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## On the Shady Side of Economics

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### ABSTRACT

This paper explains fraud from an economic point of view, using traditional economic tools and reasoning. It is shown how a supply-of-fraud function can be defined and estimated for individuals, and subsequently aggregated to derive crime rates for societies. Another approach is to explain the behaviour of fraudsters as rent-seekers, *à la mode* Gary Becker, and the problem of fraud may be seen as a case of market failure too. The paper also discusses some effects of fraud on society, and gives an empirical comparison between countries.

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You shall not have unequal weights in your bag, one heavy, the other light. You shall not have unequal measures in your house, one large, the other small. You shall have true and correct weights and true and correct measures ... All who commit these offences, all who deal dishonestly, are abominable to the Lord. *Deuteronomy 25:13-16.*

### INTRODUCTION

The above quotation stresses that fraud is an ancient sin, morally condemned in the strongest terms. Today it is widely seen as a typically "economic" kind of crime, and few examples illustrate this better than the great Portuguese bank note fraud of 1925<sup>1</sup>.

This was no routine forgery, but a particularly audacious swindle that caused currency circulation in Portugal to increase by about 5%. The remarkable aspect of the fraud was that the notes spuriously introduced into circulation were in a sense quite genuine. For instead of producing their own counterfeit money, an international gang tricked the firm Waterlow and Sons of London, official suppliers to the Bank of Portugal, into printing a new batch of notes on their behalf from perfectly authentic plates. All the notes were of the denomination of 500 escudos (about five pounds) and displayed the image of Vasco da Gama, with a total value of some 300 million escudos, almost half of which was eventually put into circulation.

The Achilles' Heel of the scheme was obviously the numbering of the notes. If they were given numbers not recorded in the books of the Bank of Portugal, the risk of immediate discovery was naturally very great. The fraudsters therefore instructed Waterlow and Sons to repeat the numbers on the last genuine consignment of notes they had sent to the Bank of Portugal. The gullibility of the printers in accepting such an outlandish order may seem extraordinary, but evidently this was a profession where intrigue and secrecy were considered quite normal.

The enterprising criminals next established a new bank in Oporto, as the vehicle for putting the notes into circulation. Business boomed for about five months, before the discovery of four notes with duplicate numbers led to the arrest of the swindlers and the closure of the bank.

The Bank of Portugal next called in the entire Vasco da Gama currency issue, undertaking to exchange genuine notes for equal value with a different design. However, it was at times virtually impossible to tell the difference between the genuine and the spurious notes, especially seeing that the operation was performed in some haste in order to prevent complete loss of confidence in the national currency. The net result was a permanent, albeit marginal, increase in the amount of bank notes in the hands of the Portugese public.

The ensuing series of lawsuits between the Bank of Portugal and Waterlow proved almost as sensational as the fraud itself, but unfortunately the matter cannot be discussed here. The legal and economic implications of the case even gave rise to a learned article in the prestigious *Economic Journal* by no less an authority than Sir Ralph Hawtrey (1932: 391-8).

Economists are interested in crime and fraud for at least two reasons. First because like all human beings, they are led by a concern for what goes on in society. Second, their interest in crime comes from a belief that the conceptual tools used in economic analysis also happen to be useful in reaching a better understanding of the origins and consequences of crime. More generally, economists think that their analytical tools are useful in the study of numerous social issues, traditionally belonging to the territory of psychologists, political scientists, sociologists, jurists and philosophers. Towards the end of this century, the discipline of economics has been enriched by sub-disciplines like social choice, public choice and neo-institutionalist economics, which have in common that they do not focus on traditional market behaviour alone, but on consumer-like and producer-like behaviour in a much wider setting.

