

CONTROLLING  
CRIME  
in  
New Zealand

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*and*  
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## EXECUTIVE SUMMARY

Crime has increased significantly in New Zealand over the past 20 years. New Zealand now has one of the highest burglary rates in the developed world, higher than the United States, Great Britain or Australia.

Many influential criminologists attribute increases in crime to poverty, unemployment, genetic defects, psychological problems and dysfunctional families. Recent criminological theories acknowledge that criminals have some control over their behaviour, but these theories persist in the search for biological, psychological, and sociological factors that make certain children destined to become criminals.

Economists believe that most people act rationally most of the time. Most people respond to expected costs and benefits. Criminals are no exception, though they may value some costs and benefits differently from non-criminals. Crime can be explained using a 'supply and demand' framework similar to that used for other goods and services. Criminals 'supply' crimes and other citizens 'demand' protection from crime. The amount and type of crime occurring in a given place depends on the 'price' of the crime. The 'price' is determined by the expected benefits to the criminal (both monetary and non-monetary) and the expected costs of being caught, convicted and punished.

By insisting that criminals choose to commit offences, the economic theory of crime recognises the moral status of criminals and thus accords them scope to become rehabilitated into society with dignity. The economic model of crime implies that people will be deterred from committing crimes if the expected costs exceed the expected benefits. The expected cost (or penalty) inflicted by the legal system is determined by the probability of conviction multiplied by the punishment once convicted. Other factors that influence expected costs include social attitudes to crime, personal values and the alternative legitimate work opportunities available to a potential criminal.

Criminals tend to be less risk-averse than non-criminals. Increasing the probability of capture and conviction is likely to yield a greater reduction in crime than a proportionate increase in the size of penalties. Certainty of punishment is crucial to effective deterrence.

Crime in New Zealand has increased because the probability of receiving substantial punishment has decreased. Crime will be reduced if the probability of capture and conviction is increased along with the size of penalties.

Psychological problems, a poor education, and a bad upbringing are associated with criminality because possession of these traits makes it difficult for a person to obtain legitimate employment. A person who cannot obtain a legitimate job that is more attractive than a life of crime may well choose the latter. Furthermore, some people, particularly juveniles, whose time is not occupied in employment, will use their leisure hours seeking thrills through criminal behaviour.

There is no fixed size criminal class. Rather, people engage in and desist from criminal activities depending upon their opportunities in the legitimate labour force.

Government policies that exacerbate unemployment (such as minimum wage laws) and deny basic education to many (through tolerance of inferior government schools) may contribute to high crime rates.

Welfare programmes that do not require labour market participation by able-bodied people may contribute to crime by providing a base income to unemployed individuals. Some of these people supplement their welfare earnings through property theft.

The need to support expensive illegal drug habits may also contribute to high property crime rates. Drug addicts may benefit more from theft and burglary than non-addicts because addicts have a greater desire for immediate cash to support their habit.

The economic model of crime implies that fines should be used whenever possible and that incarceration should be a punishment of last resort. Modern methods of electronic surveillance make it possible to punish criminals using 'house arrest'. Offenders under house arrest wear a bracelet or other device that emits a radio signal. The signal is monitored by a central computer that tracks the offender's movements at all times. Offenders are only allowed to be at home or at their place of employment. They continue to work, and they pay for the cost of being supervised. Private firms can be used to monitor the electronic surveillance equipment. Violations of the terms of house arrest would be reported to the authorities by the private firm.

House arrest avoids many of the problems associated with incarceration, including the fact that prison is an excellent school for training criminals. When people are in prison, they are losing time that could be spent gaining work experience. Economic studies have shown that work experience is crucial to increasing labour market earnings. Criminals under house arrest need not lose work experience, as they can continue to work while being supervised.

The use of a limited number of private prisons is currently being considered in New Zealand. More prisons should be privatised and run under competitive tender.

Private firms should be allowed to employ inmates inside prisons, as is done in the United States. Prisoners could assemble furniture, handle airline and hotel reservations, and perform other tasks suited to a prison situation. Firms could bid for the right to employ prison labour and would be expected to pay the market wage for labour of the quality, and with the characteristics, found in prison. A portion of each prisoner's wage would be kept to pay the cost of room and board in the prison. Upon release from prison, many former inmates in the United States have found permanent employment with the firms for which they worked while incarcerated.

New Zealand's Bill of Rights Act 1990 appears to have made the capture and conviction of criminals more difficult than it was previously. A study should be undertaken to determine how the Act could be amended in order to restore reasonable police powers to question suspects and to gather evidence of criminal activities.

The Children, Young Persons and Their Families Act 1989 has made it more difficult for police to catch juvenile offenders and for the courts to punish them. The Family Group Conference system of dealing with young offenders appears to be very expensive, and it has not reduced juvenile crime.

An external and independent evaluation of juvenile justice in New Zealand should be undertaken. Emphasis should be placed on the costs of the current system, as well as its benefits. Amendments to the Children, Young Persons and Their Families Act should be considered in order to increase the probability of significant punishment for juvenile offenders. If the expected penalty for crime is high, young people will be deterred just as older people are.

The police should only pursue criminal investigations that require their special training. Many traffic offences could be handled by private firms that monitor automatic devices such as speed cameras and red light cameras. Furthermore, police should concentrate more of their efforts on solving property crimes and less on intervening in domestic disputes.

# CHAPTER ONE

## CRIME IN NEW ZEALAND

### Introduction

Law enforcement is one of the areas of life in which there is general agreement that the government plays a crucial role. Without government enforcement of property rights and personal liberties, a market economy cannot thrive. Our need for common protection from outside forces, and from each other, is one reason our ancestors accepted limits on their freedoms, and the need to conform to rules of society. As Aristotle wrote over 2000 years ago in *Politics*:

When several villages are united in a single complete community, large enough to be nearly or quite self-sufficing, the state comes into existence, originating in the bare needs of life, and continuing in existence for the sake of a good life. . . . Hence it is evident that the state is a creation of nature, and that man is by nature a political animal. And he who by nature and not by mere accident is without a state, is either a bad man or above humanity. . . . A social instinct is implanted in all men by nature, and yet he who first founded the state was the greatest of benefactors. For man when perfected is the best of animals, but, when separated from law and justice, he is the worst of all; since armed injustice is the more dangerous, and he is equipped at birth with arms, meant to be used by intelligence and virtue, which he may use for the worst ends. Wherefore, if he have not virtue, he is the most unholy and the most savage of animals, and the most full of lust and gluttony. But justice is the bond of men in states, for the administration of justice, which is the determination of what is just, is the principle of order in political society (Aristotle, 1941:1129–30).

One of the main functions of government, as Aristotle notes, is to enforce laws and standards of justice. Yet the performance of government in this area depends crucially on the assumptions on which it bases its crime control policies. If these assumptions are unsound, its performance is likely to be impaired, giving rise to unsatisfied popular demands for more effective crime control.

Equally, even if the overall surveillance of institutions of justice is best handled by the government, individual components of the justice system may best be contracted out to private firms. For example, private security forces, private gaols and even private mediation services may handle the administration of some judicial functions better than equivalent services provided by government employees. The more economical a government can be with the resources it allocates to crime control, the better able it will be to carry out those tasks that it cannot delegate to the private sector.

In this study we argue that the assumptions on which crime control policies are based are best informed by the 'economic theory of crime', which claims that most people who engage in criminal activity choose to do so, and can be deterred from criminal activity if the likelihood of punishment is sufficiently great. We go on to argue that a programme of reform of the criminal justice system would enhance the effectiveness of punishment and make available more resources for the essential task of raising the likelihood that criminals will be punished, especially by increasing the rate of apprehension of criminals.



## Growth in crime relative to the population in New Zealand

New Zealand has experienced a significant increase in crime over the past 20 years. Burglary rates are among the highest in the developed world and violent crimes, except for murder, have increased dramatically.

Police statistics on the number of crimes reported can be used to illustrate how crime has grown in New Zealand in recent years. However, these statistics are by no means perfect for this purpose. For example, many criminal acts can result in more than one crime being reported. An armed robbery might result in crimes of violence or offences against the administration of justice (such as for illegal possession of weapons) being recorded in addition to the crime of robbery itself. The number of 'multiple' offences may increase over time as a result of changes in technology (for example, changes in surveillance techniques at banks). They might also be the consequence of tactics used by the police to extract information from victims through plea bargaining. In addition, the categories used by the police to record crimes can also change over time. For example, crimes that were previously recorded in New Zealand as 'domestic incidents' are now often recorded as 'assault by male on female'.

Crimes might not always be recorded consistently across different police jurisdictions. Perhaps most important, not all crimes are reported to the police. In particular, as the crime rate and the work load on the police force increase, victims doubt the ability of the police to resolve their complaints. An increased under-reporting of crimes leads to a downward bias in the recorded rate of increase in criminal activity.

But although the statistics presented here are not perfect, they are the best indicators we have of the overall level of crime in New Zealand. If we ignore official statistics, due to their imperfections, we are left with nothing but anecdote and speculation. The latter are inferior to the former when we are trying to gauge changes in the amount of crime.

It is customary to report crimes as a rate per head of population. There are several arguments for this practice. Other things being equal, any increase in population will raise the amount of criminal activity, along with other activities in which people engage. It is not obvious, however, that the number of criminal acts ought to be proportional to the population, as is implicitly assumed when we deflate by the total population. For example, criminal activity might increase more than proportionately with the population if the population increase consists mainly of male youths, or is concentrated in large urban centres.

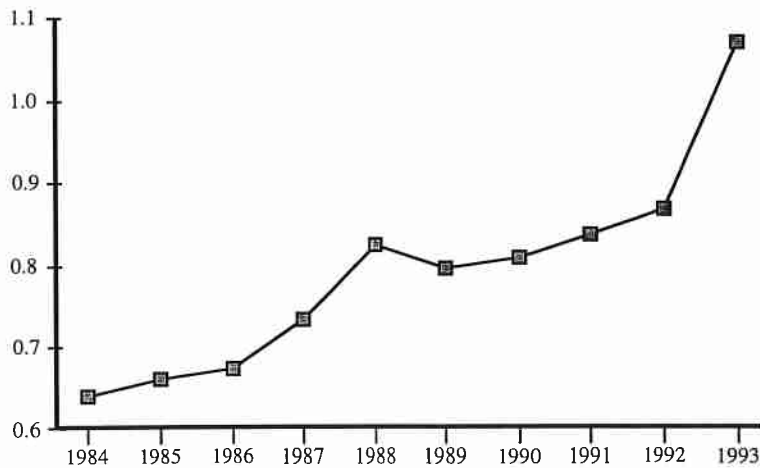
Another argument for reporting crimes per head of population is that, when victims are chosen randomly, the crime rate per head of population indicates the probability that any one individual is likely to experience the given crime in any one year. This is also a dubious argument, however, since victims almost certainly are not chosen randomly. People are at different degrees of risk of being a victim of a crime and can take actions to reduce the chances of becoming a victim. Even though the precise justification for reporting crimes as rates per head of population is not clear, we shall persist with the practice throughout this report.

Figure 1.1 shows the change in 'crimes of violence' per 100 people in New Zealand over the period 1984–1993.<sup>1</sup> The category 'crimes of violence' in the police statistics includes

<sup>1</sup> We thank the New Zealand Police for providing us with 'comparable' statistics over the whole period.

homicide, kidnapping and abduction, robbery, grievous assault, aggravated assault and other serious and minor assaults, intimidation and threats, and riots and other unlawful group assemblies. Since it is possible that changes in the recording of 'family violence' incidents have distorted the statistics, it is important to note that 'sexual assaults' and 'serious assault by a male on a female' are not included in the numbers graphed in Figure 1.1.

Figure 1.1: Crimes of violence per 100 people in New Zealand



The crime rate in the category of 'crimes of violence' has increased every year for the last ten years, except from 1988 to 1989. The increase was particularly dramatic from 1992 to 1993. The number of violent crimes in 1993 was equal to about 1 percent of the New Zealand population.

Some of the crimes included in the 'crimes of violence' category are less serious than are others. Law-abiding citizens are also particularly concerned about personal attacks that are grouped under the category 'sexual crimes'. It is useful to examine the change over time in those categories of what may be called crimes of 'serious violence'.

Figure 1.2: Serious crimes of violence per 100 people in New Zealand

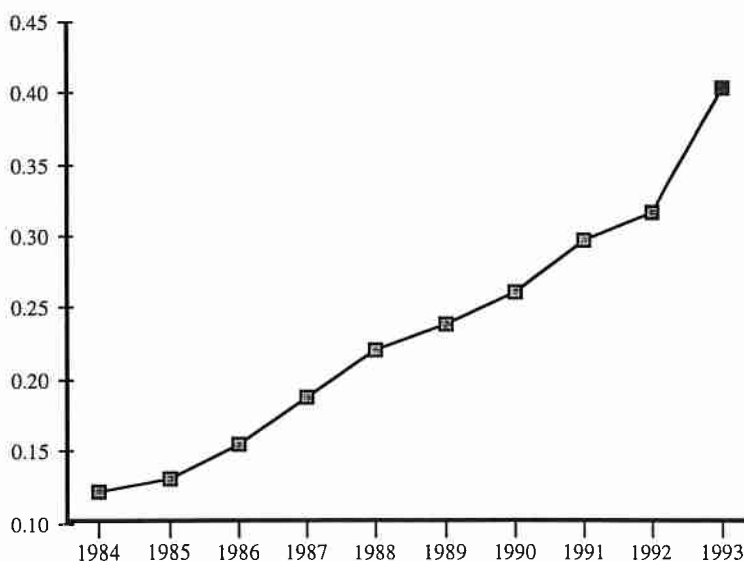


Figure 1.2 shows the annual number of reported incidents, per 100 people, of homicide, kidnapping and abduction, robbery, grievous assault, serious assault by a male on a female, sexual violation and other sexual attacks. This rate increased every year from 1984 to 1993, although there was a decline in the rate of growth from 1988 to 1990. Unfortunately, the increase in 1993 over 1992 was particularly large. As noted above, however, some of this increase might be the result of changes in police recording practices. Nevertheless, by 1993, the annual number of serious crimes of violence was almost 0.45 percent of the New Zealand population.

Figure 1.3 shows the annual number of reported incidents, per 100 people, of crimes categorised as 'dishonesty'. Crimes in this category include burglary, motor vehicle theft, shoplifting, theft from cars, theft from employers, receipt of stolen property, forgery, counterfeiting and related offences. While these crimes have also generally tended to increase over the period 1984–93, there were also years in which the crime rate in these categories fell quite substantially. In particular, the rate fell by about 4 percent from 1986 to 1987 and by over 7 percent from 1992 to 1993.

On the other hand, the general level of crimes of dishonesty is much higher than the incidence of crimes of violence. In the early 1990s, the annual number of crimes of dishonesty approximated 10 percent of the New Zealand population. It is perhaps not surprising, therefore, that one meets many New Zealanders who have been robbed or burgled within the past five years.

Figure 1.3: Crimes of dishonesty per 100 people in New Zealand

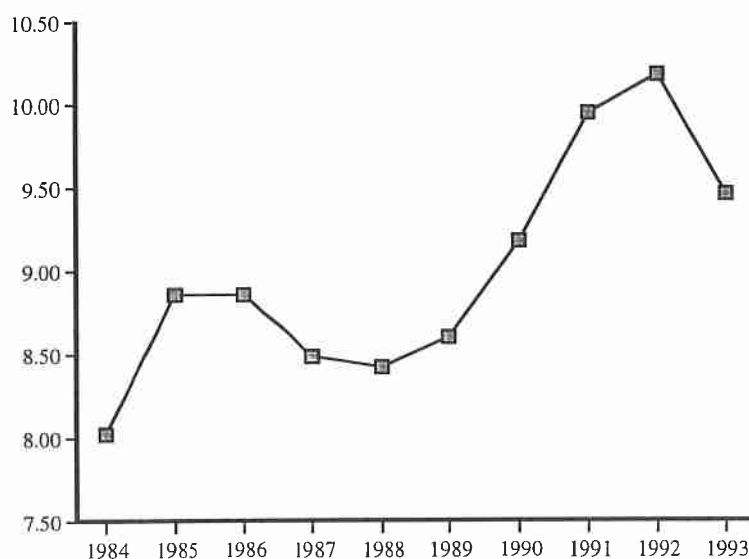
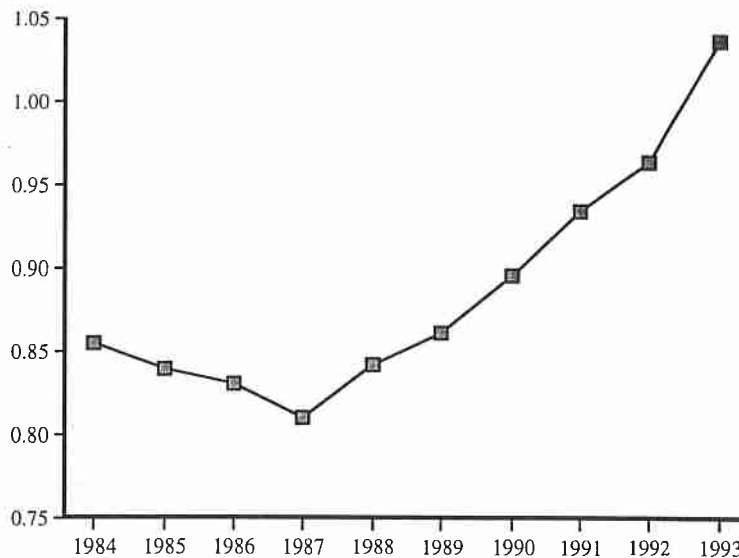


Figure 1.4 shows that the annual number of property damage crimes per 100 people in New Zealand also declined from 1986 to 1987. There were also, however, small declines from 1984 to 1985 and again from 1985 to 1986 in this category. In contrast with the crimes of dishonesty, there was not a decline in the crime rate in this category from 1992 to 1993. The classification 'property damage' includes arson and other wilful damage to property. The annual number of recorded instances of property damage in New Zealand in the early 1990s amounted to about 1 percent of the New Zealand population.

Figure 1.4: Property damage crimes per 100 people in New Zealand



### Calculating the costs of crime

The costs of crime are likely to be greater than they seem. Consider, for example, the crime of theft. It might be thought that the costs of theft can be measured as the value of the property stolen. But potential victims will take measures to protect themselves from theft. Rational individuals would take protective action to the point at which the marginal cost of additional protection equals the expected value of the marginal crimes they thereby avoid. (The 'expected value' here is the probability of being a crime victim times the private cost of protection.) From an efficiency viewpoint, the resource costs of protective measures are a net cost to society. The same resources could be used to provide a net increase in welfare instead of merely avoiding a transfer of existing resources from the victims to the perpetrators of crime. There is no necessary relationship, however, between the total expenditure on actions aimed at avoiding theft and the total amount of resources actually transferred in the thefts recorded by the police or insurance companies.

We might attempt to measure private expenditures on avoiding crime by totalling the amount spent on the police, the criminal justice system, locks, alarms, guards, armoured vehicles and so on. However, there are also many hidden costs of crime, including the psychic costs incurred by victims and the fear created in potential victims. When an elderly woman is raped, for example, this not only results in great trauma for her, it also increases the anxiety of many other older women and their families. These reductions in utility also represent an efficiency cost of crime. An increase in crime also has made many parents reluctant to allow their children to walk to or ride bikes to school. Parents must now spend more time driving their children to school and to other activities. Extra parental supervision of children is another significant cost of increased crime in New Zealand.

The decreases in utility and increases in expenditures incurred by potential victims are not the only 'economic' costs of crime. In the case of theft, for example, the resources criminals are willing to devote to transferring material resources from others to

themselves are also wasted. These resources could be used to produce a net increase in community welfare rather than merely transferring resources from one individual to another. Rational criminals would also expend resources up to the point at which the expected marginal cost to themselves of additional criminal activity equals the expected marginal benefit (again ignoring the effects on others). This need not imply, however, that there is a close or systematic relationship between the total value of resources allocated to criminal activity and the amount transferred in recorded crimes.

## Explaining crime

It seems to be well established, then, that the incidence of crime in New Zealand has risen over the last dozen years, especially for crimes of violence and crimes involving property damage. It follows that the direct and indirect costs of crimes are rising as well. But before we can evaluate and improve policies for controlling crime, we need to gain some understanding of the causes of crime. Here there is far less agreement.

The problem that immediately presents itself is the gulf, apparent not only in New Zealand but also in many Western countries, between the approach to crime prevention adopted by the authorities and that adopted by the general public. The former, including criminologists and social workers, tend to assume that criminals are driven by forces beyond their control. From this standpoint, criminal behaviour appears as a group phenomenon and criminals as victims of society. Criminal behaviour is treated as a pathology, suggesting that criminals are not fully rational and do not freely choose to commit crimes. This approach stresses factors like family breakdown, poor education, poverty and unemployment. Crime control is viewed essentially as a matter of devoting resources towards mitigating these forces rather than to punishing criminals.

The general public, in contrast, is more likely to attribute rising crime levels to insufficient levels of apprehension and punishment. Individuals are held responsible for their own actions and, whatever the mitigating factors that should be taken into account, must expect to be punished if they are found guilty, and punished sufficiently harshly to satisfy the demand for retribution and to deter the incidence of crime. Whereas the authorities tend to view crime as a social problem, the general public sees it primarily as a moral and security problem.

This study argues that the incidence of crime can best be explained by the 'economic theory of crime', and that crime can best be controlled by the policies suggested by that theory. The economic theory of crime is closer to the popular view of crime and punishment than to the establishment view: it assumes that people who engage in criminal activity choose to do so and, insofar as they can choose otherwise, are deterred by the threat of apprehension and punishment, including social sanctions such as ostracism and disapproval. Crime-control policies should, therefore, focus on providing an adequate level of apprehension and deterrence; indirectly, public policy may enhance incentives to engage in legitimate activities and promote a moral atmosphere in which potential criminals are subject to stronger social pressures and sanctions.

The economic theory of crime can be contrasted with sociological, psychological and biological theories that generally maintain that criminals are not rational and free agents. Some of these theories are discussed in some detail in Chapter 4. But it is very important to understand that the economic approach to understanding criminal behaviour is largely

compatible with these other theories. The major difference between the economic approach and alternative sociological or psychological approaches, however, is that the economic approach places the individual at centre stage. In assuming that crime can be deterred if the marginal costs of committing a crime exceed the marginal benefits, it recognises the moral autonomy of the potential criminal without denying the influence of external forces on him.<sup>2</sup>

Thus, social factors like family breakdown may well be important in explaining the growth of crime. Yet there has also been a decline in the probability of being caught and punished for committing acts of serious violence or burglary, and for some other major crimes. These declines in the probability of receiving substantial punishment have more than offset any recent increases in the severity of punishment, so that the expected penalty (the probability of punishment multiplied by the severity of punishment) has declined for many crimes.

The issues raised here touch on fundamental assumptions about the nature and workings of human society. We live in a time when a civilised sensitivity to external factors has largely eclipsed the purely punitive response to crime. But this welcome change in attitudes to crime is in danger of degenerating into a sentimentalism that, by relieving individuals of responsibility for their own actions, diminishes their moral stature and makes them fit only to be the objects of social or psychological engineering. In fact, only if we insist that individuals accept responsibility for their own actions can we hold out the hope that punishment may rehabilitate the criminal and restore his dignity and social respectability.

This unresolved tension between our knowledge of the social and psychological influences on crime and the need to treat people as morally autonomous beings reveals itself in a range of largely unnoticed contradictions. For example, many criminologists who argue that gaol terms do not deter thieves or burglars nevertheless argue for gun control laws, presumably in the belief that the possibility of incurring penalties will deter the use of firearms. Many criminologists also argue that penalties for tax evasion or other white collar crimes should be increased as a deterrence measure. Finally, it has recently become more acceptable in many Western societies to argue for increased penalties in cases of family violence, sexual harassment and rape, although many of the advocates of such harsher penalties still claim that increased penalties or probabilities of detection and conviction will not deter other types of violence, murder or property crimes.

