Torre Tonda 8 – Tel. 079.200395 – Fax 079.4360444
07100 Sassari

www.crenos.it