The economic approach to the study of crime is not accepted by everybody. Opponents have accused economists of academic imperialism, and the debate has centred around two related themes (Fiorentini & Peltzman, 1995: 1). Firstly, in non-traditional research areas opinions differ on the merits of modelling human behaviour as strictly rational. Whereas most European economists are reluctant to use their tools outside their traditional research areas, their colleagues in North America (e.g. Becker, Posner, Peltzman, Stigler, Coase) are generally less reserved. Secondly, even if a rational choice model can be applied to a field like crime, what should be included in the model: economic and/or non-economic factors? Economists are naturally partial to using economic variables.

After defining fraud in the next section of the paper, two aspects of fraud are discussed in the following two sections: the phenomenon is first explained from an economic point of view, after which its economic implications are discussed. In the subsequent section, some statistics are given and their implications for economic analysis considered and, finally, a short conclusion is drawn in the last section.

## DEFINING FRAUD

For the purpose of this paper fraud is seen from an economist's point of view, and we therefore work with the definition of the term *fraud* as set out below.

Bastiat describes the attitude of individuals toward plunder as a means of satisfying their economic needs (O'Donell, 1993). He states that men and women could work and produce what they needed by toil, but history has shown that they prefer to take what they can from others who have done the toiling. This might be done by either force or fraud. Levi (1987) defines fraud as an unusual type of crime where the fraudster gets the victim to part with his property voluntarily, albeit under false pretenses. Bastiat defines it as tantamount to frustrating the freedom of exchange, in order to receive a good or service without giving one in return (O'Donell, 1993).

Fraud differs from most other forms of crime in that it involves deceit or misinformation. In the cases of crimes like robbery and assault, it is immediately clear to the victim that a crime has been committed against him or her. Fraud, however, like corruption, can remain unnoticed. Fraud occurs when one of the agents involved in a transaction withholds, distorts or concocts information that is essential for the agreement by the other agent on the transaction. If a second-hand car is bought, it is essential to have correct information on the car. If an insurance company is making a payment for

damages suffered, it is essential that the company is accurately informed of the damages. Whether correct information is essential may, however, not always be clear, and this can be the subject of legal disputes. In most legal systems, an antiques dealer who sells a fake antique chair for, say, R10 000, is considered to commit fraud. On the other hand, a buyer who pays R10 for a chair in a flea market, knowing it is worth R10 000, does not commit fraud, even though the deal would never have been agreed upon had the seller been correctly informed of the chair's value.

It is fairly straightforward to distinguish fraud from crimes like larceny (burglary, theft, robbery), sexual offences, violence against the person, damage to property, slander and libel. Fraud and embezzlement are, however, hard to discern, as are fraud and forgery, and fraud and corruption. Fraud differs from embezzlement in that the latter does not involve a transaction between two parties. Fraud and forgery are related crimes: forgery can be used to misinform the other party. In the case of fraud, it is best not to treat forgery as a separate crime, but as one example of fraud. Fraud differs from corruption in two ways (Groenendijk, 1997: 217-8). First, corruption in itself does not necessarily involve an unauthorised or illegal action by a corrupt agent. It is the authorised action (say, granting a license) in exchange for a bribe that is unauthorised. Fraud always means an illicit action. Moreover, corruption involves three parties: a principal, a corrupt agent and a corrupt client (that could be seen as a second principal), whereas fraud is committed by a single agent in a transaction between two other agents. However, reciprocal fraud can occur too: an agent buys a fake Swiss watch from another agent and pays with counterfeit money.

## **AN ECONOMIC EXPLANATION OF FRAUD**

The seminal work on the economics of crime is a learned paper by Becker (1968), the 1992 Nobel Laureate in Economics. Following his contribution, most of the work in this field has been targeted on the allocative choice by individual agents legal and illegal activities, in the face of different deterrence systems and opportunity costs. Put simply, an individual decides to embark on a criminal act if the benefits of that act outweigh its costs. The optimal amount of illegal activity is reached where the marginal benefits are equal to the expected value of the marginal costs, made up of the probability of getting caught times the penalty involved.