We shall argue that the economic theory of crime is able to explain the recent increases in crime in New Zealand better than competing theories in sociology and psychology, but without denying the insights that these other theories offer. Thus, the influence on the crime rate of social factors can be viewed as additional elements affecting the costs and benefits (both monetary and non-monetary) of engaging in criminal activity. Some of these factors contributed to the gradual decline in the penalties that perpetrators expect to receive for engaging in criminal behaviour. Other factors increase the costs of following legitimate pursuits, decrease their benefits, or decrease the probability of being able to reap satisfactory rewards from them.

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<sup>2</sup> References to males may be taken to apply equally to females, unless otherwise stated.

## A summary of the economic model of criminal behaviour

### *Crime is chosen by participants*

The economic approach views most human behaviour as rational attempts to further whatever goals the individual has, within a range of choices constrained by the natural environment and by the rules of interaction in society. The most important determinants of variations in observed behaviour, according to the economic approach, are differences in the expected costs or benefits of alternative actions among which different individuals choose, or changes in those expected costs and benefits over time for any individual.

In particular, according to the economic model of crime, most criminals are rational people who choose to commit crimes. Criminals weigh the expected costs (including social costs, such as ostracism) and benefits (including psychic benefits, such as thrills) of crime before engaging in it. When the expected benefits outweigh the expected costs, the criminal will act.

A criminal acts rationally in the sense that he responds to incentives and disincentives. He need not be able to *articulate* all the calculations and trade-offs that he makes before he commits a crime. When we say that he is behaving rationally, we mean that his behaviour is consistent with the behaviour of a person who is maximising his own satisfactions, not that he himself will be able to tell us about the thought processes he used in deciding whether or not to commit a crime.

Economists explain other types of choice in a way that is similar to the way they look at criminal behaviour. When consumers respond to changes in relative prices by reducing expenditure on more expensive items, they need not be consciously aware that they are maximising utility. The idea behind 'economising' behaviour is that human beings, like other animals, can adjust their behaviour in response to feedback from their environment. Adjustments in behaviour that prove more effective at attaining desired results are retained, while adjustments in behaviour that prove inimical to achieving the desired goals are abandoned. Individuals do not need to be able to articulate what they are doing, or even be consciously aware they are 'maximising', any more than a snooker player has to know the laws of physics in order to hit a ball into a pocket.

The economic approach is an attempt to explain choices as rational responses to changes in opportunities. Economists usually assume tastes or goals are relatively stable when compared with opportunities. An economic theory of choice that allows arbitrary changes in tastes is untestable. By contrast, biological or psychological theories might be based on testable theories of the determinants of tastes or goals. Biological theories are unlikely, however, to be useful for explaining changes in the criminal behaviour of a fixed group of individuals over time, since most biological factors (such as inherited traits) remain fairly constant throughout a person's life.

As with many other aspects of choice behaviour, the choices of criminals can involve different time horizons. The criminal can rationally choose to invest in a 'career' of criminal activity rather than an alternative 'legitimate' career. Some criminals may also choose to participate part time in criminal activity and part time in other activities.

Some commentators suggest that 'crimes of passion' cannot involve rational behaviour. Consider the following example, however. Suppose a man is furious because he received some terrible news (perhaps contained in a letter from the tax department). He starts to grab items off the coffee table in the living room and smash them against the wall.

He grabs more items and throws them against the wall. He moves over to the mantle-piece and starts to grab his prized and extremely valuable Ming vases off the shelf. Does he have second thoughts about smashing those against the wall too? He is likely to think twice about it. Thinking twice in this situation is rational. Of course, if he decides that the psychological or other benefits of smashing the vases are worth the cost, he is not necessarily acting irrationally. But the point of this imaginary example is that even a person in a state of intense passion can control his behaviour to some extent. If the costs of crime are high, passionate and impulsive people will think twice before they act.

### *Expected penalties deter*

Economists believe that most criminals and potential criminals respond to incentives and disincentives. No more than a small minority of criminals are completely unresponsive to possible punishment. Economists point to numerous statistical studies, undertaken in a range of countries and over a number of different time periods, showing that changes in expected penalties (resulting from a change in either the actual severity of penalties or the probability of receiving them) have a significant effect on the total number of crimes committed. Yet these statistical studies are not the only, or necessarily the most convincing, evidence they cite in support of their approach. Crime statistics are notoriously unreliable, and there are many difficult statistical issues that need to be addressed when testing for the causes of changes in crime rates. The statistical evidence can almost always be challenged on the grounds that various assumptions made by the investigator are invalid.

Economists' belief in the validity of the economic theory of crime is greatly strengthened by other evidence. In particular, economists have accumulated extensive evidence that individuals behave rationally in an extraordinarily wide range of situations in which they are given the opportunity to make choices. This includes the wide range of 'market behaviour' conventionally examined by economists. It also includes many other forms of 'non-market behaviour' such as choice of spouse, choice of the number of children one has and how much to invest in each of them, and the allocation of time and energy to work around the home, leisure activities, charitable activities and tertiary education. As well, while children are often regarded as less rational than adults, parents routinely rely on rewards and threats of punishment to encourage acceptable behaviour from their children. In fact, most parents discover that children are rational enough to learn when threats are idle. Punishment has to be meted out on occasion or else the threat will lose its potency. Even mental hospitals regulate the behaviour of their patients with rewards and punishments. We can also appeal to introspection and experience to argue that the threat of minor penalties such as library fines, parking tickets or the disapproval of others for littering can be sufficient to deter minor crimes.

When economists refer to the 'expected penalty' for a crime, they are using these words in a technical way. The expected penalty ( $P \times S$ ) is a function of both the probability of being caught, convicted and punished for a crime ( $P$ ) and the size of the penalty ( $S$ ). For example, suppose that there is a \$100 fine for speeding and that you consider the other costs of being stopped (the cost of the extra time lost, the psychological cost, the cost of the infringement on your record and so on) to be worth about \$200. You take a particular route to work every day and you notice that police are sometimes present along this route to book speeding motorists. You estimate that if you travel 15 kph



above the speed limit every morning you are likely to be caught only one morning in every 100. If you are not risk averse, it would be rational for you to speed by 15 kph whenever the benefit to you of the extra time you save is more than \$3 ( $P \times S$ ). If you did this on 100 occasions, you would expect to pay \$100 in fines and \$200 in non-monetary costs but you would expect to save travel time worth more than the \$300 you expect to 'spend' on speeding. We see many such 'rational' motorists on the roads everyday. Most readers of this report probably drive above the speed limit some of the time because (consciously or unconsciously) we all estimate the chance of being caught to be rather low and the benefit of getting to our destination earlier to be rather high.

The term 'expected penalty' as used here can be somewhat misleading. In particular, the 'expected penalty' for a given crime is not the severity of penalty a given criminal expects to get. It is not a subjective, psychological assessment by individual criminals about the range of possible penalties. In our example, it is not that the motorist is unsure of the exact value of the fine or other costs of being caught for speeding, although this might be true. Rather, the idea is that penalties are only incurred with a probability much less than 1. For most crimes, the probability of capture and conviction are each considerably less than 1 so the probability of suffering a penalty (the product of these) can be very small. In addition, the probability of serving sentences as imposed is also less than 1. As a result, the expected penalty for most crimes (the probability of a penalty of a given severity times that severity and added up across the range of possible penalties) is actually quite small.

According to Rubenstein (1995:3):

'Expected punishment' is not the same as the length of time a convicted criminal actually spends in prison. Most crime never results in an arrest. Many of those arrested aren't prosecuted. Many convicts are paroled. Expected punishment, from a criminal's viewpoint, is a probability, not a certainty.

Take burglary. Only 7 percent of United States burglaries result in an arrest according to the National Center for Policy Analysis (NCPA). Of those arrested, 87 percent are prosecuted. Of those prosecuted, 79 percent are convicted. Of those convicted, a mere 25 percent are sent to prison. (Most are paroled.) After multiplying these probabilities, we see that a potential burglar faces only a 1.2 percent chance of going to prison for each act of burglary committed. Once in prison, he will stay there for about 13 months. But since he will escape imprisonment more than 98 percent of the time, the expected 'cost' of each burglary is only 4.8 days in prison.

The rational criminal will ask himself whether an act of burglary is likely to net him goods worth more than 4.8 days behind bars. If the answer is yes, then his crime pays. . . . Unfortunately, the expected prices of criminal activity are shockingly low. In 1990 a murderer could expect to spend only 1.8 years of his life in prison for his crime. A rapist could expect just 60 days. A car thief, 1.5 days. Those crimes with the longest expected prison terms (murder, rape, robbery and assault) are the least frequently committed, comprising about 12 percent of all serious crime. The remaining 88 percent carry an expected prison term of only a few days.

Economists do recognise that subjective elements can be important. Some individuals might commit a crime because they believe that their chances of getting caught and convicted are less than average. Perhaps they are right if they are particularly good at committing crimes without leaving any evidence, or if they are better than average at keeping cool while being questioned by the police or in court. Other individuals might

underestimate the severity of penalties. In particular, there might well be a lag before increases in conviction probabilities or the severity of sentences influence behaviour. Over time, however, people will come to know how likely they are to get punished and the degree of punishment they are likely to receive for a given crime. Their subjective estimates of the 'expected penalty' will get closer and closer to the actual 'expected penalty'.

From the perspective of developing a scientific theory of crime, the role of perceptions of probabilities and penalties creates difficulties. We generally do not have data on individual perceptions of these probabilities and penalties. As in other areas of economics in which perceptions appear to be important determinants of behaviour, we assume that individuals are, on average, not systematically biased in their perceptions. The objectively measured statistical expected penalties should then approximate the unmeasured subjective expected penalties that influence behaviour.

The key policy implication of the idea that expected penalties deter is that, in order to reduce crime, one must either increase the probability of punishment or increase the size of the punishment. Several aspects of criminals' behaviour suggest that they are most likely to be risk-loving individuals. If so, they will be deterred to a greater extent by an increase in the probability of punishment than they will be by a proportionate increase in the size of the penalty.<sup>3</sup>

We should also note that official punishments by the judicial system are not the only, or the most important, penalties that people incur for committing crimes. The fear of punishment by friends and relatives, in the form of ostracism or chastisement, probably deters more people from committing major crimes than do the official penalties. In homogeneous societies, such as Japan, juvenile delinquents rarely receive official punishment by the courts. The expected punishment of juveniles by their families is considered sufficient to deter most Japanese young people from deviant behaviour. A fear of punishment by one's conscience or by deities is also a form of expected penalty. The problem with these concepts from a scientific perspective is that they are very hard to measure, so we remain largely ignorant of their likely magnitude relative to the factors we can measure.

*The value of alternatives to criminal behaviour affects the amount of crime committed*

Criminals weigh the benefits of pursuing legitimate employment before they enter into a criminal career. For example, if there is high unemployment, more people will have an incentive to engage in criminal activity since they are less able to support themselves through a legitimate job. When unemployment falls, other things being equal, the crime rate should also drop. Similarly, the costs of obtaining training for alternative careers, and the level of wages one can obtain once trained, will also affect the attractiveness of crime.

Unfortunately, it is not always easy to find a 'clean' statistical test of propositions such as these. Changes in unemployment are usually associated with other changes occurring at the same time. For example, an increase in the value or duration of unemployment

<sup>3</sup> For a formal demonstration of this result, see Becker, Gary S., 1968, 'Crime and Punishment: An Economic Approach', *Journal of Political Economy*, 76 (2) pp.169-217, footnote 19.

benefits will likely increase the amount of unemployment, but it might decrease the amount of crime since unemployed individuals then have more income to buy necessities and may prefer to relax at the beach rather than engage in unpleasant and dangerous criminal activity. Similarly, increases in aggregate unemployment such as occurred in the Great Depression of the 1930s could be associated with decreases in income and wealth in the rest of the community that would make burglary and theft less rewarding. In fact, the statistical evidence most favourable to the hypothesis that unemployment affects crime involves statistical analyses that have also included variables such as average income to control for variations in the benefits of criminal activity.

It seems unlikely that individuals are genetically programmed to be criminals. Many people move between legitimate employment and criminal employment depending upon the relative benefits they expect to receive. Nevertheless, criminals learn, as other workers do, more about their business the longer they have been in it. Thus, the tendency to switch from criminal to legitimate activities might be expected to decline over time.

As individuals commit more crimes, however, they may have more at stake. If they are caught, the police might be able to figure out that they had committed several previously unsolved crimes. The effective expected penalty for an additional crime might therefore rise with the number of crimes already committed. Of course, a criminal who had already been caught and convicted for a previous crime is a prime suspect, so the probability of being caught for a new crime would be much higher than is the case for a new entrant into criminal activity. Finally, some types of crime (such as robbery) are not well suited to people over age 35, as such crimes require a certain amount of athletic prowess. Criminals who participate in crimes such as robbery tend to switch to other activities as they age.

Poor educational achievement and a bad upbringing are associated with crime because these factors make it more difficult to get a good job. Once a person has begun engaging in criminal activities (and often this begins when he is a young adult), it becomes more difficult to obtain legitimate employment. As the costs of securing legitimate employment go up, criminal employment becomes relatively more attractive.

### Unique sources of concern in New Zealand

The economic approach to understanding criminal behaviour can be applied to understanding changes in crime levels in any society. Many of the remedies for unacceptably high rates of crime that are suggested by the economic approach are also widely applicable. There are some issues peculiar to New Zealand, however, for which the economic approach appears to be particularly well suited.

First, the recent introduction of a Bill of Rights Act appears to have led to an increasing number of offenders pleading not guilty on procedural grounds. When offenders are found not guilty on procedural grounds, we would expect the police to expend additional resources collecting evidence and documenting their treatment of suspects. These additional expenditures might also bring additional benefits in the form of greater protection of individual rights. Nevertheless, a study of the effects of the Bill of Rights Act should be undertaken. Amendments to the Act should be considered if conviction rates decline due to the inability of the police to arrest and question suspects as they did previously. There is a limit to the amount of resources New Zealanders want to

devote to their criminal justice system. If asked, many citizens would probably prefer to spend money paying police to detect more crime rather than to spend the same money teaching the police how to arrest people in accordance with an elaborate set of rules that may do little to protect individual rights. There is also an issue as to whether inappropriate, or even illegal, means of collecting evidence should automatically make the evidence so obtained inadmissible. It seems illogical that no one should be prosecuted if we have strong evidence that two crimes have been committed (one by the original criminal and one by the police while collecting evidence). However, 'evidence' obtained under duress should probably be ruled out of court.

Secondly, the complex system of dealing with juvenile crime makes it difficult to evaluate whether the costs of administering it are outweighed by the benefits. It probably also makes it very difficult for prospective juvenile offenders to judge the likelihood of receiving a substantial penalty for engaging in criminal behaviour. In consequence, the current criminal justice system may not deter young people very well.

Thirdly, police diversion schemes may be contributing to a situation in which fines are rarely collected and charitable donations by law breakers are increasing. This scheme, designed to reduce litigation costs, may be contributing to an increase in charging by police and to a reduction in the revenues collected by the government from fines.

In so far as the current justice system raises the costs of enforcement to taxpayers, it may reduce the political support for effective law enforcement. The current system may also divert police resources away from pursuing criminals of most concern to society and toward those crimes that are most amenable to prosecution under the diversion scheme.

Finally, the welfare system in New Zealand is discouraging people from pursuing legitimate employment and encouraging the formation of single-parent families. Family violence occurs more often against single parents and their children. (For a further discussion of issues in welfare reform, see Green (1995).)

### Summary of major policy implications of the economic approach

We summarise here some of the main policy implications of the economic approach to crime. More detailed arguments for these policy positions are presented later in the report (particularly Chapter 5). We refer interested readers to that discussion if they wish to understand the justifications for the proposals outlined below.

The central lesson of the economic theory of crime is that the expected penalties faced by criminals should be increased. This can be achieved not only by redirecting police resources but also by general reform of the criminal justice system designed to make punishment more effective and to free up more resources for the detecting and deterrence of crime.

#### *Stop the decline in expected penalties*

In order to reduce crime in New Zealand, it is vital that steps be taken to increase expected penalties for crime. In particular, the probability of capture and conviction needs to be increased, although the size of penalties actually imposed may also need to be increased.

Improvements can be made in policing that result in a greater capture and conviction rate. Recent changes in court procedures that may have helped reduce the probability of conviction also need to be re-examined. As well, overall reform of the criminal justice system would make more of the resources it currently consumes available for crime detection and the conviction of criminals.

### *The allocation of police resources*

Police resources need to be directed to the crimes that are causing the greatest harm to New Zealanders. In particular, burglaries warrant a high priority as burglary rates in New Zealand are among the highest in the developed world.

In recent years, the police have allocated more resources towards reducing family violence (New Zealand Police, 1993). While family violence is a serious matter, it is not clear that the police are the best people to cope with some of these situations. Other specialists, such as trained social workers, might achieve more for the same resource cost to society. In short, the benefit of police actions in this area to the average New Zealander (who is neither a perpetrator nor a victim of family violence) may not be worth all the costs.

Police need to be relieved of as many non-essential duties as possible, such as most traffic surveillance. Automatic devices such as red light cameras and speed cameras can be used to control many traffic offenders. A programme to increase the use of these devices is already under way in New Zealand. In order to increase efficiency and lower costs, these devices should be monitored by a private firm under contract with the government. As police are relieved of inessential duties, they will have more time to devote to pursuing more serious offences. It is pleasing that some moves in this direction are being considered by the police.

### *Private prisons*

The use of private prisons in New Zealand will decrease costs and may also improve the quality of life for prisoners. There are currently plans for a private prison and a private remand facility to be built in Auckland. Studies of prisons in the United States and elsewhere have demonstrated that private prisons are cheaper and often better than government-run prisons. Prisoners themselves prefer private prisons. Remaining government prisons in New Zealand should be privatised as soon as possible.

### *Alternatives to prison sentences*

Prisons are expensive to build and operate. Prisoners waste valuable years of their working lives, and are prevented from investing in skills that can lead to legitimate future employment. Prisons are notorious for being 'schools of crime', places in which criminals teach each other the secrets of their trade.

Because prison is such a bad form of punishment, it should be reserved for those committing the most heinous crimes. Any criminal who can be effectively punished outside of prison should not be incarcerated. There are several alternatives to imprisonment that make such punishment feasible. First, fines should be used as a means of punishment whenever possible. Secondly, the use of electronic surveillance equipment means that criminals can serve the greater part of their sentence at home. While being tracked on a special electronic device, criminals may go only to a specified

number of places, such as their work and home. The cost of the surveillance can be deducted from their pay (it is generally only a few dollars a day), making the system very cost effective.

### *Prison industries*

The deleterious effect of prison sentences could be reduced by encouraging the use of private industries in prison. In addition to learning specific job skills, prisoners learn to come to work on time, cope with working in an office or manufacturing shop, and gain discipline in sticking with a job for which there is hope of gainful employment after prison.

Flexible industries, such as furniture manufacturing and hotel and plane reservations, are currently part of the work programme in a number of prisons in the United States. These prison industries are run by private firms that operate under contract to use prison labour. Prisoners are paid the minimum wage, with room and board being deducted by the prison.

Such employment has several advantages over traditional prison industries. For example, prisoners are gaining skills in businesses that exist outside of prison and companies (such as airlines and hotel chains) often hire, in their non-prison operations, prison employees who have successfully completed training whilst in prison.

### *Juvenile crime*

An external and independent study should be undertaken of juvenile crime in New Zealand by consultants conversant with the economic theory of crime; it should include a cost-benefit analysis of the current system. The use of Family Group Conferences appears to be very expensive, if one takes account of the costs of the time of those involved. Juvenile crime has not been reduced since the passage of the Children, Young Persons and Their Families Act 1989, and a substantial amount of crime is committed by young people. A thorough overhaul of the juvenile justice system should be considered. (For a description of the complex procedures used in the juvenile justice system, see Maxwell and Morris, 1993:8-12.)

### *White collar crime*

Competitive markets should be the first defence against white collar crime aimed at shareholders, workers or customers. If share markets, labour markets, goods markets and insurance markets are free and competitive, market incentives would do more to keep managers and employees honest than an army of serious fraud officers. In a competitive share market, if managers embezzle funds or permit embezzlement by other employees, their firms may ultimately become the targets for takeovers. New owners could install more honest managers and reap higher profits. Firms that are shown to act dishonestly toward their customers or employees would also be driven out of business if markets for goods and labour are free and competitive.

Conversely, regulated share and labour markets protect dishonest employees by making it difficult to dismiss them. Court decisions under the Employment Contracts Act 1991 are creating obstacles to dismissal, even, for example, in cases where a staff member has stolen goods belonging to the firm. Similarly, regulated insurance markets protect firms which do not guard against theft, through forced pooling of risk across industries.

This is not to suggest that embezzlers or those committing corporate fraud, when caught, should not be prosecuted just as any other person engaging in property crime would be. Rather, we are suggesting that, in a free market, there are many people in addition to the police who have an incentive to detect and punish embezzlement and corporate fraud.

Prison should be a last resort for all criminals, especially those who are non-violent in nature and where there is a real possibility that sufficiently large financial penalties can be imposed to deter future crimes. In this regard, it should also be noted that the loss of reputation for many white collar criminals may in itself constitute a very large financial penalty. White collar criminals should, therefore, be punished through large fines, or liens against their property or future income whenever possible.

*The effects of education, labour market and welfare policies on crime*

Policy toward crime should be examined within the framework of other social policies such as welfare policies, and policies that affect educational opportunities and the operation of labour markets. Improving the quality of education can raise the legitimate employment opportunities for individuals who might otherwise be attracted to crime. Similarly, labour market policies, such as minimum wage laws, that restrict employment and training opportunities for lower skilled workers, might have a significant effect on the amount of crime. Finally, welfare policies that provide a guaranteed minimum monetary income for able-bodied young adults, but leave them plenty of free time, might encourage them to supplement their welfare income through property crimes. Young people obtaining income support should be required to gain labour market experience. This would provide them with better long-term prospects, while also making it harder for them to turn to crime as a means of short-term supplementary support.

CHAPTER TWO

THE ECONOMIC MODEL OF  
CRIMINAL BEHAVIOUR

The economic approach to understanding crime emphasises that criminal behaviour is as rational as most other forms of behaviour. Criminals and potential criminals respond to changes in expected costs and benefits. The economic theory of criminal behaviour has a long history. Among professional criminologists, however, it has been eclipsed by psychological, sociological and biological theories. Since the economic approach accords with most people's view of 'common sense', it has remained the most popular theory of crime among the public at large.

### Origins of the study of crime

While there have been theories about the origins of crime at least since the time of the ancient Greeks, modern criminology began with Cesare Beccaria. In 1764, Beccaria published *On Crimes and Punishments*, a work in which he suggested that criminals are rational and that they will respond to expected punishments. Beccaria argued against torture, delayed punishment, excessive punishment and use of the death penalty.

Beccaria had an important influence on Jeremy Bentham, the English utilitarian philosopher who was involved in reforming the treatment of criminals in the late eighteenth and early nineteenth centuries. Taking his main idea from Beccaria, Bentham popularised the notion that men are governed by pleasures and pains. He argued that it might be possible to calculate pleasures and pains, thereby determining how much 'utility' one gained by various acts. A criminal weighs the expected pleasures against the expected pains before he decides to commit a crime. Modern economists have expanded upon the basic idea of utility presented by Bentham. As we discuss below, the main advances in economic theory relevant to crime involve the modern emphasis on, first, marginal utility and marginal costs (that is, the benefits and costs of *changing* the level of involvement in some activity), and second, the incorporation of probability or uncertainty into the analysis through the use of expected utility and expected costs.

Bentham was aware that criminals are concerned about two things in deciding whether or not to commit a crime. First they are worried about being captured, convicted and punished. Second they are concerned with the severity of the penalty they might receive, if caught. As Bentham wrote:

Unless men are hurried on by outrageous passion, they do not engage in the career of crime without the hope of impunity. If a punishment were to consist only in taking from an offender the fruit of his crime, and this punishment were infallible, there would be no more such crimes committed; for what man would be so insensate as to take the trouble of committing a crime with the certainty of not enjoying its fruits, and the shame of having attempted it? But as there are always some chances of escape, it is necessary to increase the value of the punishment, to counterbalance these chances of impunity.

It is 'therefore' true that the more the certainty of punishment can be augmented, the more it may be diminished in amount. This is one advantage resulting from simplicity of legislation, and of excellence of legal procedure.



For the same reason, it is necessary that the punishment should be as near, in point of time, to the crime, as possible; because its impression upon the minds of men is weakened by distance; and because this distance adds to the uncertainty of its infliction, by affording fresh chances of escape (Bentham, 1838:402).

While Bentham and other earlier economists were aware of a role for probability and marginal analysis in explaining criminal behaviour, these concepts were not a formal part of their theory of choice. Their theories were also not formulated in a precise enough way to make them amenable to statistical testing. It is the latter development that most distinguishes the modern economic approach to explaining criminal behaviour from the earlier approach. It might also be argued that the earlier approach was eclipsed by biological, sociological and psychological approaches to explaining crime because, until recent times, the economic approach appeared less capable of being tested using the available data on criminals and crime.

### Criminal behaviour as a conscious choice

The economic model of crime is based on the notion that both criminals and their potential victims are motivated by rational self-interest. In particular, most criminals consciously choose to commit crimes. They engage in criminal activity because it is preferable to alternative legitimate uses of their abilities and their time, energy and other resources.

For most people, crime is not an attractive means of obtaining access to goods or services provided by others, or of satisfying one's desires. Some crimes must be committed in dangerous or unpleasant surroundings. Criminals often face the risk of physical harm from resistance by their victims, and ostracism and abuse from family, friends and other members of society. Some of them may also have to cope with psychological and emotional costs such as feelings of shame, guilt and remorse. Some criminal activity is most prudently engaged in at inconvenient hours, such as early morning. Finally, criminals also face the risk of capture, conviction and punishment through the legal system.

Some of these costs are also present, however, in alternative, legitimate uses of one's time, energy and other resources. For example, each person demands compensation in some form, material or otherwise, for using his or her time and resources for the benefit of others. There are always alternative uses of those same resources.

Within any population, those individuals in possession of the lowest levels of marketable skills and abilities are the most likely to be criminals. They have a lower cost of relinquishing time and resources from use in legitimate pursuits. Nevertheless, most individuals with unattractive market opportunities do not turn to a life of crime. Evidently, for many, the psychological, social and legal penalties are sufficient to make crime less attractive than the meagre alternatives.

People also move in and out of criminal activity, depending upon their assessment of the likely net benefits of crime on the one hand, and participation in the legitimate job market on the other. For example, studies of robbers show that most recidivist robbers retire from the business when they reach middle age. Cusson and Pinsonneault (1986) argue that the desire for a normal family life seems to increase with age, and this lifestyle is not compatible with the occupation of robbery. Economists note, however, that

the more often a robber is caught, the more likely it is that he will be caught again, and the more severe his punishment is likely to be. Even if he has not been caught before, a criminal who has already committed many crimes has more at stake than someone who has committed few crimes. Thus, the expected net benefits of crime are likely to decline with criminal experience because the expected penalty is likely to rise.

Variations in employment opportunities are another factor that is likely to cause people to move into or out of criminal activity. For example, an increase in unemployment is often associated with an increase in crime. Some people who lose their jobs will find a criminal career an attractive way to supplement their income while receiving unemployment benefits or other welfare assistance.

The economist's view of crime contrasts sharply with views held by many scholars in disciplines such as sociology, medicine and psychology. Many modern theories of crime, based on disciplines outside of economics, assume that criminals are forced into a life of crime through no fault of their own; they are compelled to commit crimes by forces beyond their own control. From a practical point of view, there is one key difference between the economic theory of crime and most non-economic accounts of crime. Economists argue that criminals and their potential victims change their behaviour in response to changes in the expected benefits and costs of realising their respective goals, that is, the goal of committing crimes or of preventing them (see, for example, Becker and Landes, 1974, and Posner, 1988). Regardless of the exact motivations for their actions, criminals and victims both exercise free will in choosing to act in ways that they believe will make them better off.

### The 'supply' of criminal activity

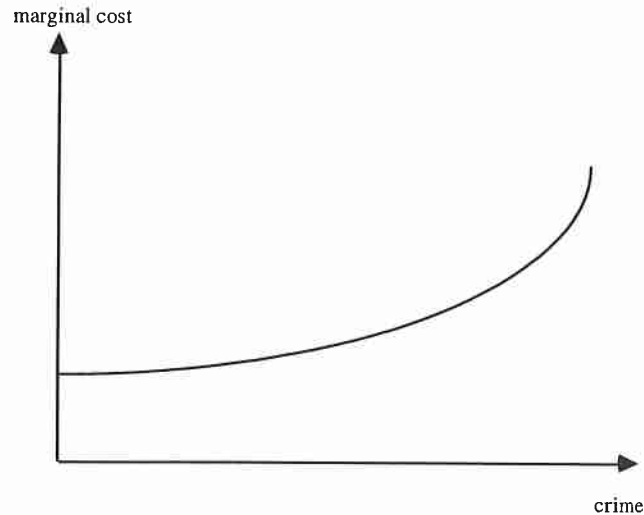
A potential criminal weighs many factors in calculating the costs and benefits of committing a crime. First he is concerned with the time and effort required to commit the crime relative to the well-being he expects to reap in return. The more crimes an individual has committed, the greater will be the value to him of the time and other resources he would need to allocate to additional criminal activity. The crimes he finds the 'easiest' to commit will usually be the ones he attempts first. A person would only choose a more difficult crime over an easier crime if the benefits from the former were expected to be much greater than the benefits from the latter.

For any one criminal, therefore, we would expect that the cost of committing additional crimes within any given time period would be an increasing function of the number of crimes already committed. We use the term 'individual cost schedule' to refer to a graph which represents the amount of crime already being committed within a given time period and the *marginal* (or additional) cost of committing an extra crime within that same time period. Given the remarks above, such a cost schedule should be an upward sloping function as in Figure 2.1. Even if the marginal costs do not rise gradually for a particular criminal, the costs schedule would still have a broadly similar shape to the schedule in Figure 2.1. It would be horizontal until the individual was committing so many crimes that every hour within the period was devoted to crime, at which point the schedule would become vertical; no further crimes could be committed.

Over time, this whole cost schedule could shift down as the criminal gains experience and learns more tricks of the trade. It could also shift up if, for example, the criminal

loses physical fitness, finds better market or non-market uses for his time and other resources, or has increasing pangs of conscience or feelings of remorse.

Figure 2.1: The marginal cost of crime for an individual criminal



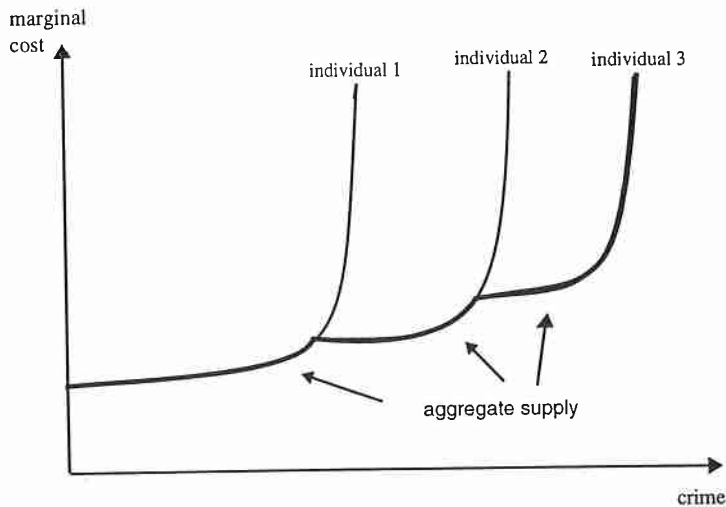
We can now think about the overall 'supply of crime' within a particular category, in a particular region, within a given time period. Each of the inhabitants of the region will have a cost schedule as in Figure 2.1. While the costs of committing even minor crimes for some individuals are very high, almost everyone would have some price at which he would be willing to commit at least some illegal acts. There are very few of us, for example, who have never exceeded the speed limit while driving a car.

We could imagine ordering people according to their cost schedules. Those with the lowest initial cost would come first; those with the highest initial costs would come last. The individual cost schedules could then be 'added' horizontally, as illustrated for three individuals in Figure 2.2. The heavy curve labelled 'aggregate supply curve' in this diagram is the 'horizontal sum' of the three individual cost schedules. The joining point between individuals 1 and 2 occurs where the marginal cost of committing an additional crime for individual 1 matches the *lowest* marginal cost of committing the first crime of this type, and within this time period, for individual 2.

The aggregate supply curve in Figure 2.2 solves the following *imaginary* problem. How should we allocate individuals to committing crimes so as to provide each level of crime at the lowest overall cost to the individuals committing those crimes? The answer would be the aggregate supply schedule as drawn in the figure. Individual 1 would commit the initial group of crimes up to the point where his marginal costs of committing further crimes matched the marginal costs of individual 2. From that point on, both individuals 1 and 2 would be called upon to commit the crimes until their (equal) marginal costs matched the marginal costs of individual 3. From that point on, all three individuals would be called upon to supply the requisite number of crimes and so on.

The aggregate supply curve would also trace out the supply of crimes of a given type, in the specified location and within the specified time period. Now we put 'return to crime' (both pecuniary and non-pecuniary returns) on the vertical axis. As the return to crime rises, individual 1 would respond by committing more crimes. If the return

Figure 2.2: A crime supply schedule from three individuals



gets high enough, both individuals 1 and 2 would begin to commit crime. Further increases would then attract individual 3 and so on.

### The benefits of criminal activity as seen by the potential criminal

We can also use a set of diagrams to derive a 'demand' curve in the market for criminal activity that is analogous to the 'demand' curve in markets for ordinary goods and services. In a normal market, the demand curve represents the marginal benefit of supplying the good or service to the customer. The price that can be read off the demand curve is the amount customers are willing to pay for an additional unit of the good or service, graphed as a function of the level already being provided. Looked at from the point of view of the *seller*, the demand curve represents the marginal return for using the time and resources at his or her disposal to supply an additional unit of output to the customers. Similarly, the 'demand curve' in the 'market' for criminal activity represents the expected value *to the criminal* of using his time and other resources to supply an additional criminal act. The derivation of the demand curve for criminal activity involves several steps.

The actual return to a particular category of crime within a region and time period will depend on the number of those crimes already being committed. Rational criminals would exploit the 'most lucrative' (in non-pecuniary as well as pecuniary terms) victims or targets first before moving on to, or leaving to others, those opportunities that have more meagre expected returns. We can thus imagine ranking the crime opportunities in order from the 'most lucrative' to the 'least lucrative'. The expected return to crime would tend to decline as more crime is committed. This is illustrated in Figure 2.3.

We have drawn this curve reasonably 'flat' to reflect the fact that there are likely to be many very similar opportunities for crime in a given neighbourhood. Consequently, the expected returns should fall gradually with the level of crime. We shall refer to the marginal return curve in the absence of any protective response from potential victims as the 'notional demand curve'.

Figure 2.3: Marginal returns with no defensive response

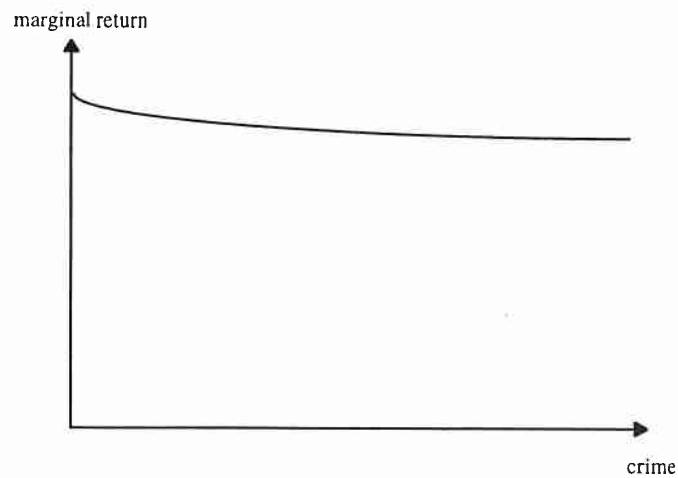
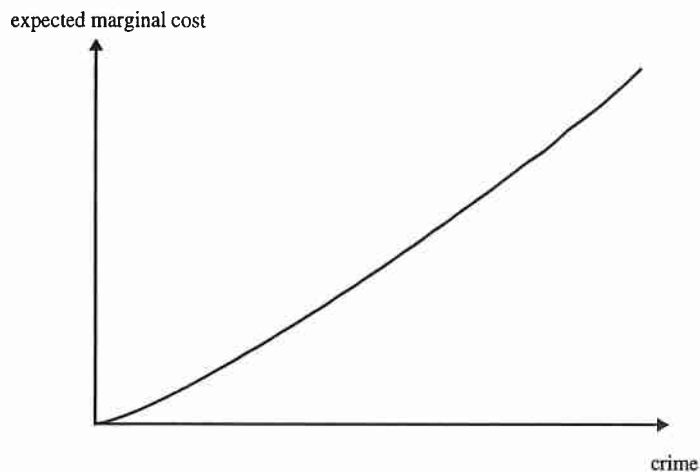


Figure 2.4: The expected marginal cost of crime to potential victims

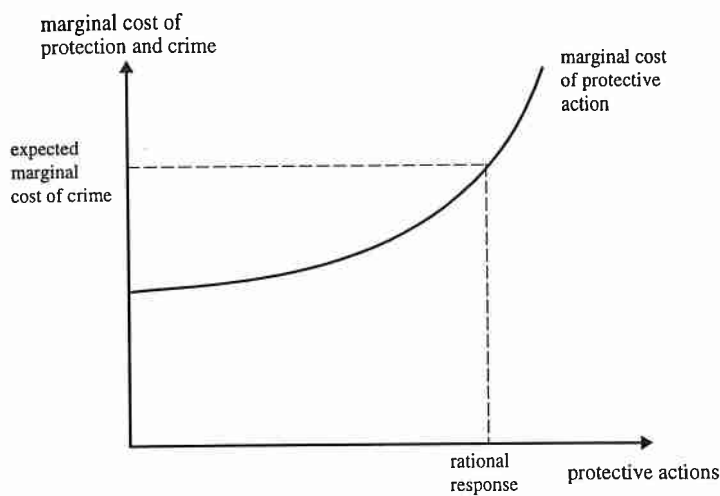


The return to a criminal from committing a particular crime will typically fall far short of the cost to the victim. Damage to the property, or to the physical or psychological well-being of the victim usually does not accrue as a return to the criminal. As the amount of crime in a neighbourhood increases, the cost of crime to actual victims is unlikely to decline, and may even rise if, for example, the more marginal criminal acts involve more damage to the victim's property. However, the *expected* cost of crime to any one potential victim will rise. This will happen because the *probability* of becoming an actual victim increases as the total number of victims increases. This relationship is reflected in Figure 2.4.

Increases in the expected cost of crime will encourage potential victims to take protective action. They will buy guard dogs, surveillance cameras and better locks. They will put in security lights and alarms. They may take self-defence lessons, or engage private guards, or acquire armoured vehicles. They could use different streets when they drive around town, change their place of residence, or change the locations of their shopping or recreational activities. Law-abiding citizens may also go out of their way to subject criminals or their families to moral sanctions, in order to raise the psychological or social costs of committing crimes.

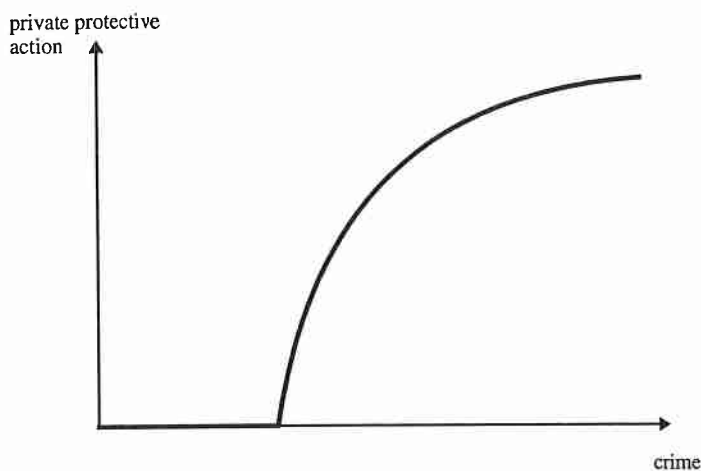
We can group the protective responses into various categories that have different marginal costs and different degrees of effectiveness. Potential victims would first take 'elementary precautions'. In more technical terms, we say they would first use those actions that yield a given amount of protection at lowest cost. As any one action is used to a greater extent, however, each additional amount of protection that can be afforded by extending its use is likely to come at greater cost. As illustrated in Figure 2.5, the marginal cost of private protective actions is, therefore, likely to rise as the amount of protective action increases.

Figure 2.5: Investment in private protective measures



Rational potential victims would protect themselves up to the point at which the marginal cost of protective action matched the marginal benefit. The marginal benefit is measured as the expected value to a person of the crime he has likely avoided. This is illustrated in Figure 2.5. If we combine Figure 2.5 with Figure 2.4, we obtain a positively sloped curve of private protective action, as a function of the level of crime. This is illustrated in Figure 2.6.

Figure 2.6: Private protective measures as a function of the level of crime



As the amount of crime increases, political pressures for increased public deterrence measures are also likely to mount. These public actions include increased spending on the police, courts, and prisons and other means of punishment. They increase the *expected* penalty by raising either the *probability* of capture and conviction, or the *severity* of the penalty likely to be imposed through the legal system, or both. An increase in the expected penalty in turn will reduce the expected returns to criminal activity. Potential criminals could be expected to learn about, and respond to, these changes in expected returns. A rough estimate of the relevant probabilities, or the unpleasantness of the different sanctions, is often obtainable from criminals.

Since the public actions are provided simultaneously to all the citizens, they are likely to deter crime at a low *per person* cost. The share of the costs borne by any one citizen will, however, depend on the political mechanism. This is likely to affect individual attitudes to an expansion of spending on the criminal justice system.

As has been observed by Downs (1957) and many subsequent authors, democratically-elected politicians have some incentive to respond to their constituents' desires. The vast literature on the public choice model of democratic political processes (see, for example, Mueller (1979)) also tells us, however, that there is no presumption that public protective measures would be provided up to the point where their marginal economic cost matches the marginal benefits to the group of people protected. For example, vested interests within the justice system and the bureaucracy might be able to exploit the public demand for a response to increasing crime to further their own ends. These vested interests may genuinely feel that they are 'doing well by doing good'; that is, advocating actions that are in the public interest even if they happen also to be in their own self-interest. Nevertheless, a disproportionate influence of vested interests on the political process could lead to excessive use of some public crime deterrence strategies relative to their cost effectiveness.<sup>4</sup> While the use of public deterrence strategies in a democracy is unlikely to be 'efficient', public protective measures should in any case increase as increasing crime raises the expected marginal cost of crime to potential victims and voters.

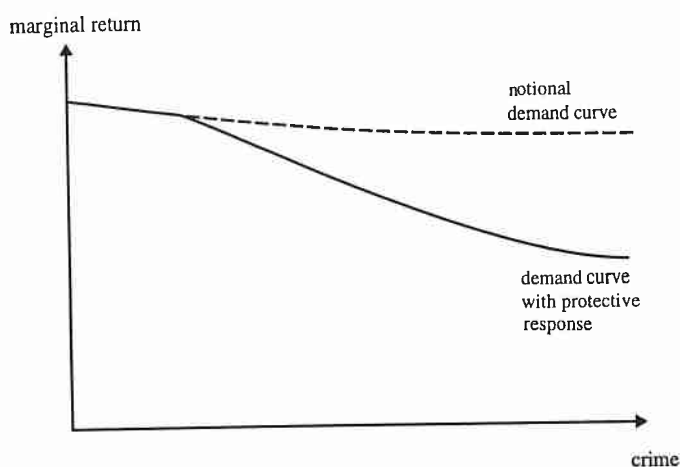
The private protective actions illustrated in Figure 2.6, together with a similar graph for public protective actions, will result in a positively-sloped graph of total protective actions as a function of the level of crime. These protective actions will reduce the expected return to crime from the perspective of the potential criminal.<sup>5</sup> The 'notional demand curve' in Figure 2.3 would be shifted down by the reduction in expected benefits at each level of crime. The result will be a market 'demand curve' as illustrated in Figure 2.7.

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<sup>4</sup> However, the marginal cost of public protective actions need not equal their budgetary cost when government-owned suppliers, such as the police, prisons or court system, lack strong incentives to minimise costs.

<sup>5</sup> At least, this would be the usual presumption. It might be argued that rebellious teenagers could be attracted to activities once they are made 'forbidden fruit'.

Figure 2.7: The market demand curve



## Supply and demand

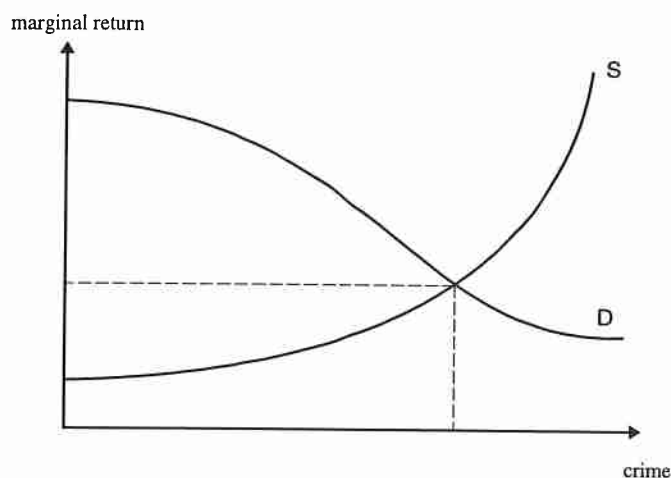
To summarise the discussion so far, we have noted that economists discuss crime just as they discuss markets for other goods and services; that is, they consider both the supply and demand sides of crime. On the one hand, there are a certain number of criminal opportunities available in any community (for example, cars left with their motors running provide opportunities for theft), and there are people who will avail themselves of these opportunities and 'supply' a certain amount or number of crimes. Criminals will 'supply' crimes as long as the benefits they expect to receive are greater than the costs they expect to incur, where costs include arrests, fear, pangs of conscience, and disruption of their personal lives.

On the other hand, the returns that criminals could expect to realise from the commission of crimes will decline as the amount of crime increases. The easiest opportunities are exploited first. Potential victims will take actions to protect themselves and to reduce the returns to crime as more crimes are committed. They will also 'demand' increased police protection and increases in the probability that criminals are severely punished for their actions. The amount of crime occurring in a given community is determined by a balance of the forces of supply and demand. The 'market equilibrium' may then be illustrated as in Figure 2.8.

As in other markets, when the expected benefits from crime go up, the amount of crime will go up. When the expected benefits of committing a crime go down, the amount of crime will go down. Individuals will 'supply' crime to the community as long as the benefit to them exceeds the cost to them. Individuals will tolerate crime as long as the costs to them of criminal activity are lower than the costs to them of preventing crime. By 'costs' here, we do not just mean monetary costs. Social, psychological and other non-pecuniary costs and benefits are taken into account both in the commission of crimes and in their prevention.



Figure 2.8: Equilibrium amount of crime and the expected returns to crime



### Some implications of the economic approach

#### *Simple correlations are inadequate statistical tests of the approach*

The most important implication of the economic theory for statistical research on criminal behaviour is that the level of crime, the marginal returns to crime, the expected marginal costs of crime for potential victims, and the level of private and public protective actions are all determined *simultaneously*. This has consequences for the statistical techniques that should be used when testing the theory. In particular, simple correlations between the level of crime and expenditures on police, or the severity of prison sentences, for example, should be interpreted with considerable caution.