### **Homo economicus or homo sociologicus?**

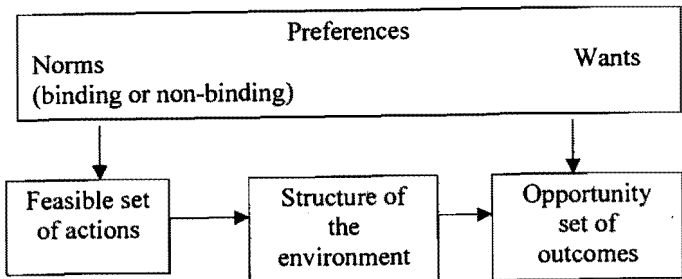
Following Eide (1994: 9), the debate on the merits of economic crime could be related to what Elster calls one of the most persistent cleavages in the social

sciences, namely two opposite poles of thought conveniently associated with Adam Smith and Emile Durkheim, that is, between *homo economicus* and *homo sociologicus*. *Homo economicus* is guided by instrumental rationality, attracted by the prospect of future, adapting to changing circumstances, always on the lookout for improvements. *Homo sociologicus* is again driven by social norms, pushed by quasi-inertial forces, insensitive to circumstances, adhering to prescribed behaviour even if new and better options become available (Elster, 1989: 99).

These can be treated as two conflicting concepts, but they are also complementary. The economic approach concentrates on the importance of probabilities and the magnitudes of reward and punishment; the sociological (or criminological) approach investigates how people deal with probabilities, rewards and punishments, given their norms, values and beliefs. The concepts are blended together in what Eide (1994) calls a *norm-guided rational offender*.

Figure 1, based on Eide (1994: 13, 20), illustrates the role of norms for a rational actor.

**Figure 1 The choice problem of a norm-guided rational offender**



The rational choice problem here, is to choose a course of action (from a feasible set of actions), that, given the structure of the environment (or situation), will lead to a certain outcome. The feasible actions and outcomes are evaluated by the offender using preferences. The preferences of the would-be offender consist of norms and wants. Norms are moral attitudes towards actions, and wants refer to attitudes towards outcomes. Norms are not always binding. If an action is likely to produce an outcome that is wanted very badly but happens to clash with a norm, then the individual might well choose to break the norm (Eide, 1994: 13, 14). On the other hand, a desired outcome may be forgone if it requires an action that breaks a (binding) norm.

Three perspectives on fraud are given below. Firstly an equation is developed with the amount of fraud on the left hand side, and the factors determining that

amount on the right hand side. Strange as it may seem, this illustrates the way that many economists think. Secondly, following Becker (1993: 391), the idea of *rent-seeking* is used to explain fraud. Finally, fraud is explained from the perspective of market failure and/or government failure.

### A supply-of-fraud function

Eide's model of the norm-guided rational offender comprises a number of different factors that explain individual behaviour. Using the model, it can be argued that variations in fraud at the individual level are the result of differences in:

- feasible courses of action (opportunities);
- benefits and costs of legal and illegal activities;
- personal characteristics that shape norms and wants (preferences);
- the environment's formation of preferences.

Criminological studies tend to stress the third and fourth factors, economic studies the first and second. Following Becker<sup>2</sup>, these factors are usually put into an individual supply-of-crime function, like:

$$c_i = f_i(p_i, s_i, w_s, w_u, w_0) \quad (1)$$

which can then be used to do cross-section, time-series, or pooled studies, where  $c_i$  is the number of crimes committed by person  $i$  in a given time period,  $p_i$  and  $s_i$  are the probability and the severity of punishment, respectively;  $w_s$  and  $w_u$  are the net benefits of a successful and an unsuccessful crime, respectively; and  $w_0$  is exogenous income or wealth (Eide, 1994: 90).