For example, suppose we find a region that has severe penalties along with a high crime rate. This is not necessarily evidence against the economic model. Although the penalties are high, the probability of receiving them might be quite low. Even if the expected penalty is high (the sizes of the various penalties times the probabilities of receiving each of them, summed over the range of possible penalties), the observation need not be strong evidence against the economic theory. The high crime rate could have been caused by some other factor. For example, the predominant business in the area may provide many opportunities for 'easy' armed robberies. As another example, in a country where corruption is endemic, the costs of not participating may be exclusion from some economic activity. The benefits of corruption, and the level of criminal activity, might accordingly be very high even though penalties and the likelihood of receiving them are also high.<sup>6</sup>

Differences in social attitudes could be another 'exogenous' factor leading to high crime despite high expected penalties. In some societies or sub-cultures, crime might be relatively attractive because the alternative legitimate employment available to unskilled people is dreary and has low status. The high expected penalties in each of these cases

<sup>6</sup> In this case, however, it would seem that if corruption is truly endemic the likelihood of receiving a penalty is unlikely to be extremely high. In fact, we would speculate that causality often runs in the other direction—corruption becomes endemic in those societies where the legal system is in disarray and the likelihood of receiving a penalty is accordingly very low.

would be a *response* to the high crime rate. Citizens would have lobbied for the high penalties precisely because they believe them to be an effective deterrent. The positive correlation between crime and expected penalties would not prove that high penalties 'cause' a high crime rate.

### *Expected penalties affect decisions to commit crime*

The most important policy implication of the economic theory of crime is that it asserts we can deter some people from committing crimes by raising the expected penalty. Many criminologists and psychologists note that violent crimes, such as murder, are often committed in the heat of an argument and against members of a criminal's own family or friends. These criminals are often suffering from mental illnesses or are in desperate need of money to buy addictive drugs. It may seem unlikely that murderers rationally calculate the expected costs and benefits of the acts as they are committing them. In some cases, however, high expected penalties could deter them from making prior rational choices, such as deciding to try drugs or associate with known criminals, that ultimately resulted in irrational acts.

There may also be many other individuals who do rationally decide whether or not to commit a particular criminal act. They weigh the 'benefits' to them of committing the crime against the possible costs, including the possible cost of being caught and punished. As noted, many of us are in this situation every day, when we decide whether to exceed the speed limit while driving. A more serious case is that of a hired killer who is trying to decide whether the money he is being offered in order to kill someone is enough to compensate for the chance of being caught and punished. A small change in the probability of capture and conviction for hired killers, or an increase in the penalty applied to them, may be enough to convince the hired killer who is 'sitting on the fence' not to commit the crime. The same is true of speeding drivers. The sight of a police car is enough to slow down many drivers who are deriving few benefits from speeding and are afraid of being punished. Thus, the economic model of crime explains how we can reduce the amount of criminal activity, even if we cannot deter *everyone* from committing crimes. We can deter the 'marginal' criminal, that is, the person who is just indifferent between committing a crime and not committing it. Stiffer expected penalties may tip the balance for such people and deter them from criminal activity.

### *Marginal analysis applied to crime*

The distinction between 'marginal' and 'average' deterrence might be better understood with the aid of the following example. Suppose there is a downtown office that is a considerable distance from the nearest public parking station. Parking places are available at the front of the building, but any one car is allowed to use them for a maximum of 15 minutes. The restriction is, however, poorly policed.

Now suppose there are two office workers. One of them, Mr White, hates to walk. Since the parking infringement is poorly policed, he typically decides that it is worthwhile to park illegally and take his chances. A low parking fine incurred with low probability is insufficient to deter White, except perhaps on those days when he is feeling a little less lethargic and decides to park legally and walk.

Another individual, Mr Green, does not mind walking nearly as much. On most days he decides to park legally. On some days, however, he has a large load of books to

bring to the office, and he chooses to park illegally to save carrying the load a long distance. Green is 'more deterred on average' by the low expected fine.

Now suppose the size of the fine, or the probability of receiving it, is increased. White, who was less deterred by the initial fine, might decide that the effort of walking is not as bad as the new, higher, expected loss from the fine. He decides to park legally from now on. The *increase* in the expected value of the fine has a large *marginal* deterrence effect on the individual who was deterred only a little by the initial fine.

Green still decides, however, that the expected cost of the fine is insufficient to compensate for the effort required to carry his load of books from the parking station. The increase in the expected cost of the fine has very little effect on his decisions about whether or not to park illegally. Even though Green was initially 'more deterred' by the low probability fine, the *marginal* deterrence effect of an increase in the expected value of the fine is lower for him than it was for White.

The point of this example is that we may be able to say very little about the likely deterrent effect of a *change* in expected penalties on the basis of past observed average levels of deterrence. Criminals who have not been greatly deterred by existing penalties could nevertheless be very responsive to an increase in those penalties.

#### *Marginal penalties for marginal crimes*

An important insight from the economic theory of crime is that the schedule of penalties needs to be chosen with care. In some situations, a criminal can alter the probability of capture or conviction by committing additional crimes. For example, after robbing or sexually assaulting someone, an offender can often significantly decrease the probability of being caught and convicted by murdering the victim. If the additional penalty for murder is not sufficient to offset this lower probability of capture and conviction, the offender will be encouraged to take the extra step.

Another example can be found in fisheries law in New Zealand. Fisheries law developed from centuries old customs law, which expressly recognised the difficulties of detecting, convicting and punishing violators of restrictions on fishing. In New Zealand, there is automatic confiscation of boats and equipment on conviction for a fisheries offence. Such a high penalty creates incentives to engage in other criminal acts to avoid prosecution, such as threatening fisheries officers with violence. This has been recognised in New Zealand and a system for reaching *de facto* repatriation understandings with the Crown has been instituted. Offenders can now repurchase their equipment at prices less than market value.

#### *The intensive versus the extensive margin*

The crime supply curve (Figure 2.2) shows that the 'supply' of crimes increases in response to an increase in the marginal returns to crime for two reasons. Each person currently choosing to commit crimes of a particular type will be tempted to commit more crimes as the expected return increases. This is known in economics as an expansion of supply on the *intensive* margin. Increasing expected returns can, however, also attract new individuals to the activity. This is known as an expansion of supply at the *extensive* margin.

The possibility that supply can expand on the extensive margin leads to the so-called 'replacement effect'. Suppose a criminal is captured, convicted and incarcerated.<sup>7</sup> The number of crimes in the region in which he was formerly operating might be expected to decline by the number of crimes he had been committing. If that were to happen, however, the equilibrium return to crime in that region would rise, as the supply curve shifted to the left. Other criminals left operating in the region would be encouraged to expand their activity on the intensive margin. In addition, some new individuals might be attracted from other regions or activities to 'replace' the individual who was incarcerated. The net effect of putting the formerly active criminal behind bars might not be very large. There may be many other individuals who are 'close substitutes' for the incarcerated person and nearly as 'good' at being a criminal as he was.

If the incarceration of one individual is not the result of an increase in the probability of capture and conviction, then potential criminals will not be deterred by that incarceration to any greater extent than they were before. When one criminal is put behind bars for robbing, for example, others may take over his potential targets and rob them in his place. If the probability of capture and conviction does rise, if more criminals are incarcerated, and if potential criminals are aware of the increased chance of being caught and convicted, then crime will be reduced. Potential criminals will not replace the incarcerated individuals completely because the potential criminals will fear possible capture and punishment.

In economic jargon, we say that an increase in expected penalties shifts the expected marginal benefit curve to the left at the same time as the supply curve shifts to the left as one of the criminals is taken off the streets. The shift in the expected marginal benefit curve represents increased effectiveness in reducing the equilibrium crime rate.

### *The role of risk aversion*

Modern economists affirm much of what Bentham and Beccaria wrote, and they use modern statistical techniques and mathematical models to confirm what earlier thinkers intuited about the causes and effects of crime. One area in which modern economic reasoning has made significant advances is the analysis of risk.

The 'expected utility approach' to understanding choice behaviour provides us with a general account of how individuals choose or avoid risk. Expected utility theory allows economists to model in a simple way the trade-offs people make with respect to risk.<sup>8</sup>

<sup>7</sup> The 'replacement effect' is also likely to operate when previous offenders are reformed. Thus, even if the Children, Young Persons and Their Families Act 1989 succeeds in reforming some juvenile offenders, it may be less effective at reducing the aggregate amount of juvenile crime. The newly reformed individuals are likely to be replaced by other individuals who were formerly on the margin of committing crime.

<sup>8</sup> The 'expected utility approach' is not beyond criticism as a descriptive model of choice behaviour under uncertainty. It is a good first approximation to such behaviour, however, particularly when utility is allowed to be state-dependent. A fundamental misunderstanding of expected utility theory leads Cameron (1988:302) to make some irrelevant criticisms of the economic theory of crime. He says that the economic theory postulates that criminals choose between the 'risky asset' of crime and 'the riskless asset of legitimate income' to maximise an expected utility of wealth. He claims that, as a result, "Economists ought not to come immediately to such a conclusion [that punishment will deter crime] . . . When the assets in the criminal's portfolio are both subject to risk, the supply of crime depends on the means and variances of legal and illegal income and the covariance of legal and illegal income." Cameron also claims (1988:304) that, "In Becker-type models sentence length only operates indirectly through its impact on wealth." Expected utility theory is, however, a theory about individual attitudes to random utility outcomes. In most economic applications, utility is modelled as depending on the consumption of market goods and services and non-market uses of time. Only in applications to the allocation of wealth across portfolios of financial assets it is customary to postulate an indirect utility function that depends on financial wealth.

We noted above that people respond to changes in expected costs and benefits. More generally, criminals, potential criminals, and victims will modify their responses to expected costs and benefits, depending upon how risk-averse or risk-loving they are.

In particular, economists can analyse how criminals will trade-off the probability of capture against the size of the penalty they might get if caught and convicted. Since criminals expose themselves to the risk of punishment in the hope of securing gain, it is reasonable to suppose that they may be less risk-averse than the average person. Most people buy insurance in order to reduce the variation in their well-being in case uncontrollable events occur. Investors also have to be compensated with high expected returns before they are willing to accept assets with risky payoffs. Criminals, however, deliberately undertake actions that increase the variability in their fortunes should they escape or alternatively be caught, convicted and suffer some punishment. Some psychological studies suggest that criminals are less risk-averse than the average person (Wilson and Herrnstein, 1985:186–87; Fishbein, 1990:37).

It can be shown that if criminals are actually risk-loving, rather than merely less risk-averse than the average person, they will be more concerned with the probability of capture and conviction than with the size of the penalty. A moderate penalty that is incurred with a high probability of capture and conviction will deter risk-lovers more than a higher penalty that is offset, in expected value terms, by a lower probability of capture and conviction. Thus, increasing the probability of capture and conviction might have a greater deterrent effect than an 'equivalent' (in expected value terms) increase in penalties. It could, however, be more expensive to increase the probabilities of conviction than the size of the penalties. In that case, the costs of the alternatives would have to be weighed against their relative benefits.

#### *Moral hazard and criminal behaviour*

A significant qualitative 'test' of the economic model arises from applying the theory of 'moral hazard' to criminal behaviour. The idea of moral hazard arose first in the literature on insurance. Actuaries observed that the probabilities of adverse events occurring, and also the size of insured losses, often changed after a group of individuals purchased insurance. Premiums based on calculations using data where insurance had been unavailable proved inadequate to cover the actuarial risks once the insurance had been provided. The explanation is that people with insurance are less careful. They have reduced incentives to avoid the occurrence, or reduce the severity, of an adverse event if they can receive compensation from the insurance company should the event occur. Actuaries coined the term 'moral hazard' to refer to this change in expected indemnity payments following the provision of insurance.

The economic model of criminal behaviour encourages us to think of criminal activity as 'negative insurance'. Just as the purchase of ordinary market insurance *reduces* the variability of income or well-being depending on various possible events that could occur (a house does or does not burn down, an accident or illness does or does not occur, and so on), criminal activity *increases* the variability of well-being depending on whether or not the criminal is caught and convicted. This is the reason we tend to think of criminals as being risk-lovers—they gamble on suffering a large diminution in their well-being should they be caught and punished, in return for the chance of a substantial increase in their happiness should they get away with their misdeed.

We might then think that a type of 'reverse moral hazard' should apply to criminal behaviour. Risk-loving criminals would not be expected to have an incentive to avoid the occurrence of an adverse event. Yet we certainly see criminals taking care, and investing resources, in the evasion of capture and conviction. The fact that both risk-loving criminals and risk-averse uninsured individuals invest time and other resources to reduce the likelihood of an adverse event would appear to be difficult to explain with a consistent model of rational choice.

Economists have, however, identified two distinct components of moral hazard. 'Self-insurance' is used to refer to actions individuals can take to reduce the severity of a loss should an adverse event occur. 'Self-protection' refers to actions individuals can take to reduce the likelihood of an adverse event occurring. The availability of market insurance increases expected losses by reducing incentives for insured individuals to engage in both self-insurance and self-protection. It turns out, however, that while risk-aversion is a necessary requirement for individuals to self-insure, risk-aversion is neither necessary nor sufficient for individuals to engage in self-protection. Thus, the observed tendency of criminals to reduce the probability they will be caught and punished (that is, self-protect) is consistent with their deliberate actions to increase the variability of their well-being in different possible 'states of the world' (that is, to undertake 'negative' self-insurance). The fact that the same simple rational choice model can explain these apparently contradictory observations is a significant argument in favour of its empirical relevance.

#### *Other qualitative evidence on the relevance of the economic approach*

We shall discuss some of the statistical tests of the economic approach in the next chapter. We shall argue that the evidence from the best statistical studies is consistent with the economic approach. As the above discussion of moral hazard shows, however, the statistical evidence is not the only check we have on the validity of the economic approach.

Economists have examined a wide range of choice behaviour in market and non-market settings. These examinations have shown that an extraordinary range of behaviour is consistent with the hypothesis that people make rational choices while pursuing their goals. There is little reason to believe criminal behaviour is different. Further, a wide range of personal experience suggests that it is not.

Expenditure on defence is used to deter international aggression. Most of us have been deterred from speeding, parking illegally or violating other traffic laws by expected penalties. Most of us have also chosen to violate the traffic laws on occasions when we have judged that the expected penalty is quite low. Libraries use fines to deter the late return of books. Parents use expected penalties to control the behaviour of their children. Even individuals who are certifiably insane are nevertheless apparently rational in the sense that they respond to variations in expected costs and benefits.

Except when it appears convenient to deny it, most people routinely argue that expected penalties deter. Many individuals who deny the efficacy of expected penalties for influencing many 'ordinary' crimes nevertheless argue for penalties to control tax evasion, the illegal use of firearms, violent demonstrations at abortion clinics, contra-

ventions of environmental laws, or acts of family violence. The argument that expected penalties deter all sorts of behaviour *except* burglary, robbery, and serious personal violence is, in our view, preposterous.

CHAPTER THREE

STATISTICAL TESTS OF THE  
ECONOMIC MODEL OF CRIME

It is impossible definitively to 'prove' a theory by statistical analysis. The best statistical evidence covering a wide range of crimes in many societies and over a long period of time is, however, consistent with the hypothesis that the probability of capture and conviction and the size of formal penalties do have a significant effect on the crime rate. One can also view many other factors emphasised in the sociological and psychological literature as consistent with the economic model, and thus fit them into a unified framework of analysis. We shall illustrate this in the next chapter.

### Regression analyses using aggregate time series data

*A wide range of multiple regression analyses show that expected penalties deter*

Many empirical studies have been carried out in the past 30 years that attempt to test the economic theory of crime. These tests have been based on the aggregate police and court statistics collected in a large number of countries. In a recent survey of these studies, Eide *et al.* (1994) note that many aspects of the economic theory of crime are supported by empirical data. For example, many studies have tested the effect on the crime rate of increasing the probability of capture, conviction and punishment and the severity of punishment. As Eide *et al.* note:

As a whole, criminometric studies clearly indicate a negative association between crime and the probability and severity of punishment. The result may be regarded as a rather firm corroboration of the deterrence explanation in the theory of rational behaviour: an increase in the probability or severity of punishment will decrease the expected utility of criminal acts, and thereby the level of crime (Eide *et al.*, 1994:156).

Eide *et al.* conclude that the amount of crime can be decreased by either increasing the probability of capture, conviction and punishment or by increasing the severity of punishment.

Eide *et al.* also attempted to test the economic model using Norwegian data on 53 police districts covering a period of 9 years. Their study suggests that, for total crime, and for at least 7 of the 12 crimes they considered, criminals are deterred by increases in the probability of capture or increases in the size of penalties (Eide *et al.*, 1994:224–236). The categories in which the deterrence effect is not statistically significantly different from zero were 'offences against public disorder' (including in some cities, but apparently not in others, burglary), forgery, slander and libel, embezzlement and fraud. In some of the categories, including 'offences against personal liberty', violence against the person, aggravated larcenies, simple larcenies and motor vehicle theft, the deterrence effect was significantly negative and large in magnitude. Eide *et al.* note that data-recording problems may have affected some of the categories that do not seem to respond to changes in the probability of capture.



Eide *et al.* note that increasing the number of police in a region can also have a mixed result on the crime rate. On the one hand, the economic model of crime predicts that increasing police surveillance will deter criminals. Thus, an increase in the number of police should result in a decrease in the amount of crime in given locale. Some studies suggest, however, that increasing the number of police in a given area can lead to an increase in crime. It may be the case that the actual amount of crime is decreasing, but the amount of crime being detected and recorded by the police is increasing. It is difficult to demonstrate whether crime actually goes up when more police are hired or whether the new police simply detect more crime (Eide *et al.*, 1994:163–4).

#### *Legitimate employment opportunities and criminal behaviour*

The economic model of crime suggests that when legitimate employment opportunities increase, criminal activity should decrease as individuals move out of crime and into the legitimate labour force. This aspect of the economic theory of crime has not been so clearly substantiated by statistical tests.

A problem for the studies is that, as legal income increases, the gains from crime may also increase. For example, suppose employment in a certain region increases. Income in that region will also increase, and employed people will buy more goods. These goods then become attractive targets for theft and burglary. Thus, although a criminal may be attracted by better legitimate job opportunities, he may be more attracted by the increasing opportunities for acquiring wealth through theft. As Eide *et al.* note:

No systematic relationship seems to appear between income measures applied and the estimates obtained. Although the hypothesis that an increase in legal income opportunities decreases crime is not rejected in most of the studies . . . other studies would not reject the 'opposite' hypothesis that an increase in legal income opportunities would increase crime. This ambiguity in results might be due to the fact that the income measures used represent benefits not only of legal activities, but also of illegal ones: higher legal incomes (mostly wages) tend to make work more attractive than crime, but to the extent that higher legal income in a region produces a greater number of more profitable targets for crime, the same income measure may be positively correlated with criminal activity. If both mechanisms are at work simultaneously, and their relative strength is not universally constant, it is not surprising that the results of various studies differ. The theory is not necessarily deficient, but the methods applied do not distinguish between the two mechanisms (Eide *et al.*, 1994:160).

Some studies have also found a fairly weak statistical relationship between the unemployment rate and the level of crime. In some of these cases, the problem may lie with the statistical techniques employed. In some unpublished work done with Australian data, a student of one of the authors allowed the error terms in the regression equations to be correlated over time and contemporaneously across the different states and categories of crime. The coefficients in the regression equations were able to be estimated much more precisely. The author was able to confirm that the effects on state crime rates of unemployment and average wages for unskilled labour in almost all cases were in accord with the predictions of the economic theory.

#### *There are difficulties with using aggregate statistics to test theories of criminal behaviour*

There are statistical problems with most studies attempting to measure crime and the deterrent effect of expected penalties using aggregate crime statistics. Many

criminological studies are based on simple pairwise correlations between the crime rate and one other variable. It is well known in the statistical literature that such correlations should be treated with extreme caution when there are many influences operating on the variables of interest. At a minimum, any statistical studies that do not use multiple regression techniques (including the graphical presentations we give below<sup>9</sup>) should be taken as little more than suggestive of the possible forces at work.

Even most multiple regression analyses of crime statistics are inadequate. As we emphasised above, an important implication of the economic approach is that the level of crime and the expected penalties for criminal behaviour are simultaneously determined. A multiple regression analysis that includes expected penalties as one of the explanatory variables will produce a biased estimate of the effect of expected penalties on the crime rate unless this 'simultaneity bias' is taken into account. The best studies of crime data use statistical techniques that correct for such simultaneous equations bias. These are mainly done by economists since economists are most familiar with the relevant techniques. Simultaneity bias arises in many economic settings, since market equilibrium is simultaneously determined by the interaction of supply and demand. Most other social scientists who examine crime statistics do not take simultaneity bias into account. Their statistical analyses are defective as a result.

In addition to having problems with their choice of statistical technique, there is another more basic problem with most statistical studies of criminal behaviour. The statistics examined by the studies are often seriously deficient. As we noted in Chapter 1, official police statistics are far from accurate as a measure of the amount of crime being committed. There is severe under-reporting of many categories of crime. The extent of this under-reporting is also likely to vary systematically both with the amount of crime and with the probability of capture and conviction. If victims become discouraged about the likelihood that criminals will be caught and punished, they are likely to cease reporting crimes to the police.

The under-reporting problem is one reason so many statistical studies have focused on the crime of murder. Even though we might expect murder to be less deterred by changes in expected penalties than other crimes such as theft or burglary, the statistics on murder rates are likely to be much more accurate than corresponding statistics on property crimes or offences such as rape or personal attacks.

The police statistics also will be affected by police recording practices. Variations in these practices across jurisdictions and over time can severely distort our understanding of actual changes in crime rates and their correlation with changes in other variables. In order to calculate probabilities of capture and conviction, and the severity of sentences actually served, we need to relate the police statistics to the court and prison statistics. This is usually extremely difficult to do without detailed study of a large number of individual cases.

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<sup>9</sup> Sophisticated statistical analysis is beyond the scope of this report. We briefly discuss the statistics for New Zealand merely to refute the claim that even a superficial analysis can demonstrate that the New Zealand experience contradicts the economic approach.

## Using individual data rather than, or in addition to, aggregate crime statistics

Economists interested in testing the economic theory of crime have increasingly turned to data sets on individual behaviour. For example, Grogger (1991) formed a data set of 13,978 individuals who had been arrested in California. He had the California Department of Justice merge official arrest records with earnings records used to determine eligibility for unemployment insurance benefits that were on file at the California Employment and Development Department. He then used multiple regression analysis to explain the number of times each individual in his sample was arrested in 1986. The explanatory variables he used were:

- The proportion of adult arrests prior to 1986 that resulted in a conviction. This was taken to measure 'the individual's expected certainty of punishment'.
- The average length of prison sentences served since age 18. This was taken to measure 'the expected severity of punishments'.<sup>10</sup>
- The total amount of time the individual had spent in prison since age 18. This was used as 'an indicator of criminal human capital'.
- The number of quarters in 1986 during which some positive earnings were reported. This was used as a measure of employment opportunities.<sup>11</sup>
- Reported earnings for 1986 from establishments which contribute to the unemployment insurance system. This was used as a measure of income able to be earned from legitimate employment opportunities.
- For all individuals who reported zero earnings in the first quarter of 1986, the number of quarters since the individual last had positive earnings or was released from prison, whichever was more recent. This was used as a measure of lack of legitimate labour market experience.

Grogger summarised the results of his analysis as follows:

The expected decrease in the number of arrests stemming from a one-standard deviation increase in the conviction rate is about 19 percent. In contrast, we see that an increase of one month to the expected prison sentence (insignificantly) reduces criminal activity, as proxied by arrests, by less than 1 percent. A one-standard deviation increase of over three months brings an expected reduction of only about 3 percent. This evidence suggests that increased certainty of punishment provides a much more effective deterrent than increased severity. . . . A 6 percentage point increase in average conviction rates would deter as many arrests as a 3.6 month increase in average prison sentences.