If all individuals were identical, equation (1) could also be used as an aggregate crime supply function. However, in the norm-guided model individuals are not identical: norms, wants, the outlook for and the environment of crime are all different. Therefore one has to assume that there is an "average individual", with the following supply-of-crime-function:

$$C = F(P, S, W_s, W_u, W_0) \quad (2)$$

where the variables are mean values of the corresponding variables in equation (1) (Eide, 1994: 91). The next step then is to rewrite (2) as an equation in which the crime rate (CR) in a country is explained by different groups of variables, like:

- punishment variables (PV). First of all there is the probability of punishment, for which number of variables can be used, such as the

clear-up ratio (cleared-up crimes divided by reported crimes), the arrest ratio (arrests divided by reported crimes), the conviction/crime ratio (convictions divided by reported crimes), and the conviction/arrest ratio (convictions divided by arrests). The severity of punishment in a country can be measured by the average length of sentence that is handed down, the average length of actual imprisonment, the use of capital punishment, or the jail/fine-ratio (number of jail sentences divided by number of fine sentences). As a proxy for all these punishment variables, one could use the per capita government expenditure on police and justice;

- variables representing the magnitude of material gain from crime (MV). Often variables like average income, median personal or family income are used, together with variables for income distribution, or the unemployment rate;
- environmental, socio-economic and demographic variables (ESD), like the proportion of the male population in the age bracket 15-24 years, population density, mean period of school attendance, number of non-husband-and-wife households, and the level of migration.

The result is an equation like:

$$CR = f(PV, MG, ESD) \quad (3)$$

that can be estimated for various individual countries. Comparisons between countries can be made too, and reasons found for differences between their crime rates. The word *crime* above may be substituted by the word *fraud*, to indicate the specific form of crime discussed in this paper.

### **Economic rent and rent-seeking**

Frank (1997: 542) has spelt out two different meanings of the word rent:

In everyday usage, the term *rent* refers to the payment received by a landlord, a rental car company, or some other owner in return for the use of a real economic asset. In economic analysis, however, the term has taken on a slightly different definition. Economic rent is the difference between the payment actually received by the owner of a factor of production and his reservation price (the minimum amount necessary to induce him to employ it in its current use).

For example, a professional golfer might be willing to play in a tournament for a fee of \$10 000. If he however receives \$50 000, the difference is his economic

rent, namely \$40 000. Economic rent is often connected with a fixed factor of production, such as land. If a landlord is willing to hire out an expensive city plot for a certain monthly payment, but gets more for it, then the difference is economic rent.

The two examples above have much in common. The golfer and the landlord own something that creates profit for themselves, and the profit is called economic rent. The golfer was, quite possibly, born with his talent, and the landlord either bought or perhaps inherited the land. In South Africa and many other countries, land was given by government to some families in the past, and now they extract economic rent from it. Similarly, the government may lease or sell to somebody the right to mine, say, diamonds or gold; a liquor license; or the right to broadcast TV programmes. The holders of these rights have an advantage over non-holders, and there exists the possibility of extracting economic rent from society by means of these privileges. It would be no more than natural for people to look for opportunities to derive economic rent, and their action to do so is then called *rent-seeking*. Frank (1997: 635) therefore writes:

Gains from public choices are often large and concentrated in the hands of a few, whereas the costs, while also large, are spread among many... The prospective beneficiaries of a public program have powerful incentives to lobby government in favour of it, while each of the prospective losers has too little at stake to bother about.

The result may be that projects are approved even when their benefits do not exceed their costs. If the benefits do however exceed the costs, and there are large net gains to be had from the project, private parties are then willing to spend large sums of money to enhance their odds of being chosen as the beneficiary. Pursuit of such gains goes by the name of *rent-seeking*.

This is related to crime and fraud in the following way: Becker (1993: 391) argues that criminals "spend on weapons and on the value of the time in planning and carrying out their crimes, and that such spending is socially unproductive – it is what is now called *rent-seeking* – because it does not create wealth, only forcibly redistributes it". He estimates the social cost of theft by the amount of money stolen (since rational criminals would be willing to spend money up to the value of their crimes), plus the resources applied by potential victims to protect themselves against crime.

Legal ways of rent-seeking is to buy land, make a bid for a government contract, or work on one's golf swing. If successful, the result is that you become one of a small number of owners of a scarce resource, or an opportunity that may yield



economic rent. The illegal way of rent-seeking is to spend time and/or money to acquire the power of extracting financial and other rewards from criminal activity..