The coefficient of the contemporaneous prison time variable measures the incapacitative effect of prison. The point estimate indicates that each month in prison reduces the average individual's criminal activity by about 7 percent. . . . The hypothesis that the arrests are reduced in exact proportion to the time spent in prison cannot be rejected at any customary significance level, however.

<sup>10</sup> The implicit assumption behind these first two variables is that the individual's own prior experience dominates all other information in forming his expectations of the probability of being arrested and convicted.

<sup>11</sup> While employment experience in 1986 may not be representative, it is not clear that there should be any bias associated with using it. If a variable is unrepresentative for some individuals, but not systematically biased, the effect will be a reduction in the magnitude and statistical significance of the estimated coefficient.

The coefficient of the total prison time variable provides a measure of the recidivism on the part of released prisoners. The estimated coefficient indicates that each additional month spent in prison increases average arrests by about 2 percent. . . . If arrests are a valid proxy for crimes committed, this effect may indicate an increase in criminal activity on the part of ex-prisoners, stemming either from greater criminal human capital or from negative labour market signals acquired in prison. On the other hand, this result may simply be due to increased surveillance by police of individuals released from prison.

The next three variables measure the responsiveness of my measure of criminal activity to employment and earnings. The coefficient of the employment variable is negative, but not at all significant. The income coefficient, however, is negative and highly significant, indicating that a \$100 increase in earnings reduces arrests by just under 1 percent, on average. This effect is very large; a one-standard deviation rise in income is associated with an average decrease in arrests of 48 percent. The non-employment duration coefficient indicates that increasing the length of a current jobless spell by one calendar quarter increases arrests on average by about 2 percent. A one-standard deviation increase of 4.6 quarters results in an average increase of about 7 percent (Grogger, 1991:304).

Since he had a very large data set, Grogger was also able to examine the effects of the various explanatory variables on different types of crime. He noted that with regard to felonies versus less serious crimes:

Increases in the probability of conviction seem to be more effective in deterring serious felony crimes than less serious crimes. Sanction severity, on the other hand, is about equally (in)effective in deterring both types of criminal activity. . . . Most of the crimes prevented by the incapacitative effects of prison are of the less serious non-felony type. . . . The estimates of the employment effects are quite different for these two types of crimes. An additional quarter of employment is associated with a 4 percent decrease in felonies, but a 6 percent increase in non-felonies. . . . This difference . . . explains the small and insignificant coefficient in the aggregate model; apparently, relatively minor criminal activity complements employment while employment and serious crime are substitute activities. . . . Income effects, in contrast, are roughly the same across crime types, while felony crimes are more sensitive to the duration of a spell of joblessness (Grogger, 1991:306).

He also compared property offences with non-property offences:

Turning . . . to the results for property and non-property crimes, we see that non-property arrests are much more responsive to higher conviction probabilities than property arrests, but that sanction severity matters much more [by a factor of more than 7] for the property offences than the non-property category. Incapacitative effects are larger for non-property offences as well, while increases in criminal human capital lead to slightly greater increases in property offences. Again we see mixed results for the effects of employment. . . . Property crimes and employment are complementary . . . suggest(ing) that relatively minor property crimes are undertaken to supplement income from conventional employment. . . . Property arrests are seen to be roughly twice as responsive to changes in income as are arrests overall, and three times as responsive as non-property arrests (Grogger, 1991:306).

A potentially serious problem with applying the results of Grogger's study is that he examined the experience only of individuals who had already been arrested. In contrast, Tauchen, Witte and Griesinger (1994) examined data for a cohort sample of males born in 1945 and residing in Philadelphia between their tenth and eighteenth birthdays. They used city-wide real expenditure on the Philadelphia police force divided by the number of offences recorded in Philadelphia for each year in the period 1955–63 as a measure of public expenditure on criminal justice in each year. They also examined other measures to check on the robustness of their results. They summarised their results as follows:

We find robust evidence for a general deterrent effect of criminal justice resources. The effect is significant across specifications of the model, measures of criminal justice resources, measures of criminal activity, and estimation methods. Our results suggest that the general deterrence effect may be strongest for individuals with limited previous contact with the criminal justice system. This finding may explain, in part, the difficulties uncovering general deterrent effects in studies of prison releaseses (Tauchen, Witte and Griesinger, 1994:399).

They note that:

The use of individual data on crime and aggregate, city-wide measures of general deterrence avoids some obvious sources of simultaneous equations bias inherent in general deterrence measures based on the individual's own criminal history<sup>12</sup> (Tauchen *et al.*, 1994:406).

They go on to perform a number of tests for the exogeneity of their police resources variable. They comment:

There is, of course, no way to rule out completely the endogeneity of our deterrence measure. We believe, however, that the extensive sensitivity and exogeneity tests in combination with the careful choice of a deterrence measure (police resources rather than a clearance rate or a variable reflecting an individual's experience with the criminal justice system) provide stronger evidence than is customary for the exogeneity of the deterrence variable (Tauchen *et al.*, 1994:408).

As we noted above, a potentially serious problem with the results reported by Grogger (1991) is that they relate only to individuals who had already been arrested. Tauchen, Witte and Griesinger have a sample that includes many individuals who were not arrested within the sample period.

To check on [the possibility that incapacitation explains the deterrence result] we estimated our model excluding individuals incarcerated during the sample period. The estimated coefficients on the police resource variable remained negative and were somewhat larger in magnitude and significance. . . . We find no evidence of a specific deterrence effect<sup>13</sup> (Tauchen *et al.*, 1994:410).

Finally, Tauchen *et al* were also able to examine the effect of legitimate employment opportunities, education and IQ on the propensity to commit crime. They observe:

As do other researchers, we find that the estimated effects of working and of schooling are both significant but that the coefficients on these two variables are not significantly different from one another. The estimated effects of employment and schooling on crime may in part indicate the way in which labour market status affects the opportunity costs of crime. Also, the coefficients on these variables undoubtedly reflect differences in personal characteristics associated with working or being in school.

The estimated coefficients on IQ are negative and significant in all specifications. This is consistent with the hypothesis that individuals with higher IQs have better legal labour market opportunities, but may also reflect the ability of high intelligence individuals to avoid arrest.

Individuals who attended parochial junior and senior high are significantly less likely to be arrested than those who attended public schools. . . . While no definitive conclusion regarding the source of the parochial school effect is possible, the literature and additional work with our data suggest that the effect may stem from non-wage benefits of white-

<sup>12</sup> Unfortunately, Grogger (1991) did not examine his sample for this type of endogeneity problem. It is, therefore, a potential problem with his analysis.

<sup>13</sup> In other words, they find no evidence that crime is deterred *only* because individuals are prevented from engaging in crime while incarcerated. On the contrary, they find expected penalties more likely to deter individuals who have not yet been incarcerated.

collar employment, factors associated with church attendance, or omitted family characteristics associated with parochial school choice. (Tauchen *et al.*, 1994:410-411)

A reasonable summary of the results from these analyses is that the variables emphasised by economists have been found to be statistically significant, and numerically important, factors influencing the propensity of individuals to commit crimes. On the other hand, the ability to explain the variation in the criminal experiences of the different individuals is rather limited. Factors other than those recorded in the data sets appear to be relevant for explaining the choices of many individuals.<sup>14</sup>

While the statistical analyses based on individual data have been more sophisticated than most studies based on aggregate crime statistics, they are not without their own problems. None of the analyses of which we are aware have tested for dynamic elements in individual behaviour. More important, in order to test the economic theory of crime, one needs data on individual beliefs about the probability of arrest and conviction, and beliefs about the likely severity of any penalties that might be imposed following conviction. The data sets do not record data on such beliefs. The researcher has to construct measures of these individual beliefs. The statistical test becomes a joint test of the economic theory of crime and the ancillary assumption about the way individual beliefs are formed.

### A brief survey of recent New Zealand statistics

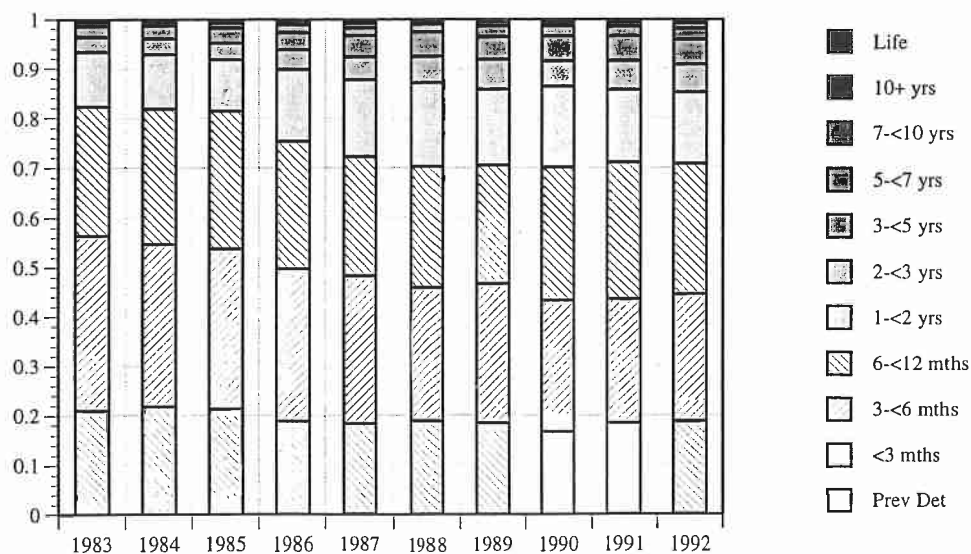
It has been claimed that recent experiences in New Zealand are inconsistent with the economic model of crime. In particular, it has been observed that, while the severity of prison terms increased in the period 1986–88, there were few additional increases in penalty severity beyond 1988 whereas crime rates in New Zealand nevertheless generally tended to increase.

Figure 3.1 (based on data and a similar figure from the New Zealand Department of Justice) graphs the proportion of new prisoners in New Zealand categorised according to the severity of their sentence. The proportion receiving prison terms of less than one year in duration has been hatched. The proportions receiving longer terms have been shaded in grey, with the darkness of shade increasing with the length of the sentence. It is clear from the figure that an increasing proportion of new prisoners in New Zealand received longer sentences from 1986 to 1988. The proportions have then remained fairly stable from 1988 to 1992.

The crime rates in New Zealand in recent years were graphed in Chapter 1. As we noted in that chapter, the crime rate for crimes of violence fell from 1988 to 1989, but increased in all other years from 1984 to 1993. Serious crimes of violence showed an increase throughout the period 1983–1993, although the rate of increase was somewhat lower from 1988 to 1990. Crimes of dishonesty (including burglary, theft and related offences) fell quite substantially relative to the New Zealand population from 1986 to 1988, but the crime rate in this category resumed its upward climb from 1988 until 1992. The rate then fell again from 1992 to 1993. The rate of property damage crimes decreased from 1984 to 1987, and then increased in each of the subsequent years to 1993.

<sup>14</sup> Recall, however, that for the economic theory to be useful we do not need all individuals to be deterred. It is only important that there be a significant marginal response to changes in expected penalties. Linear regression analyses do not test for a different marginal versus average deterrence effect.

Figure 3.1: Proportion of new prisoners receiving each type of sentence



The decreases, or slower rates of increase, in crime rates from 1986 to 1988 could be seen as a response to the increased severity of prison sentences from 1986 through 1988. The resumption of rapid rates of growth in crime rates from 1989 and beyond, however, *does* appear inconsistent with the economic model. The severity of prison sentences, as reflected in Figure 3.1, remained roughly constant throughout this period.

The conclusion that the recent New Zealand experience contradicts the economic model of crime is nevertheless unwarranted. The economic theory argues that the expected penalty (the probability of capture and conviction *times* the severity of the sentence imposed) deters crime. While the severity of punishment is one element of the expected penalty, the probability of receiving each type of punishment is also a crucial determinant. In order to obtain the expected penalty, we need to weigh each of the possible punishments by the probability of receiving them and then add the resulting values. The above statistics *by themselves* do not reveal the change in expected penalties over time.

An extreme example may clarify this argument. Suppose the expenditure on the police and court procedures changed dramatically so that the number of individuals sentenced to a prison term fell to only 100 persons per annum. Suppose that each of these individuals is convicted for a serious crime involving violence and each of them receives a prison sentence of more than one year. All other criminals escape capture or conviction or, if they are convicted, none of them is sentenced to a prison term. The *proportion* of individuals receiving a sentence of one year or more would rise to 100 percent. A bar graph like those in Figure 3.1 would suggest that there had been a marked increase in the severity of sentencing. Since so few criminals would be likely to be caught, convicted and seriously punished, however, the expected penalty for committing any given crime would have declined drastically.

We do not have sufficient data to calculate the change in expected penalties over this time period. The New Zealand Department of Justice did, however, provide us with unpublished statistics, covering the period 1989 through 1993,<sup>15</sup> on the number of cases within each broad category of crime that resulted in a custodial sentence (all determinate

<sup>15</sup> To further investigate the relationship between Figure 3.1 and the crime rates graphed in Chapter 1 we would need data from years prior to 1989, but these were not available to us.

prison sentences including corrective training and the indeterminate sentences of life imprisonment and preventive detention), periodic detention, community care, community service, supervision, fines or reparation, deferment, conviction without sentence and other. The Department informed us that, for a case involving more than one charge, the charge taken to represent the case was the one that resulted in the most serious penalty.

Within each category of crime, we took the number of cases resulting in a custodial sentence, periodic detention or fine in a given year. We took these as indicators of 'serious punishment'.<sup>16</sup> We then divided by the number of offences reported in the police statistics in that category for the same year. The resulting proportions gave us an estimate of the probability of receiving 'serious punishment' for each major crime category for each year from 1989 through 1993. This probability reflects not only the clearance rate for the police but also the likelihood of being convicted by the courts. It also reflects the likelihood of receiving a substantial versus a less substantial punishment following conviction.<sup>17</sup>

Although it was difficult to see how we could obtain a better measure of the punishment probability using the data available to us, this measure nevertheless has some serious defects. In order to calculate actual expected penalties, we would need detailed data on the probability distribution of the lengths of different sentences, or the amounts of fines, imposed. We would also need to know how sentences served relate to the sentences imposed. The measure of the number of crimes is also likely to be incorrect since many crimes are not reported to the police. Under-reporting of crimes would imply that the true probability of receiving a substantial penalty is lower than the figure we have calculated. This bias may, however, be less significant for more serious crimes since these are more likely to be reported to the police.<sup>18</sup>

There are also problems with relating the police and Justice Department statistics in the way we have done. The statistics on crimes reported, which are recorded by the police, do not match the 'case' basis of the Justice Department statistics. When there are multiple offenders and only one offence, the police statistics record just one offence whereas each of the offenders will be a case in the Justice Department statistics. When one offender commits a number of offences at the same time, each offence is entered separately in the police statistics, while the Justice Department statistics would only record the charge

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<sup>16</sup> We could have experimented with alternative definitions in an attempt to obtain statistics that 'better matched' the theory. We did not do this since we think such 'data mining' seriously compromises the use of statistical analysis as a check on the validity of a theory. The graphs presented below were all based on the first estimate of the probability of receiving 'serious punishment' that we calculated. In our view, any credible statistical analysis should report the amount of 'experimenting' the investigator has undertaken so that the reader can discount the evidence for any 'cooking of the numbers' that may have occurred.

<sup>17</sup> These probabilities reflect the 'objective' chance of receiving a substantial penalty following the commission of a serious crime. The deterrence effect depends on the 'subjective' probability, in the minds of potential criminals, of receiving substantial punishment. Unfortunately, we do not have data on these subjective beliefs. They are probably impossible to obtain. By using the objective probability we are effectively 'testing' not only the economic theory of crime but also the ancillary assumption that the beliefs of potential criminals about the probability of capture, conviction and punishment are not systematically biased.

<sup>18</sup> An increase in the proportion of crimes reported to the police may produce a spurious negative correlation between the variables graphed below. For example, suppose the additional crimes are of a less serious nature, and do not result in the convicted criminal receiving a 'substantial penalty'. The recorded crime rate would increase, while the measured probability of receiving a 'serious penalty' would decline. The resulting negative correlation would not reflect an underlying causal link between the likelihood of receiving substantial punishment and the crime rate. We thank a referee for this observation.



that resulted in the most serious penalty. Finally, the cases reported in the Justice Department statistics are likely to relate to at least some crimes reported in the police statistics from previous years.

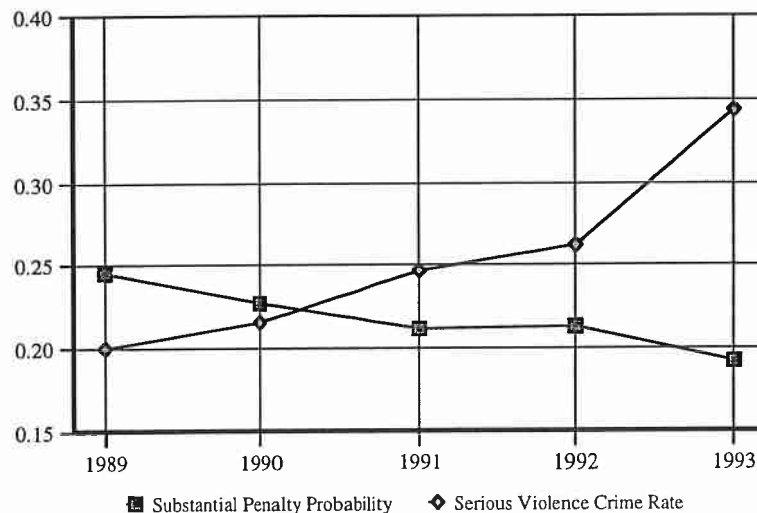
As we noted above, there are also serious doubts about what can be learned from a pairwise correlation between two variables when many factors affect the variables of interest. Multiple regression analysis is a more reliable statistical method to use in such cases. In this particular application, there is also the problem that both the amount of crime and the size of the expected penalty are likely to be jointly determined endogenous variables. Even multiple regression analysis is, therefore, unlikely to give accurate estimates of the effect of a change in the expected penalty on the crime rate. One needs to use instrumental variables, or other simultaneous equation estimation techniques, to control for the simultaneity bias. The application of such statistical techniques to New Zealand data would be beyond the scope of this study, even if we had appropriate data available to us. The collection of statistics that would make such an analysis feasible ought, however, to be a priority of the Justice Department.

### *Violence*

As in Chapter 1, we grouped reported crimes in the categories of homicide, kidnapping or abduction, robbery, grievous assaults, serious assaults by a male on a female and sexual violation into a category we called 'serious violence'. For each year from 1989 through 1993 we then divided this sum into the number of cases involving violence that resulted in a custodial sentence to arrive at a probability of receiving a 'serious penalty' for crimes involving 'serious violence'.

The resulting ratios are graphed along with the corresponding crime rates per 100 people in New Zealand in Figure 3.2. This figure clearly suggests, contrary to the message conveyed by Figure 3.1, that expected penalties for serious violence continued to decline from 1989 through 1993, while the crime rate increased.

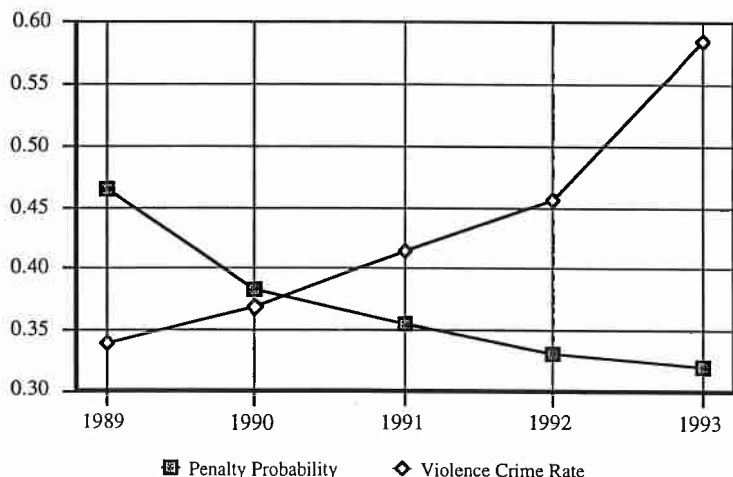
Figure 3.2: Penalty probability and crime rate—serious violence



If we widen the definition of 'violence' to include 'all serious assaults' and also 'other sexual attacks', and we widen the definition of 'substantial penalty' to include the cases that resulted in periodic detention or fines, we arrive at Figure 3.3.

Again the probability of receiving a substantial penalty for these types of crimes appears to have declined throughout this period. The negative correlation between the crime rate and the probability of suffering a substantial punishment is clearly evident in the figure and shows up strongly in a simple regression of these two variables.

Figure 3.3: Penalty probability and crime rate—violence

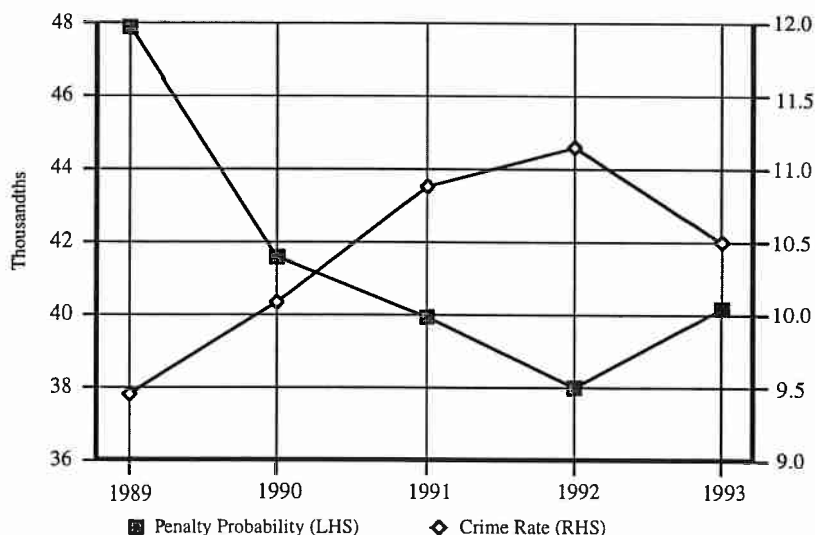


The Justice Department statistics include a category of cases involving ‘other offences against the person’. Serious driving offences would be included in this category. Since we have not been presenting statistics on any of the driving offences, we omitted this category.

*Property offences*

We compared the Justice Department category of ‘cases involving property offences’ with the Police statistics categories ‘dishonesty’ and ‘property damage’. The crime rates and probability of receiving a custodial sentence, periodic detention or fine for this category of offence are graphed in Figure 3.4. The scale for the crime rate per 100 people in New Zealand is on the right hand axis. The scale for the probability of receiving ‘serious punishment’ is on the left hand axis (in thousandths).

Figure 3.4: Penalty probability and crime rate—property offences

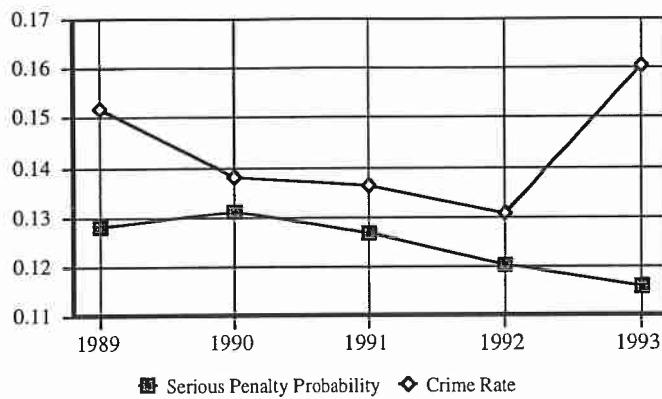


The negative correlation between the two series is again quite striking. It is interesting that the decrease in the crime rate in this category from 1992 to 1993 was associated with an increase in the probability of receiving a serious sentence.

### *Drug offences*

The final category of crime we examined was drug offences. The relevant crime rates per 100 people and probability of serious conviction are presented in Figure 3.5. In this instance, the two series are not very negatively correlated. A regression analysis shows that the crime rate per 100 people in New Zealand is negatively related to the ratio of serious convictions to the number of reported crimes. The coefficient, however, is not statistically significantly different from zero.

Figure 3.5: Penalty probability and crime rate—drug offences



## CHAPTER FOUR

# ALTERNATIVE THEORIES OF CRIME

There are many theories of the causes of crime. Some suggest that crime is caused by medical or psychological conditions. Others claim that a poor upbringing and low living standards force people into a life of crime. Violence in the media has been blamed for crime, as have poor diet, alienation from society and a lack of maternal bonding.

The economic model of crime does not suggest that alternative theories of crime are useless in explaining some individuals' criminal behaviour. Rather, economists claim that the behaviour of many criminals is a rational response to their lack of marketable skills or, more generally, their relative suitability for criminal behaviour. The economic account of crime is consistent with theories that suggest poor parenting and poor education lead people to commit crimes. Those who lack a good family life often do not possess the social skills necessary for holding a legitimate job. Similarly, a low level of education makes it difficult for a person to find good, legitimate employment.

### Criminological determinism

Many theories of crime are based on the idea that criminals are predisposed to criminal activities due to some underlying biological, physiological or psychological defect. These theories may be called 'deterministic' because they suggest that it is nearly impossible for certain people to avoid becoming criminals. There are three types of deterministic theories. The first group of theories suggests that crime is caused by genetic defects, the second suggests that crime is caused by poor physiology, and the third suggests that crime is caused by psychological problems.

#### *Genetic factors*

There have been many historical accounts attributing criminal behaviour to 'bad blood' in the family. Families that possessed certain genetic defects were said to make up a 'criminal class' (Elmsley, 1987:58–72). Other theories suggested that certain skull shapes and body types caused people to become criminals (Fink, 1962:153).

More recently, studies have compared twins and adopted children to determine whether there is a genetic component to crime. Identical and fraternal twin boys were examined for their tendency to become criminals. Studies suggested that it was more likely that both boys in a pair of identical twins would become criminals than that both boys in a pair of non-identical fraternal twins would become criminals (Wilson and Herrnstein, 1985:90–94). Another study examined boys who were placed for adoption. Boys whose biological parents were criminals were more likely to become criminals than those whose biological parents were not criminals. The adoptive parents' criminal tendencies (or lack of them) had less of an effect on the boys' criminality than the biological parents' criminal tendencies. These studies purported to demonstrate that crime is caused by a genetic defect (Wilson and Herrnstein, 1985:95–100). Each of these studies has been criticised because of the small sample sizes and poor statistical techniques used (Fishbein, 1990:44). As Curran (1994:61–2) noted recently:

Adoption researchers do not utilise a consistent definition of criminality. Some employ diagnostic categories, such as antisocial personality, which often are determined by questionable criteria (such as using 'bad language' or spending money 'irresponsibly'). . . . A second serious shortcoming in these studies stems from the amount of time children spend with their biological parents before being relocated to new homes. For research purposes, the ideal condition would be to examine children who were separated from their biological parents at birth. . . . The research shows that the offspring separated from their mothers at a later age and those who spend more time in institutions are more likely to be diagnosed antisocial or to have criminal records. Thus, it may be that the quality of early parenting, rather than genetics, influences criminal behaviour.

### *Chromosomal abnormalities*

Some studies have suggested that men who are born with an extra Y chromosome are at increased risk of becoming criminals. These so-called XYY males constitute 1–2 percent of the prison population, although this genetic defect occurs in only 1 in 1000 boys (Wilson and Herrnstein, 1985:101–103).

Because XYY males make up such a small percentage of criminals, this genetic defect could not account for a great deal of the crime that takes place in a country such as New Zealand. Moreover, it may be the case that XYY males have other medical or psychological problems that make it difficult for them to find legitimate employment. The economic theory of crime would suggest that the XYY chromosomal defect need not in itself cause crime, but may lead to factors that make individuals less suited for legitimate employment or more adept at activities required to commit certain crimes. One could test out the economic theory in this case by examining whether a purported genetic influence on criminal behaviour alters the returns to crime relative to alternative careers. Another explanation for the correlation might be that XYY criminals are more likely to be caught than criminals who do not have this defect. For example, having an XYY chromosome defect could affect intelligence or communication skills that are crucial to evading capture or conviction successfully. Thus XYY males may be no more common in the criminal population, although they are over-represented in the prison population.

### *Physiology and criminal behaviour*

In the 1800s, some physicians claimed to show that crime was caused by poorly shaped skulls (Fink, 1962:13). Others maintained that criminals had abnormal facial features that led to the commission of their crimes (Lombroso, 1876). Juvenile delinquents in the late nineteenth century were found to be underweight, short, weak, sickly and unintelligent (Fink, 1962:135). These traits were said to cause them to commit crimes. Although all of these early studies have been discredited, due to the poor research and statistical techniques used, modern studies have pursued the notion that crime is caused by certain physiological traits.

In the 1950s, studies comparing the body types of female delinquents with Oxford University undergraduates found that the delinquents were shorter, fatter and more muscular. Another study of delinquents in the United States claimed that they were, on average, more muscular than non-delinquents (Wilson and Herrnstein, 1985:87–88). It seems that thin, physically weak people are under-represented among modern criminals.

Although criminals may, on average, be stronger and heavier than non-criminals, it does not follow that these traits cause a person to become a criminal. An economist would

argue that, other things being equal, a person possessing above-average physical strength may find criminal pursuits more attractive than legitimate ones. Suppose two individuals Smith and Jones were considering burglary or working at a restaurant as a means of supplementing their income. The restaurant pays the minimum wage. Burglary has the potential of providing a much higher hourly wage, although it is more risky. Suppose these individuals were alike in all respects except one: Smith is muscular and Jones is not. Smith is more likely to commit burglary than Jones because he is better suited for the job. Burglary often requires opening doors and windows with crowbars, leaping over fences and fighting with victims. A non-muscular person is clearly at a disadvantage in performing these tasks. If Smith chooses to commit burglary, his muscularity is an advantage, but being muscular did not cause him to commit the crime. He still chose burglary over working in the restaurant because he believed the pay-off to him was likely to be higher.

There have been many attempts to demonstrate that crime is caused by biological factors such as genetic defects, body types and facial features. There may be some correlation between certain physiological characteristics and criminal behaviour. Economists maintain, however, that these traits may contribute to making an individual more suited for criminal pursuits than for legitimate ones.

### Psychological causes of crime

Many psychological studies have attempted to demonstrate that criminals are mentally different from non-criminals. Criminals are said to have low IQs, suffer from mental illnesses and have unusual personality traits. These studies are not necessarily inconsistent with the economic approach. Economists would emphasise, however, that psychological factors do not *directly* cause an individual to become a criminal. Rather, they may influence the relative attractiveness of using one's time, energy and other resources to commit crimes rather than satisfying one's desires through legitimate activities. Alternatively, since many of the psychological studies are done on *prison inmates* (rather than a representative sample of criminals), the results of the studies might reflect factors that are more likely to cause a criminal to be caught and convicted.

For example, recent studies show that criminals have, on average, lower verbal IQs than non-criminals, but score normally in other respects on IQ tests. Criminals may, thus, be less able to function in a working environment requiring good communication skills. Their legitimate job opportunities may be limited by their poor verbal skills (Wilson and Herrnstein, 1985:165–66). Criminals with poor verbal skills might also be less able to avoid conviction than those better able to communicate with their lawyers or perform better in a trial. The criminals with worse verbal skills would then again be over-represented in the prison population relative to their numbers in the population of criminals.

Furthermore, studies of juvenile delinquents suggest that they are more likely than non-delinquents to be emotionally unstable, impulsive, suspicious and hostile. Delinquents display antisocial behaviour as early as the third grade in school (Wilson and Herrnstein, 1985:179). If it is the case that criminals tend to have antisocial personalities, they may find it difficult to keep and hold good jobs. Thus, a life of crime may be more attractive to those with antisocial personalities than a life filled with legitimate pursuits. Economists argue that having an antisocial personality does not cause one to become a criminal.

Rather, a person with an antisocial personality may be more likely to choose to be a criminal than a person with a normal personality. It may also be the case that people with antisocial personalities are less likely than normal people to respond to social pressures against criminal behaviour. The social cost of committing crime would be lower for antisocial people than for normal people.

Finally, when prison inmates are assessed using personality tests, many are found to deviate from normal on the psychopathic, schizophrenic, hypomania and depression scales on the Minnesota Multiphasic Personality Inventory (MMPI) (Wilson and Herrnstein, 1985:186–87). But testing individuals' personalities while they are in prison yields questionable results. Incarceration causes many psychological problems that may influence the results on personality tests. For example, it is not surprising that prisoners are more depressed than normal people. Nor is it surprising to an economist that criminals are more likely to be psychopathic than non-criminals. Psychopaths are, by definition, risk-lovers who do not become anxious during events that are normally considered to be stressful. A psychopathic personality might be helpful during robberies, burglaries or other risky crimes (Fishbein, 1990:37). In addition, as we noted in Chapter 2, an implication of the economic account of crime is that criminals are likely to be less risk-averse than noncriminals.

### Family life and criminality

Many studies attempt to show that criminality is caused by inadequate child-rearing practices. Longitudinal studies of juvenile delinquents suggest that criminals are more likely to come from inadequate families, but the effects of single-parent households and child abuse on criminality are unclear (Wilson and Herrnstein, 1985:98–99).

At least one study concluded that unaffectionate parents who did not discipline their children were more likely to have delinquent offspring. Highly subjective data, however, were used in this study. Social workers interviewed parents about their child-rearing practices in order to determine which practices were most likely to result in delinquency. The interviewers knew, however, which families contained the delinquents and which did not. Thus, the results of the interviews may have been biased by the social workers' prior knowledge of the family. A more objective method of determining actual child-rearing practices is required in order to evaluate these earlier studies of delinquents (Wilson and Herrnstein, 1985:213–219).

The economic theory of crime is consistent with the idea that family life and upbringing could affect whether a person chooses to become a criminal or not. A great deal of education (especially social education) takes place in the home, and parents are the ones who ensure that children attend school, complete homework and receive other training that is useful later in holding legitimate employment. A person with a good education has more and better job opportunities than a person with a poor education.

Strong families may also increase the *probability* of punishment for deviant behaviour. Many crimes are committed by adolescents. If parents become aware of delinquent behaviour in their children, punishment can be meted out immediately. If a police officer apprehends a juvenile delinquent, there will be a delay in punishment, due to the time required for trial and conviction. Parents have more flexibility than the police in increasing the certainty of punishment, as well as its severity. The economic model of

crime suggests that criminals may be more concerned with the probability of punishment than they are with its severity. Specifically, an increase in the probability of conviction may increase deterrence when it is combined with a fall in the severity of punishment sufficient to leave the *expected* severity unchanged.<sup>19</sup> Thus, children may be deterred from crime by parental supervision and punishment if that punishment is substantial, swift and certain.

A strong family may also be a useful deterrent to crime because many of the penalties for crime are social penalties, such as ostracism. In a society with strong family ties, members of each family will seek to constrain the criminal behaviour of each other member, since criminal behaviour may result in ostracism from society for the whole family. It has been argued that the low crime rate in countries such as Japan supports this claim. As noted in Katoh (1992):

We [the Japanese] have a homogeneous social structure. The informal control systems of society, those of family, school, neighbourhood, work place (office) and also mass media, are functioning comparatively well in our community. Regardless of the urbanisation and anonymity of life in the big city, we always have to consider that such informal social controls affect our everyday life. The lifestyle and life feelings of our young generation have drastically changed, especially since the end of the 2nd World War. But thought patterns and behavioural patterns have not fundamentally changed. For example, most people like to take the decisions or lifestyle of the neighbours and acquaintances into consideration and their decisions depend on one another's.

In Japan, family relations are still intact. But if these relations are damaged, it will manifest itself in the form of so-called family violence. Recently, in Japan, it has been reported that children are hitting their parents and that fathers hit their wives and children because of their own frustrations. I think the relationship in families changes with the changes in social structures (Katoh, 1992: 79–80).

On the other hand, although reported crime in Japan is very low, there may be a considerable amount of unreported crime. As Katoh notes:

The Japanese criminal organisations try to avoid involving people from outside their organisations in crime, especially crimes of a violent nature. If for example a day-light shoot-out takes place, this can usually be put down to rivalry, revenge and reprisals between gangs. Organised crime is responsible for only 6.6 percent of reported offences. The dark area of this criminality is very large, as offences between criminals do not usually come to the attention of the police (Katoh, 1992:74).

It should also be noted that one additional reason for the low crime rate in Japan may be that the Penal Code and the Code of Prison Practices are very severe. Both codes came into force in 1908 and have remained unchanged. They were based on German law of the nineteenth century, and punishment of forced labour and the death penalty are allowed under Japanese law (Katoh, 1992:77–78). The combination of high probabilities of capture and conviction with severe punishments is an important reason why the average Japanese person (who is not a member of a gang) does not need to worry very much about crime.

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<sup>19</sup> Of course, if the punishment is trivial, the deterrent effect will be slight even when a person is certain of receiving it.



## Sociological accounts

There are many sociological accounts of the causes of crime. While they differ in detail, most of these accounts attribute crime to factors outside the control of the individual.

### *Strain theories*

One group of theories, called strain theories, is based on the idea that people are basically good. They want to conform to the rules of society, and they only deviate from those rules when they are under some kind of 'strain'. For example, an honest businessman may be under the strain of trying to pay his child's tuition bill at Harvard. The strain causes him to embezzle funds from his company. He did not freely choose to embezzle (Hirschi, 1969:4-6).

### *Cultural deviance theories*

A second group of sociological theories, called cultural deviance theories, is based on the notion that children either learn to conform to the rules of the middle class or they do not. If a child is raised by parents who do not reinforce acceptable middle class behaviour in him, the child will become a delinquent. Delinquency is caused when a person does not embrace the norms and values of the middle class and creates his own standards of behaviour. Again, individuals fail to embrace the morals of the middle class when they suffer from an inadequate upbringing. Thus, individuals do not voluntarily commit crimes, but are driven to crime due to their poor moral education (Sutherland, 1956:9).

### *Control theory*

A third group of theories, called control theories, maintains that an individual commits a crime when his bonds or attachments to society are broken. The attachments to family, school and other social institutions are used to measure bonds to society (Hirschi, 1969:16). One control theorist, Travis Hirschi, has altered his theory recently and now suggests that people commit crimes when they suffer from low self-control. Low self-control results from poor upbringing. (We discuss Hirschi's new theory in more detail below.)

### *Violence in the media*

Deviant behaviour has been blamed on violence in the media since early times. In discussing the education of future leaders, Plato noted in c. 390 BC:

You know also that the beginning is the most important part of any work, especially in the case of a young and tender thing; for that is the time at which the character is being formed and the desired impression is more readily taken. . . . And shall we just carelessly allow children to hear any casual tales which may be devised by casual persons, and to receive into their minds ideas for the most part the very opposite of those which we should wish them to have when they are grown up? . . . The first thing will be to establish a censorship of the writers of fiction, and let the censors receive any tale of fiction which is good, and reject the bad; and we will desire mothers and nurses to tell their children the authorized ones only . . . .

Neither, if we mean our future guardians to regard the habit of quarreling among themselves as of all things the basest, should any word be said to them of the wars in heaven, and of the plots and fighting of the gods against one another, for they are not true. No, we shall

never mention the battles of the giants, or let them be embroidered on garments, and we shall be silent about the innumerable other quarrels of gods and heroes with their friends and relatives. . . . For a young person cannot judge what is allegorical and what is literal; anything he receives into his mind at that age is likely to become indelible and unalterable; and therefore it is most important that the tales which the young hear first should be models of virtuous thought (Plato, 1989:62–64).

Plato, anticipating those who object to violent cartoons on television, noted that the Greek myths were corrupting the young of Athens. By listening to stories about Zeus fighting with Hera, toddling Athenians were being encouraged to fight with each other and engage in other types of deviant behaviour. These violent stories left an indelible imprint on Greek minds, according to Plato, and these tales needed to be suppressed in favour of more improving ones.

St. Augustine, lamenting his misspent youth, noted that he was corrupted by the Greek tragedies and comedies to which he was irresistibly drawn. As he remarked in his *Confessions* (AD 397):

I was much attracted by the theatre, because the plays reflected my own unhappy plight and were tinder to my fire. Why is it that men enjoy feeling sad at the sight of tragedy and suffering on the stage, although they would be most unhappy if they had to endure the same fate themselves? Yet they watch the plays because they hope to be made to feel sad, and the feeling of sorrow they enjoy. What miserable delirium this is! . . . Whether this human agony is based on fact or is simply imaginary, if it is acted so badly that the audience is not moved to sorrow, they leave the theatre in a disgruntled and critical mood; whereas, if they are made to feel pain, they stay to the end watching happily . . . .

In those unhappy days I enjoyed the pangs of sorrow. I always looked for things to wring my heart and the more tears an actor caused me to shed by his performance on stage, even though he was portraying the imaginary distress of others, the more delightful and attractive I found it. Was it any wonder that I, the unhappy sheep who strayed from your [God's] flock, impatient of your shepherding, became infected with a loathsome mange? (Augustine, 1961:55–57).

From ancient times until the present, deviant behaviour has been blamed on the media. In the nineteenth century, members of the public and the judiciary complained that increased literacy was leading to a crime wave. Young boys were reading too many detective novels, and these corrupting works were inspiring them to commit crimes (Elmsley, 1987:7).

Despite recent attempts to demonstrate that violence in the media, particularly on television, has caused an increase in crime, no significant effect has been shown (Withers, 1984). If there is a positive *correlation* between those who watch a lot of television and those who commit crimes, the economic model of crime suggests that it may be due to the fact that criminals have poor educational attainment and thus spend less time reading for entertainment. Their lack of verbal skills may also make them less likely to spend their leisure time in social pursuits, such as visiting friends or attending parties. They may also have a very low value of time. Criminals may enjoy watching a lot of television, but it does not follow that television viewing causes them to commit crimes.<sup>20</sup>

<sup>20</sup> We are not suggesting that television viewing has an improving effect on people's moral outlook or that it is a productive use of anyone's time. We are merely claiming that criminals should not be considered less responsible for their actions because they watched violent or mind-numbing programmes on television. Excessive television viewing should not be accepted as an excuse for criminal behaviour.

## Education

Children who do poorly in school are more likely than good students to become juvenile delinquents. Misbehaving in school is often the beginning of a child's 'criminal' career. Delinquents have lower verbal IQs than non-delinquents and are more likely to drop out of school (Wilson and Herrnstein, 1985:269-275).

Poor achievement in school does not cause crime directly, according to the economic model. Rather, having a bad education limits a person's job opportunities. Certain social skills are learned at school, such as following directions, respecting authority, getting along with others and showing up on time. When these skills are lacking, along with inadequate reading, writing and mathematical knowledge, a person will have a difficult time holding legitimate employment. Thus, a poor student may choose a criminal career over a legitimate one because his legitimate opportunities are so unattractive.

## Sociological responses to the economic theory of crime

Most criminologists have ignored the economic theory of crime. Individual rationality, and particularly changes in behaviour in response to changes in expected costs and benefits, were not considered to be very relevant in discussions of criminal behaviour. Recently, however, some criminologists have examined whether there may be a role for rational individual decision making. The most detailed discussion of the economic approach by criminologists that has come to our attention is that of Gottfredson and Hirschi (1990). Their book contains much more than a discussion of the economic approach to crime. We shall discuss this part of their book in some detail, however, because we are primarily interested in the economic approach. We shall argue that many of the criticisms directed at the economic approach by Gottfredson and Hirschi display fundamental misunderstandings of the economic theory of crime.

As we noted in Chapter 1, classical economists such as Bentham and Beccaria maintained that explanations of criminal behaviour were based on the same principles and underlying explanations as other forms of human behaviour. Individuals engage in crime when they believe that the benefits (or pleasures) they are likely to receive will outweigh the costs (or pains) they are likely to incur. In other words, each of us is a rational calculator of pleasures and pains, and we choose to act in a way we expect is likely to maximise our pleasures. We may forgo certain immediate pleasures in order to obtain the probability of other long-run pleasures. People estimate the probability of bad consequences of any of their actions (including possible punishment) before they act.

In the nineteenth century, as we have mentioned earlier, certain scholars suggested that criminals were inherently different from non-criminals. Some suggested that criminals were biological throw-backs to more primitive creatures in the chain of evolution. Others noted that criminals came from inferior families, were often of puny size and intelligence, and that they were corrupted by reading gory detective stories (see Buchanan and Hartley, 1992:62). One result of this so-called 'positivist' thinking was promotion of the idea that criminals are not responsible for their behaviour. A criminal is not rational when he commits a crime; rather, his behaviour is determined by his genetic make-up, his psychological problems or other factors outside of his control.

In the twentieth century, further studies in the positivist tradition have attempted to show that there is a significant genetic component in crime, that criminals score poorly in the verbal section of IQ tests, that they come from families where the discipline is too lax or too harsh, that they are not properly bonded to their schools and societies, and that they have abnormal psychological profiles when tested in prison (for example, they are risk-loving). Many of these studies have been shown to utilise questionable research techniques. Regardless of the validity of these studies, however, they do not demonstrate that criminals are irrational when they engage in crime. Many of the factors that distinguish criminals from non-criminals are also factors that influence the attractiveness of criminal acts relative to legitimate employment. Thus, a person who cannot communicate well, has a poor upbringing, does badly in school and enjoys taking risks may be well-suited to the 'job' of being a burglar and ill-suited for anything else (Buchanan and Hartley, 1992).

Gottfredson and Hirschi (1990:xiii) acknowledged the problems that face modern criminology when they wrote:

We have for some time been unhappy with the ability of academic criminology to provide believable explanations of criminal behaviour. One after another, the disciplines have staked a claim to crime, and each has ended up saying about crime what it says about nearly everything else. No explanation consistent with a disciplinary perspective seems to have the ring of truth. Public policies have pretty much exhausted the possibilities available to those who would use the criminal justice system to combat crime, moving from rehabilitation, through deterrence, to incapacitation. Policymakers ask in vain for ideas to justify pursuing one solution rather than another, and as a result they are at the mercy of whatever proposals come along, from more police to fewer drugs, from more career-criminal programmes to fewer furloughs, from sting operations to neighborhood watch.

Gottfredson and Hirschi maintain that the classical approach to human behaviour (that is, the one propounded by the classical economists such as Bentham and Beccaria) is more effective than the positivistic theories in explaining criminal behaviour as a species of deviant behaviour. They note:

The classical image of human nature and the classical conception of the criminal act seemed to us better able than any positivistic theory to accommodate the finding that crime is only part of a much larger set of deviant acts, acts that include accidents, victimizations, truancies from home, school, and work, substance abuse, family problems, and disease. It is also known that crime is heavily concentrated among the young, and the differences between people in their propensity to crime are reasonably stable over long periods (Gottfredson and Hirschi, 1990:xiv).

Gottfredson and Hirschi attempt to reconcile the classical and positivist traditions in criminology by suggesting that criminals are rational, but criminals are also individuals who have low self-control. That is, criminals seek pleasure and avoid pain, but they are more concerned with short-run gains than long-run ones. Criminals are generally ostracised, so that social penalties against crime are ineffective against them. Social penalties are, according to Gottfredson and Hirschi, more important than legal sanctions.

Although Gottfredson and Hirschi favour the classical approach to crime, they are critical of theories of crime based more explicitly on economic reasoning. They argue:

But perhaps the most general failing of economic analysis is its unexamined tendency to regard crime as 'work', as the illegitimate equivalent of labour-force participation. This

fundamental misconception of crime leads to the view that the decision to engage in crime has the same properties as the decision to engage in any other income-producing occupation, that it has career characteristics (e.g. specialization), that it can be a realistic source of lasting income, that its pursuit is compatible with the pursuit of legitimate activities, and that its participants respond to fluctuations in risk created by crime-control bureaucrats . . . .

The data on property crime cannot be reconciled with the view of crime derived from economic models of work. The modal age for burglars is about seventeen, and the rate of burglary declines rapidly with age (Hirschi and Gottfredson 1983). The most likely 'pecuniary' outcome for a burglar is no gain, and his next offense is likely to be something other than burglary. Shoplifting of something he does not need or cannot use is high on the list of probabilities, or an offense likely to terminate his legitimate and illegitimate careers—such as rape, assault, or homicide—for (again) no pecuniary gain is also highly probable. In the unlikely event that he is legitimately employed, his most likely victim will be his employer, an act difficult to reconcile with maximization of long term utility or the equation of legitimate work with risk avoidance. Because research shows that offenders are versatile (Wolfgang, Figlio, and Sellin 1972; Hindelang, Hirschi, and Weis 1981; Klein 1984) our portrait of the burglar applies equally well to the white-collar offender, the organized-crime offender, the dope dealer, and the assaulter; they are, after all, the same people (Gottfredson and Hirschi, 1990:74).

Gottfredson and Hirschi suggest that the economic account of crime has the following features:

- decisions about engaging in crime are no different from other decisions people make about earning money;
- crime is a career and requires specialisation;
- crime is a source of lasting income;
- one can engage in legitimate activities and criminal activities at the same time;
- criminals respond to changes in the probability of capture and punishment; and
- crime is a long-lasting career, although data show that the tendency to commit crime peaks at age 17 and declines rapidly thereafter.

Let us consider each of these points.

- *Decisions about engaging in crime are no different from the sorts of decisions people make about earning money*

Gottfredson and Hirschi maintain that when people engage in crime, they do so impulsively. When a person goes about earning money by legitimate means, he plans ahead and does not act impulsively. It is not clear to us that 'impulsiveness' is a good criterion for distinguishing between legitimate and illegitimate activities. Many people do earn money impulsively. Opportunities for making large amounts of money often do not last long simply because they are a great attraction to many people. Of course, others may wash windshields on a street corner, trim trees or perform other odd jobs that do not require a lot of planning or prior investment in education or training. By the same token, many crimes do require a lot of forethought. Commercial burglaries are often carefully designed and executed. Evidence suggests that experienced shoplifters plan where, when and what they will steal (Cornish and Clarke, 1986). A central tenet of the economic model of crime is that criminal decision making is no different from other sorts of decision making. Even if a person is impulsive, it does not mean that he will not alter his behaviour in response to changes in expected penalties (see Chapter 1 for further discussion of this point).

- *Crime is a career and requires specialisation*

There is nothing in the economic model of crime that requires criminals to specialise. In fact, it may be maximising for criminals to alternate between criminal activities in order to reduce the probability of detection. For example, suppose a criminal, Mr Clark, had shoplifted televisions from a number of stores recently. The staff will be suspicious of anyone hanging around the television departments in shops, and the probability of detecting a shoplifter may increase. Clark might sensibly decide to take up burglary or robbery instead of shoplifting, in order to avoid detection by the police. One study of criminals noted:

Whereas many offenders said that they did not think about being caught, some also said that they chose to rob rather than to burgle or shoplift because of prior apprehensions for those crimes. One chose to rob because he was on probation for burglary and was fearful of getting caught for that again (Feeney, 1986:68).

It is not surprising that many criminals engage in the 'crime' of under-age drinking or taking illegal drugs, as well as property crimes, as these activities fulfill quite different needs. Property crimes provide people with money or goods that can be sold for money. Smoking marijuana and drinking alcohol help people to relax. If we say that a burglar does not specialise in burglary because he also smokes marijuana, we may as well say that a doctor does not specialise in medicine because he also drinks martinis. Smoking marijuana and drinking alcohol provide similar pleasures, although one is a crime and the other is not (for adults, at least). In short, people may commit many different types of crime and yet can still be said to specialise in certain activities. (Indeed many of us commit diverse crimes every day when we exceed the speed limit while driving, fail to fasten our seat belts, or roll through stop signs on deserted roads.)

Although there may be good reasons why criminals should diversify their deviant activities, recent studies have suggested that many of them do specialise in certain types of crime. As Kempf (1986:198) points out:

This study examined juvenile specialization among 27,160 persons and followed their criminal behaviour to age 27. The research findings indicated that patterns of specialization do exist and remain even when race, gender, unique juvenile career stages, and adult offender status are separately controlled. These findings suggest that notions such as Klein's (1979:169) espousal of 'cafeteria style delinquency' are premature in their dismissal of offense specialization and lend support to the emphasis on crime-specific explanations by Clarke and Cornish (1985).

- *Crime is a source of lasting income*

Nothing in the economic account of crime suggests that crime is a lasting source of income. On the contrary, the economic model implies that people will move in and out of legitimate and illegitimate businesses, depending on the respective benefits they expect to receive from each. It might be argued that if criminals learn various tricks of the trade or make better contacts as they commit more crimes, they might be expected to engage in more criminal activities over time. As marginal costs fall and/or marginal benefits rise, criminal activity becomes more attractive. As we alluded to above, however, previous criminal activity could raise the probability of capture and conviction for any new crime substantially. In addition, someone who has already committed several crimes and escaped prosecution might have more at stake if capture for a new crime exposes him to a higher chance of being caught for previous crimes.

- *One can engage in legitimate activities and criminal activities at the same time*

This seems to be obviously true. Robbers typically do not steal everything they use. Rather they steal valuable things, sell them and use the money to buy things they want. Embezzlers obviously engage in legitimate and illegitimate activities at the same time. By definition, one cannot embezzle if one is unemployed.

- *Criminals respond to changes in the probability of capture and punishment*

Despite Gottfredson and Hirschi's belief that criminal acts are usually impulsive, evidence suggests that criminals do respond to changes in the probabilities of capture, conviction and punishment. The data presented in Chapter 3 are not inconsistent with the claim that crime has increased in New Zealand in recent years because the probability of capture and conviction has been reduced. In Buchanan and Hartley, 1992 and 1993, we presented evidence that reductions in expected penalties for crime in Australia have also been associated with increases in crime. As we noted in Chapter 3, there is also a large body of more sophisticated statistical evidence from many countries showing that changes in expected penalties deter crime.

Interviews with recidivist criminals suggest that these individuals decide to give up criminal activity when they believe the probability of capture gets too high. As Cusson and Pinsonneault (1986:76) noted:

It is clear that, with age, criminals raise their estimates of the certainty of punishment. They come to terms with the simple fact that the more crimes they commit, the greater the cumulative probability of arrest. This fact is often overlooked; people seem to think that the probability that an offender will be arrested is equal to the probability of being arrested for a single crime. This obviously does not apply to the career criminal. What must be considered in the career criminal's case is the cumulative probability of punishment—that which is calculated on the total number of his or her crimes. Young delinquents generally do not realize that each new crime increases the probability of their being caught. On the other hand, all the ex-convicts we met agreed that those who commit crimes regularly sooner or later run the risk of finding themselves behind bars . . . . With age, the criminal comes to the conclusion that theft is a bad risk: 'If you steal, you'll find yourself inside fast enough, because the odds are against you. You're known to the cops; you may have more experience, but you're not as quick.'

- *Crime is a long-lasting career, although data show that the tendency to commit crime peaks at age 17 and declines rapidly thereafter*

The term 'career criminal' is used metaphorically, rather than literally, by economists. The economic model of crime does not require that individuals pursue criminal activities for a long time. Indeed, evidence in favour of the economic account of crime is provided by the rapid decline in criminality after age 17. When a person turns 18, he will be tried in adult courts where the punishments are more severe and a permanent record of convictions is made. Thus, it is rational for a person to stop committing crimes when the probability of harsher penalties increases.

It is interesting to note that modern criminologists have many psychological and sociological explanations of why the crime rate declines after age 17. Some claim that children mature rapidly between 17 and 18 and gain more self control. Others note that social ties, such as those with girl friends and wives, are more common in older teens, and these ties provide a restraint on delinquency.

We suggest that there is nothing intrinsically important about the year from 17 to 18. In fact, in the nineteenth century, the peak age for criminal behaviour was 23 (Quetelet, 1969:appendix). It may be that, in previous times, juvenile delinquency was dealt with in a more informal way than at present and thus was not included in official statistics. The transformation of many juvenile delinquents into law-abiding citizens at age 18 does seem, however, to be an artifact of the twentieth century and is associated with the establishment of juvenile courts and corrective facilities.

Gottfredson and Hirschi appear to have misunderstood the economic account of crime. Economics has little to do with money. Rather, economics concerns the allocation of scarce resources to alternative, competing activities or ends. Economists maintain that most individuals seek pleasure (or what they perceive to be pleasure) and avoid pain (again, the pain associated with different activities or circumstances can differ across different individuals). Each of us acts to maximise our pleasures (both long-run and short-run pleasures) and to avoid pain (both long-run and short-run pain). We may work in order to earn money. We want money, however, in order to obtain certain pleasures that can be purchased with it and not for its own sake.

Crime is a substitute for labour-force participation when it occupies the time and resources a person might otherwise devote to holding a job. For example, when a juvenile delinquent spends an evening spray painting ('tagging') bus shelters, he uses up time and energy in order to obtain the pleasure of seeing his handiwork ruining public property. If this same juvenile had a legitimate job or was engaged in meaningful education or training, he would be spending his time and energy earning money, or preparing for earning money, which he would then spend to obtain some sort of pleasure.

Crime is a substitute for legitimate employment, even when the criminal activity does not aim at, or result in, money in the criminal's pocket. The criminal is seeking pleasure, and he may obtain it with or without using money.



## CHAPTER FIVE

# POLICY IMPLICATIONS OF THE ECONOMIC THEORY OF CRIME

The central policy implication of the economic theory of crime is that the incidence of crime will fall if the expected penalties faced by criminals are increased, or if the incentives to engage in legitimate alternatives to crime are increased.

In this chapter we discuss three types of public policy reforms designed to achieve these goals. First, the activities of the police should be directed towards crime detection and deterrence to a greater extent. Secondly, economising on criminal justice resources would make more such resources available for crime detection and deterrence. Thirdly, economic and social policy reforms could make crime less attractive and legitimate alternatives to crime more attractive.

Many countries have recently rediscovered the value of competition and private enterprise in promoting increases in economic welfare. New Zealand has been among the leaders of this movement towards greater privatisation of the economy. In particular, privatising government monopolies and subjecting them to competition have been shown to increase economic efficiency in New Zealand and elsewhere. Similar advances are being made, and should be expanded, in the area of criminal justice. Private ownership provides opportunities and incentives for individuals to monitor managers and to pressure them into minimising production costs and serving their customers. Strong market competition, combined with the threat of bankruptcy, is an even more potent force encouraging the same ends.

Privatising the prison system, aspects of traffic control, and electronic surveillance of convicts on parole will lead to greater efficiencies in the criminal justice system. These and other suggestions for improving criminal justice in New Zealand will be considered in this chapter.

### The police

In our discussions in New Zealand, it has been suggested that the New Zealand police face several critical issues that may need further examination:

- police priorities need to be reassessed;
- the current system of measuring police 'outputs' does not provide the best incentives to police to allocate their resources efficiently;
- police could be relieved of duties that do not require their special training, and they would have more time to pursue serious crimes;
- recent changes in laws have made capture and conviction of criminals, especially juveniles, more difficult; and
- adult police diversion schemes need to be reassessed.

We comment on each of these issues and offer suggestions that may be deserving of further research and analysis. Our comments are not based on extensive research, and thus we offer them only as a starting point for further investigations.

### *Police priorities need to be reassessed*

New Zealand has one of the highest burglary rates in the developed world, higher than in Australia, the United States or Great Britain. Yet the Police Corporate Plan 1993-94 made family violence the top priority for police action, followed by street violence. Burglary and motor vehicle crimes are the third and fourth priorities, respectively.

It is possible that priorities in New Zealand are very different from priorities in similar societies overseas, but we doubt it. We suspect that the recent focus on family violence relative to burglary reflects changing political priorities that do not truly reflect the concerns of the average citizen.

While family violence is a serious issue, it is not clear that raising its priority, and therefore increasing the use of police resources in the area of family violence, is appropriate. The police already make on-the-spot arrests in cases involving serious family violence. Raising the priority of family violence presumably would get the police involved in less serious cases. The same resources in the hands of social workers, psychologists or others trained in counselling may achieve better results at lower costs.

### *Measuring police performance*

While the notion of having the government 'buy' certain 'outputs' from government departments is a good one, the current system of measuring 'outputs' for the police does not provide the best incentives for the police to use resources efficiently. Currently, the police are measured as 'supplying' a certain number of man-hours and dealing with a certain number of offences each year. Police man-hours could be supplied, however, without a corresponding reduction in crime being achieved. The government (as an agent for the citizens) should be more concerned with pursuing the outcome of a low level of crime.

Police performance could be measured by the change in the crime rate from the previous year. A potential difficulty with measuring crime rates, however, is that the police have some latitude over what is recorded as a crime and what is not. In particular, crime statistics could be inflated by recording many minor offences as crimes. Crime figures would need to be weighted by the severity of the different crimes making up the index. This could, however, result in other problems. There may be a tendency to emphasise crimes that are politically sensitive but do not constitute a serious threat to public order. Another problem is that the police do not directly control the crime rate, but are only one of a number of influences affecting it.

An alternative approach might be to measure police performance with an index of costs per arrest. Indices of costs per arrest, however, could bias police activity toward crimes yielding high arrest figures rather than crimes that are of greatest public concern. Perhaps some combination of an index of crime rates and costs could be used.

Using *changes* in the crime rate, or costs per arrest indices in each region would allow a correction for regional differences in the levels of crime rates or costs. Introducing this type of 'benchmark' competition between regions is a way of simulating some of the beneficial effects of market incentives.

*Police could be relieved of inessential duties*

Trained police are being used to perform jobs that could be more cheaply performed by clerical workers. For example, most of the functions of traffic surveillance could be performed by office workers using red light cameras, speed cameras and other devices that automatically detect infractions of traffic laws; some use is already being made of civilians. Police should perform only jobs that require their special talents and training. In the case of the enforcement of traffic laws, police might be needed only to force people to pay fines where this proves to be necessary.

Enforcement of many traffic offences could be handled by a private company under contract to the government. A private firm supplying traffic surveillance services would have much stronger incentives to minimise costs than the current police force has. Private firms could bid to provide a service monitoring traffic cameras and collecting fines for infringements. Private collectors would, however, have an incentive to charge offenders less than the fine for the infringement (in the form of a bribe) and keep the difference. More generally, the firm would not have a strong incentive to detect infringements.

An alternative would be to allow firms to bid an up-front fee for the right to monitor traffic cameras and collect the fines as revenue. A potential problem here, however, is that violators of traffic laws might refuse to pay fines to a private firm even though they would have paid if the police had been involved. A private firm might be involved in extensive litigation to collect the fines. Conversely, historical instances of 'farming out' enforcement of customs or other tax laws have provided cases of intimidation of citizens by the collecting agency. Since physical evidence of traffic infringements (in the form of a photograph or other physical record detailing the date, time and nature of the infringement) is required in order to collect a fine, however, there may be less of a problem with the company inventing infringements and victimising or extorting citizens than occurred with some of the private tax collection arrangements in previous eras. In fact, the operations of the firm could themselves be governed by laws that would have extremely high penalties for violation.

*Review operation of the New Zealand Bill of Rights Act 1990*

Recent changes in New Zealand law, including passage of the Bill of Rights Act, have made capture and conviction of criminals more difficult. The New Zealand Bill of Rights Act, the Children, Young Persons and Their Families Act 1989, and other new laws have made it more difficult for police to arrest and convict criminals. Arrests can only be made if certain complex procedures are followed. Evidence of crimes can be admitted in court only if it was obtained in a specified manner. Some criminals may be exonerated from crimes that would formerly have resulted in convictions, due to the requirements of the Bill of Rights Act.

The costs of prosecution have increased due to passage of the Bill of Rights Act. Time costs are incurred by those attending court while arguments are heard over whether evidence is admissible or not. These costs are incurred whether or not the accused is subsequently convicted.

We find it difficult to understand why neither the criminal nor the police officer involved should be found guilty in situations where there is conclusive proof that two crimes have been committed (one by the suspect and one by the police). Both parties should be found guilty of committing their respective crimes and both of them should be punished. The law should not condone illegal acts by the police any more than it condones illegal acts by citizens. A member of the police force found guilty of obtaining evidence by illegal means should be prosecuted for the crime. If evidence establishes beyond reasonable doubt, however, that an accused person is guilty, that evidence should remain admissible, regardless of how it was obtained. (Since evidence obtained under duress would fail to dispel reasonable doubt about its authenticity, it should be ruled out of court.)

A study of the Bill of Rights Act should be undertaken in order to consider whether amendments to it are needed. The increased court costs incurred due to arguments over admissibility of evidence should also be assessed. It could be argued that New Zealand is currently experiencing an adjustment period, and that, once police become accustomed to the new rules, convictions will return to their former levels. An examination of trends in court convictions could provide evidence of whether police are adjusting to the new rules. If police continue to lose cases on procedural grounds, amendments to the Bill of Rights Act should be considered. These amendments could consider restoring to the police the powers they had before passage of the Act regarding arrest and the questioning of suspects and returning to the previous situation regarding the admission of evidence .

#### *Police diversion schemes*

The current system of diversion schemes for adults should be reviewed.

In an effort to reduce court costs and provide alternative forms of punishment for first-time offenders, a system of diversion by the police has been implemented in New Zealand. Under this system, a first-time adult offender may avoid court convictions by agreeing to a diversion programme organised by the police. The offender may be asked to write a letter of apology to the victim. He may be required to provide full restitution to the victim for losses. The offender may also be asked to make a contribution to a charitable organisation in lieu of a fine.

The advantages to the offender of police diversion are several. The punishment incurred by an offender diverted by the police may be lower than the punishment he would have received if he had been prosecuted in court, even if he had been found innocent of the charges. The offender will not risk getting a criminal record, since the offence is not recorded by the court. He will not incur the time cost of appearing in court more than once. The social costs of attending court on a criminal charge are high, even if one is exonerated.

Thus, the expected penalty for first-time offenders may have been reduced since police diversion schemes have been implemented, particularly when one takes account of the social costs of being prosecuted. If the expected penalty has been reduced, then first-time offenders will be less deterred under the current system of police diversion than they were under the old system under which they faced the likelihood of formal prosecution in court and a criminal record. A study should be undertaken to determine

whether the expected penalty for first-time offenders has been reduced since the introduction of the police diversion scheme.

A further problem with police diversion schemes is that they have resulted in a loss of revenue from fines and an increased possibility of police corruption. Previously, first-time offenders were often punished by being fined. These fines resulted in a considerable amount of revenue for the government. Under the current system of police diversion, revenue that would have been collected as fines is being given to charities.

Police may be tempted to funnel contributions into charities in which they have a personal interest, for example a school attended by their children. While these sorts of indiscretions may not yet have occurred, they are a potential problem for the diversion programme as the amounts of money donated to charity become larger each year (see Young and Cameron, 1992, for further discussion of this issue).

## Prisons

### *Rehabilitation*

The idea of rehabilitating criminals is good if it can be achieved at a cost that is reasonable relative to the benefits obtained. The economic approach does, however, put a different perspective on the goals of rehabilitation. Traditional criminologists who treat criminal behaviour as a 'pathology' or 'disease' emphasise rehabilitation as a benefit to the criminal. The economic approach tends to be more respectful of the criminal's preferences. Some criminals may not want to be rehabilitated. In such cases, we should admit that the primary beneficiary of rehabilitation is the rest of society. In so far as the 'replacement effect' is small (see the discussion in Chapter 2), rehabilitation will reduce the overall amount of crime and will result in more resources being used in a productive manner. On the other hand, rehabilitation costs more than punishment alone.

Rehabilitation may benefit a criminal, as well as the rest of society, when that individual has few legitimate employment opportunities due to poor education or training. In this case, rehabilitation may take the form of providing education and work-related skills that are marketable outside of prison.

One good way of providing job-related skills to prisoners is to allow private firms to operate businesses inside prisons. This is being undertaken successfully in both the United States and the United Kingdom. Private companies agree to employ prisoners in a shop on the prison grounds. Light manufacturing, such as furniture assembly, and desk jobs, such as taking airline reservations, are examples of the kinds of work that can be performed in prison (Elliot, 1988).

In the United States, prisoners are paid the minimum wage. If this requirement precludes the employment of most prisoners, competitive tenders could be used to determine a market-clearing wage rate. In the United States and the United Kingdom, the cost of maintaining the prisoner (that is, his room and board) is deducted from his pay. When the prisoner is released, he can take the money he has saved with him.

Companies are attracted to prison employees because inmates are willing and able to work nights and weekends. Airlines and hotels, for example, use prisoners to handle overflow reservations during busy hours and at times when ordinary employees do not wish to work.

Inmates who perform well in their prison jobs are regularly offered employment, upon their release, with the firm for which they worked while incarcerated. These prisoners are able to prove their worth to a private company, and so overcome the negative view many employers have of ex-convicts (Elliot, 1988).

There are limited forms of prison employment in New Zealand (e.g. farm and forestry work) but the scope for extending them in more productive ways is substantial.

Treatment for drug and alcohol addiction is also important in a prison rehabilitation programme for those prisoners requiring treatment. Without such treatment, job training is unlikely to be helpful, since addicted ex-convicts will have difficulty securing, or staying in, employment after release.

### *Conflict between rehabilitation and deterrence*

There is an inherent conflict between rehabilitation and deterrence in criminal justice. On the one hand, a prisoner who gains job-related skills and is treated for drug addiction in prison is more likely to seek legitimate employment upon release than is a prisoner without such rehabilitation. On the other hand, if prison becomes an attractive place for gaining job skills and curing drug addictions, people will have an incentive to commit crimes in order to be incarcerated. For example, in the United States courts have ruled that prisoners have the right to free medical care, although those outside of prison do not. This ruling has led some people suffering from acquired immune deficiency syndrome (AIDS) to commit crimes in order to be incarcerated. Once in prison, these people are entitled to free medical care for AIDS that they would have been denied outside of prison.

The job-training programmes in prison also should not be more attractive than those outside of prison. Even if a potential criminal is not eager to go to prison for job training or drug treatment, he will be less deterred from committing crimes if he thinks prison is not too bad than he would be if he believed prison to be a dreadful place. In short, we must not make prison so attractive that people do not mind going there or are even eager to get there.

### *Private prisons*

Major advances are being made in the use of private prisons in New Zealand. Evidence from overseas, in countries such as the United States and Australia, suggests that privately-built and operated prisons are preferred both by the governing authorities and by the prisoners. The costs of maintaining a prisoner in a private prison are considerably less than housing the same prisoner in a government-run facility. As criminologist Greg Newbold (1994) noted:

Australia contracted its first private prison at Borallon in Queensland in 1990. It now has three private prisons: Borallon and Arthur Gorrie in Queensland, and Juneé in New South Wales. In September I went to Australia to inspect both of Queensland's facilities. I also interviewed Stan Macionis, the deputy director of the Queensland Corrective Services Commission. Having units with their own kitchen facilities—these and many other features made Borallon and the Arthur Gorrie Centre the two best institutions I have seen anywhere in the world.

New Zealand should take steps to privatise all prisons, community service schemes, and periodic detention centers. Private firms can run these facilities under contract with the government. Periodic inspections by officials of the Department of Corrections would ensure that corrections facilities are maintained and run properly. Any contractor who did not perform satisfactorily would lose the contract. As Newbold (1994) stated:

Private prisons will be subject to all the monitoring devices currently operating in public prisons, such as the Ombudsman, the prisons inspectorate, Prisoners Aid, and so on. In addition, State monitors will be appointed to ensure that contractors comply with the law and with the contracts under which they operate. . . . Private prisons will be under heavy public scrutiny. The media demand a degree of transparency in private prisons which has never existed in State-run institutions. The Australian experience shows that when things go wrong in private prisons, the media have a field day. Management of private prisons is therefore keen to avoid, and quick to remedy, situations that give rise to incidents or disturbances.

Private prisons need to be monitored to ensure that prisoners are not badly treated, but also to ensure that they are not treated too well. The managers of private prisons may have an incentive to make life for prisoners very comfortable, so that the inmates will be easy to control. An excessively comfortable prison, however, provides less of a deterrent to potential criminals than an uncomfortable one. Private prisons should also be required to provide work or training in skills that are marketable outside of prison. As we noted earlier, private firms should be allowed to operate inside prisons to allow inmates to gain work experience and to help pay for the cost of their incarceration. These businesses should be part of private as well as public prisons.

### *Alternatives to prison*

The economic model of crime suggests that prison should be the punishment of last resort. Not only is a prisoner losing valuable time that he could be using to obtain valuable work experience or other training, but society is also losing the benefits of his labour. In addition, taxpayers have to bear the cost of housing, clothing, feeding and guarding the prisoners. If the same deterrent effect can be achieved using a non-custodial form of punishment, then that punishment is preferable.

### *Fines*

Fines are an excellent form of punishment and should be used whenever possible. Unfortunately, the use of fines in New Zealand has fallen dramatically in the past 20 years and continues to fall. The Criminal Justice Act 1985 made the imposition of fines more difficult for judges. Judges can impose fines only if they can demonstrate that the recipient of a fine has the ability to pay it. There is no way, however, that a judge can be certain that a person is unable to pay a fine, for anyone may be able to borrow money from family or friends, and this would not appear in the person's income. When the alternative to paying a fine is going to prison, many people will find a way to pay the fine, even if they appear to be indigent (see Spier and Luketina, 1988, for a further discussion of this issue).

If a judge does impose a fine and the offender does not pay the fine, the judge is currently required to hold a second hearing weeks later and impose an alternative sentence. Some judges may prefer to hand out a custodial or supervisory sentence at the first hearing if they believe the offender will not pay a fine, regardless of the offender's ability to pay.

Amendments to the Criminal Justice Act should be considered in order to restore to judges the right to impose fines, regardless of an offender's apparent ability to pay. A criminal could be given a choice between fine and imprisonment and then punished by much more severe terms of imprisonment if he fails to pay the fine in accordance with the agreed schedule.

#### *Electronic surveillance*

There are many new systems available for the electronic surveillance of offenders living outside of prison. Some use devices surgically implanted under the individual's skin. Others use bracelets or anklets that cannot be removed from an offender without such removal being detected by the authorities. These electronic devices emit a radio signal that is monitored with the aid of advanced communications technology and computers. The offender can be permitted to go from home to his workplace and nowhere else. Any infraction of this rule will be noted by the computer program, and the police can be notified automatically. If an offender violates the terms of electronic supervision, he can be sent to a regular prison as punishment.

When incarceration is not required to protect the public from violent acts by the prisoner, electronic surveillance has many advantages. The costs of housing an offender in his own home are borne by the offender himself. Also, since the offender is still able to work in a legitimate job, he does not waste time in prison. He is able to maintain or enhance his marketable skills, and this should help reduce the incentives to return to a life of crime once his sentence has been served. Furthermore, the offender avoids learning additional criminal skills from fellow prison inmates.

In schemes in operation in the United States, an offender's movements are monitored day and night by private firms. The prisoner monitoring industry has grown in the United States, and there are now several competing firms offering such services.

The Department of Corrections is currently investigating the use of electronic surveillance devices. These investigations should be expedited and a system put in place as soon as possible. Electronic surveillance will provide judges with an additional form of punishment for offenders that is effective and costs the taxpayers much less than having the same person in prison.

#### Juvenile crime

A large percentage of crime in New Zealand is committed by juveniles. Recent changes to laws concerning the treatment of young people have reduced expected penalties for juvenile crime, both by reducing the probability of capture and conviction and by reducing the size and severity of penalties.

As Rosemary McLeod noted in a recent article on law relating to juvenile crime in New Zealand, it is not clear that the current system is discouraging young people from committing crimes. She describes the case of a 13-year-old boy who raped two girls, aged 6 and 8:

From babyhood he'd been around the fringes of gang culture, like his teenaged parents. From the men he'd learnt the macho gang strut, to be staunch, uncaring and tough. He'd learned how to treat women, too: they got little respect. Now he'd violently raped two little girls. He'd come of age.



The justice system was clear on what would happen next. The family and friends that had made him what he was, would now help turn him into something else: a normal 13-year-old boy.

Would he be punished? That wasn't even an option. He was officially in need of care and protection. . . . Because of the boy's age, he couldn't go to youth court: he'd have to be 14 for that. . . . Once he might have been helped in a boys' home; but those homes have mostly been closed, because the new policy throws responsibility for dealing with offending children back on to their families.

Last November, Justice Minister Doug Graham reported that the boy was 'in a secure placement under 24-hour supervision and receiving counselling'. He has also been sent to Great Barrier Island, to a Social Welfare institution where, among other enjoyable outdoor activities, he could learn scuba diving. And he has been sent to board at St. Stephen's School at Pukekohe, near Auckland. His \$6,000 annual fees, and his school uniform, are paid for by the taxpayer (McLeod, 1995).

This young rapist is now benefiting from a private school education that he would not previously have been able to enjoy. The threat of free scuba diving lessons and education at a private school would hardly appear to be an effective way of deterring boys from committing crimes such as rape.

The Children, Young Persons and Their Families Act 1989 emphasises concern for the well-being of children, but it does not take account of the cost to society of juvenile offending. The Act does not aim to reduce the incidence of juvenile crime, and it has not done so (Maxwell and Morris, 1993:1-12).

Prior to 1985, juvenile offenders could be and were arrested and brought to court for many offences. Punishment for juvenile robbers, for example, was often a sentence of up to two years in a borstal training centre, the juvenile equivalent of prison. Thus the costs of committing crime as a juvenile were high, in so far as the young person had to go to court, had a criminal conviction recorded against his name and could be sent to a juvenile prison. Family members of juvenile delinquents would suffer the social costs of appearing in court with their errant child, having a child with a criminal record, and losing daily contact with the child while he was in the borstal. Parents had a greater incentive than they currently do to supervise their teenaged children because of the social costs they and the children might incur.

Under the current system, juvenile offenders typically are not arrested, do not appear in court, do not incur a criminal record and do not serve time in juvenile detention centres. The aim of the current Act is to ensure that no child goes on to become an adult recidivist criminal because he was labeled as a delinquent at an early age. An unforeseen consequence of this Act is, however, that the cost to juveniles of committing crimes has been greatly reduced. Thus juveniles who would have been deterred from committing crimes under the old system are less deterred today, and there is more juvenile crime.

### *Family group conferences*

Juvenile delinquents in New Zealand today are handled by a complicated and expensive system called the Family Group Conference (FCG). Myriad social workers, police officers, family members, lawyers and others are called in for a council meeting in order to decide how to punish juvenile offenders. One aim of the Children, Young Persons and Their Families Act was to give victims a chance to participate in the process of reforming

juvenile delinquents. Young offenders are required to apologise to their victims and, in certain cases, to make restitution to them for damage they may have done. Victims are therefore invited to attend the FCGs. Some FCGs have as many as 30 people in attendance for several hours. The typical number of people attending a FCG is 9. If the cost of these people's time is taken into consideration, the real cost of the FCG system is extremely high, due to the loss in productivity of those attending the conferences (Maxwell and Morris, 1993:74–75). On the other hand, taxpayers may save from the fact that fewer juveniles now experience custodial penalties.

Apart from the direct cost to the taxpayers and the participants, the other key consequence of the new system is that fewer juveniles may be deterred from committing crimes. It is important to distinguish the specific deterrent effect of punishment (that is, the tendency of a person who has been punished not to offend again) from the general deterrent effect of punishment (that is, the tendency of people not yet offending not to begin committing crimes). Some criminologists claim that the new system of treating juveniles has not reduced the deterrent effect of punishment because the number of juveniles re-offending after a FCG is no greater than the number who re-offended after imprisonment under the previous system. This may suggest that the specific deterrent effect on delinquents is no different under the two systems. The general deterrent effect may still be different, however. General deterrence is of great importance because our aim should be to keep young people from ever committing their first crime. The fact that the incidence of juvenile crime continues to rise suggests that the FCG system has not increased either the specific or the general deterrent effect.

A survey was taken of those who participated in FCGs. Offenders, families, social workers and others were very satisfied with the system. The punishments were, in general, quite acceptable to the offenders. The young offenders liked the FCGs because, they noted, it was much less intimidating than going to court. The worst part of an arrest, from their perspective, was the fear and humiliation of appearing in a criminal court with one's parents (Maxwell and Morris, 1993:131–163). Several offenders noted that the punishment dealt out by their family members was less severe than what they would have incurred by being punished in the court system.

From the point of view of the deterrent effect of the FCG system, the fact that young offenders and their families liked FCGs is unfavourable, rather than favourable. If juveniles are less afraid of an FCG than they are of court, they will be less deterred by the punishment of an FCG than they would be by the possibility of being arrested. We do not want young offenders to be happy about the punishment they receive; we want them to be unhappy about it so that they will not offend again, and other juveniles contemplating similar crimes will be deterred from committing them (Maxwell and Morris 1993:109–125, 131–163).

Victims were much less satisfied than other participants with the FCG system. Some victims noted that offenders got off very lightly, and that they were not punished as severely as they would have been under previous judicial processes. The cost of attending FCGs for victims (mainly the cost of their lost time) may also have made them less satisfied with the system. If victims find the system expensive, and the results unsatisfactory, they will be less likely to report crime. This may be especially true for victims whose time is very valuable. If fewer crimes are reported, the fall in the probability of arrest would further reduce the deterrent effect of the system.

Unfortunately, we do not have data that would enable us to prove that fewer crimes by juveniles are being reported or that the deterrent effect of possible punishment was greater under the previous system. It is hard to believe, however, that a system which the criminals like better will deter them to a greater extent. It can be said that the FCG system has not resulted in a reduction in juvenile crime.

### *Arresting young offenders*

One aim of the Children, Young Persons and Their Families legislation was to reduce the number of juveniles formally arrested. This was achieved by making it extremely difficult and time-consuming for police to arrest juveniles. Although the number of juveniles arrested has gone down, the amount of juvenile crime has increased. This is hardly surprising since the expected penalty for committing juvenile crime has decreased (Maxwell and Morris, 1993:1–12).

Police must justify arrests using a limited number of grounds. As young people have so many rights during arrest, the job of the police becomes very difficult. Police may have difficulty in locating parents, or other adults responsible for a child, before questioning. Thus, the police are deterred from questioning juvenile offenders or from taking effective action against juvenile crime. The hands of the police have been tied, so they may often ignore juvenile crime.

### *Juvenile delinquents are 'victims of society'*

One of the fundamental problems with the New Zealand system is that it is based on the idea that juvenile offenders are themselves victims. While it may be the case that many young offenders come from dysfunctional families, do poorly in school and have other problems, it does not seem rational to add to their list of problems by enticing them into juvenile crime through neglecting to have a punishment system that will deter them from bad behaviour. If young people know that they are likely to be caught for a crime, and if they know that, when caught, they are likely to be punished, and that the punishment will be unpleasant, most young people (and their parents) will make sure that they do not engage in deviant behaviour. The rules of the game need to be clear; offenders need to be caught and punished as soon as possible, and the offenders' friends and cohort will soon learn to desist from delinquent behaviour.

### *Review of the juvenile justice system*

An external, independent study of juvenile crime in New Zealand should be undertaken. As noted earlier, FCGs are very expensive if one takes into account the costs of the time of those involved. A proper cost-benefit analysis of the FCG system should be done by trained economists, and the results should be presented to the government for evaluation. If, as we suspect, the costs of the FCG system outweigh its benefits, the system should be scrapped. Juvenile offenders above a certain age should be held responsible for their behaviour and should be arrested and made to appear before a Youth Court judge with their parents or guardians. Police should be given discretion in issuing warnings to young offenders, but must retain the right to arrest when they deem it necessary. Youth Court judges should have the right to sentence young offenders to punishment without a conviction being recorded, but judges should also retain the right to require that convictions be recorded. Juveniles should be punished whenever possible without sending them to detention centres, but such centres should be available as a punishment

of last resort. Juveniles could be sentenced to electronic surveillance and allowed only to go to school or work and forced to spend the rest of their sentence at home.

While it is true that a certain number of juvenile delinquents will be labelled as offenders, and that this labelling may inhibit their ability to move into the legitimate labour force, a far greater number of young people will be deterred from committing any offences whatsoever. Young people will commit fewer crimes because they will be afraid of the consequences, including the humiliation of attending Youth Court, a possible criminal record, home detention under electronic surveillance, or serving a sentence in a juvenile detention centre.

Part of the external study of juvenile crime should examine how parental responsibility for delinquent behaviour can be increased. If young people vandalise property, commit burglary or engage in other criminal behaviour while they are living at home, their parents should bear some of the responsibility for compensating the victims of such behaviour. If parents were liable for the misdeeds of their under-aged children, they would have an incentive to supervise those children more closely than they currently do. (For further interesting discussions of the causes and possible solutions to juvenile crime, see Fergusson *et al.*, 1993; Leibrich, 1993; and Caspi *et al.*, 1994, 1995.)

#### *Improved macroeconomic policies, labour laws, education and welfare policies*

Juvenile crime rates are closely related to job opportunities for young people. Increases in unemployment during business cycle downturns can severely restrict the job opportunities of several cohorts of school graduates. Nevertheless, attempts to eliminate all cyclical fluctuations will probably exacerbate business cycles. The best thing that governments can do is to make sure that stable monetary and fiscal policies are adopted. The New Zealand government has adopted this focus for macroeconomic policies. An additional benefit of stabilising, as opposed to de-stabilising, macroeconomic policies is that they contribute to reduced crime rates.

New Zealand's labour market is now more flexible and rates of youth unemployment have been falling sharply. Employment growth, however, is still being hampered by minimum wage laws and by Employment Court decisions that do not enable people to enter freely into contracts and then allow employers to terminate them readily if things do not work out. Attempts to increase job protection, and the difficulty of dismissal, mean that employers will be less willing to take on the most marginal workers, such as those with a criminal conviction. Similarly, minimum wage laws price some of the most marginal workers out of jobs. If minimum wage laws were repealed, some teenagers who cannot find work at current minimum rates would find jobs at lower wages. These entry-level jobs would provide work experience for young people and would prepare them for higher paying jobs. Apprenticeship programmes that employ young people at initially low wages are a good way of providing skills training. Discouragement of training is a common occurrence under minimum wage laws.

Well educated people are less likely to become criminals than poorly educated people, as the former have employment opportunities that the latter lack. Many young people, particularly those from poor families, do not receive a good education in state schools. Poor schooling therefore may also contribute to high crime rates. More competition within the school system through a voucher system of funding education (involving

equal entitlements for students whether they enrol in state or independent schools) may help reduce juvenile crime by improving the quality of publicly-funded education. If parents were given the same entitlement to education for their children at any private or public school, they could choose to send their children to higher quality schools. Even those who do not choose to avail themselves of the new opportunities are likely to benefit. Schools would become more directly accountable and responsive to parents. Government schools would be forced to raise their standards in order to compete for the available pool of students. A step has been made in this direction by the 1995 budget decision to introduce a limited voucher scheme enabling a small number of children from disadvantaged backgrounds to enrol in private schools. The scheme should be widened to include all children.

Finally, welfare programmes that offer cash benefits to able-bodied teenagers but do not require any commitment of time from them are probably counter-productive from the point of view of reducing juvenile crime. Young people are not encouraged to enter the labour force and develop marketable skills. They have plenty of spare time to engage in other activities. Government income support can be thought of as a type of 'option' contract. It provides a minimum standard of living and encourages its recipients to engage in risky supplementary activities, such as property crime. If their efforts are successful, and the probability of capture and conviction is low, young offenders might obtain a substantial supplement to their limited welfare income. On the other hand, if the criminal activity turns out to be not very lucrative, they can still live on their welfare income.

### White collar crime

The term 'white collar crime' is used to describe crimes committed by managers and other professionals who engage in activities such as embezzlement, fraud and forgery. The victims of their actions are usually their employer, the shareholders of the company with whom they are employed, or other companies. The term 'white collar crime' is vague, but we use it here because the economic model of crime does have certain implications for crimes against corporations and shareholders that differ from its implications for crimes against individuals.

#### *Competitive markets are the first line of defence against white collar crime*

The most important point that economics tells us about corporate crime is that competitive markets are essential to ensuring that individuals within corporations act in the public interest. As Adam Smith pointed out in *The Wealth of Nations*, the invisible hand of a free market operates so that each individual, by pursuing his own self-interest, is normally motivated to act in the public interest. Furthermore, self-interest tends to be a much stronger motivating force than 'public duty'. With regard to white collar crime, this means that free and competitive markets for corporate ownership, the goods and services supplied by firms, and the labour supplied to firms by employees (including especially those employees with executive authority such as managers and accountants), are the most effective mechanisms for discouraging corporate theft.

While competitive markets should be the first line of defence, they do not of course, obviate the need for legal sanctions when white collar crime occurs. We shall discuss

below some issues pertaining solely to the punishment of white collar crimes. First, however, we wish to elaborate on the role of competition in limiting white collar crime. The connection between white collar crime and competition suggests that increases in white collar crime could, in some cases, be a symptom of a more fundamental underlying problem that needs to be addressed along with changes in expected penalties.

*Shareholders should guard against corporate theft*

In principle, shareholders in a company should have a great interest in controlling corporate crime. Such crime devalues their investments and is a personal cost to them. It is often not easy, however, to identify when managers of a company are stealing from their shareholders. For example, if managers buy expensive holiday resorts for themselves using corporate assets (as some United States firms have done), this may deprive the shareholders of some returns on their investments. On the other hand, managers may argue that the resorts are necessary in order to restore their mental health, to promote good relations with others in the industry and to forge bonds between highly stressed executives. If the shareholders were consulted, they would probably be sceptical of the value to them of these kinds of expenses. Shareholders may, however, turn a blind eye to executive perquisites since these benefits are a way of increasing a manager's pay without increasing his tax liability.<sup>21</sup> Even when managers are benefiting themselves at the expense of shareholders, the cost to each individual shareholder of monitoring the activities of corporate managers is very high. Individual shareholders cannot easily supervise the day-to-day activities of the managers they hire. Thus, each shareholder has an incentive to 'free-ride' on the monitoring activities of shareholders holding large blocks of shares who do have strong incentives to monitor the management more closely. The amount of monitoring of corporate managers may, however, be less than optimal.

*Takeovers help prevent managers from stealing from shareholders*

Competitive share markets give managers an incentive to maximise the market value of corporate equities. Management actions that lower the market value of the firm invite other management teams to buy a controlling interest in the firm, change the defective policies, and realise a private capital gain. In particular, if embezzlement or corruption in a company reduced the return to shareholders, the company would be attractive to others who could take it over and install a better management team. A less corrupt management team would increase profits to the new shareholders. Having a personal financial stake in the outcome is likely to make new corporate owners more diligent at discovering defective management practices than their counterparts in the Serious Fraud Office.

Laws regulating share markets in order to reduce the threat of takeovers therefore shield managers from the consequences of poor management practices, including criminal acts by themselves or their employees. While the media often portray takeovers as evil occurrences by greedy capitalists, in fact takeovers are a healthy way in which a free market minimises theft and corruption in firms.

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<sup>21</sup> Since the maximum marginal income tax rate in New Zealand has been reduced to 33 percent, and even after adding the GST of 12.5 percent, the incentive for large-scale tax avoidance has been greatly reduced. As a result, perquisites are a decreasing proportion of total remuneration packages in New Zealand. Further flattening of the tax scale would be beneficial for this and other reasons.

New Zealand has wisely avoided heavy-handed regulation of corporate takeovers. It has also scored well on international comparisons of business corruption. It is most important that market disciplines on corporate behaviour remain strong both to maximise shareholder value and to check white collar crime.

*Competitive markets for managerial services assist shareholders*

If the market for managerial services is competitive, so that executives can be readily replaced by someone else (including managers of foreign firms taking over New Zealand companies), managers who do not perform in the interest of the shareholders are likely to lose their jobs. Existing managers will be reluctant to take actions that further their own interests at the expense of shareholders. They will have a vital self-interest in ensuring that the firm is well run and, in particular, that employees lower down the chain of command are supervised to limit fraud, embezzlement and other abuses. Such motivation out of self-interest is likely to be far more effective than outside monitoring by police, who in any case also have much poorer access to the information required to apprehend and convict white collar criminals.

*A competitive market for workers will also help minimise corporate crime*

In a competitive and deregulated labour market, any employee caught stealing from his firm will lose his job. He will have difficulty getting another job because his record will show that he was a thief. Employees will be reluctant to steal from their firms if they believe there is a high probability of being caught, and if they believe they will lose their job if caught. Thus laws that inhibit firms from dismissing employees may encourage white collar crime. Some decisions of the Employment Court have been unhelpful in this regard. As we noted above, a regulated share market also has spill-over costs for ordinary employee crime because managers do not have as great an incentive to minimise theft by workers as they would in a deregulated share market in which takeovers were relatively easy.

*Detecting white collar crime and punishing white collar criminals*

While policies aimed at promoting free and competitive markets should be the first defence against white collar crime, it must be admitted that they are unlikely to deter all such crime. Furthermore, white collar criminals are no different from other criminals in their response to expected penalties. Because New Zealand is a small country, many cases of company crimes will involve offshore investments. Corporate criminals may be able to steal from investors in various ways using overseas bank accounts and complicated corporate structures involving international firms and holding companies. Detection of such crimes can be extremely difficult, as the Serious Fraud Office is forced to rely on assistance from other countries that may gain by retaining their status as a shelter for fraudulent business activities. The difficulty of detecting and prosecuting white collar crime suggests that more attention should be paid to ensuring that enforcement proceedings are not bogged down by barriers to obtaining relevant information or unnecessary procedural obstacles.

To deter white collar criminals, the expected penalty must be sufficiently high. If the probability of detection and conviction is low, and the benefits of committing the crime and escaping punishment are high, punishments must be severe in order to achieve deterrence. The social costs of detection alone, however, may be quite high for many white collar criminals. These criminals often have good jobs and are respected members

of the community. Typically, they forfeit these benefits once they are charged with a crime. Arrest alone for such a person would have large personal costs. The social costs of conviction for white collar crime are, however, reduced by sunset laws that expunge criminal records after a period of time. Prevalent suppression-of-name privileges granted to offenders in high social classes may also lessen the expected penalties from committing white collar crime.

Apart from publicity for their misdeeds, fines are among the best forms of punishment for white collar criminals. In these cases, fines can often be made large enough to have a significant deterrent effect and yet not so large that the criminal will not be able to pay them. The fines for white collar crimes must be high, so that others will be deterred from committing them.

As we noted above, fines are a good form of punishment for any type of criminal offence and should be used whenever feasible. For white collar criminals traditional prison should be a punishment of last resort. Most are not violent, are not considered a threat to the community, and can be made to work more profitably outside of prison. House arrest with electronic surveillance may also be an acceptable sort of punishment for white collar criminals who cannot afford to pay a large fine.

Some white collar criminals steal money from companies and hide these funds in overseas bank accounts. They may be technically bankrupt when they come to court in New Zealand, although they have many hidden assets. These criminals must be offered the choice of paying a high fine or serving a prison sentence. Many of them are likely to 'find' sufficient funds to pay a large fine if they are given the opportunity to do so. Alternatively, they can be monitored by electronic surveillance and forced to work in a legitimate job in order to repay their debts.

Although white collar criminals who take large sums of money often appear in the newspapers, the most common white collar criminal is a person who steals small sums of money or goods from his employer. These criminals should not be sent to prison, but should be fined, placed under house arrest using electronic surveillance, or given community service orders or periodic detention. They should continue working and repay their employer, as well as the costs of their electronic surveillance or other supervision.



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