Becker (1993: 390) argues that criminal behaviour is rational, and that criminals do not have radically different motivations from anyone else. Rational behaviour does however not imply narrow materialism. Many people are constrained by moral and ethical considerations, and they do not commit crimes even when these are profitable and there is no danger of detection.

However, police and jails would be unnecessary if such attitudes always prevailed. Rationality implied that some individuals become criminals because of the financial and other rewards from crime compared to legal work, taking into account of the likelihood of apprehension and conviction, and the severity of punishment (Becker, 1993: 390).

### **Market failure**

Committed advocates of the market system believe that the market can provide in any need that consumers may have. Producers thus see the opportunity to make profits by providing the goods demanded. There are however also goods and services that the market fails to provide, namely public goods, such as law and order and clean air. There are also some problems that the market fails to solve, such as air pollution, which is a well-known example of a so-called externality. Another example is the existence of excessive market power. The sole producer of a good or service (monopoly) might ask any price he wants, due to a lack of competition in the market. Such market power usually can then come to be controlled by the government.

The externality referred to above, is a negative side-effect of some economic activity that is not automatically solved by the economic system. For example: a factory pollutes the air around it, and harms everyone that lives or works close to it. The factory does not *deliberately* pollute the air; this is a coincidental side-effect of a regular kind of economic activity. Externalities can also be positive: the factory may serve to attract other businesses to a region, thus creating new job opportunities. The reason for the factory's existence is to make profit, and in the process both positive and negative side-effects can arise. Pollution is the opposite of a public good, namely a public "bad", and this has to be addressed by the government.

The market and other economic systems (e.g. socialism) do not automatically take care of fraud, and then the government has a responsibility to act on behalf of the citizens to combat these problems, using tax revenue to this end.

Sometimes firms, especially larger ones, have fraud detection departments to fight the problem, and in this way the market does partly take care of the problem - at a cost.

Fraud is quite similar to some forms of market failure referred to above, and can therefore itself be considered as another market failure, since the market "does not take care of the problem". In such circumstances, a large part of the state budget goes towards the police and the legal system, which represents a heavy cost to the community as a whole.

Another well-known market failure is imperfect information. For perfect competition to take place, all consumers must know where the best bargain (lowest price) is to be found. If they all go to this seller, other sellers will be forced to lower their prices too if they wish to stay in business. Reality is however very different, and information as a rule is only imperfectly available.

Fraud is also to a large extent an information problem. The ideal situation in any market transaction would be that buyers and sellers have the same amount of information. But this is often not the case: for example, if someone buys a used car, he or she has far from perfect information about it. This gives the seller in the transaction the opportunity for fraudulent behaviour.

## **THE ECONOMIC IMPLICATIONS OF FRAUD**

An economic explanation of fraud should include the effects that it has on the economy. Fraud is an economic issue by definition, since economic assets are deceitfully transferred from one person to another, or falsely withheld from somebody. The bigger picture of the impact of fraud on the national economy is the ultimate reason for our interest in the subject.

What are the specific costs associated with fraud? Seeing that fraud amounts to misinformation, these costs are mostly information costs. Consider two agents: a fraudulent agent F, who has the costs of providing misinformation and concealment, and a victim V, who incurs damage and monitoring costs. These monitoring costs have to be weighed against the probability of fraud multiplied by the damage caused by fraud. From the perspective of V, the optimal amount of fraud allowed for will not be zero: at some point the costs of reducing the probability of becoming a victim of fraud exceed the expected benefits. A good example of the economic implications of fraud, is represented by insurance fraud. We consider the following four points:

In the first place, there is the amount of money directly involved in the fraud. Insurance fraud will either decrease the profits of the insurance company or, more likely, lead to an increase in insurance premiums. The economic rent that accrues to a successful fraudster, means the redistribution of funds from the insurance company to the criminal.

Secondly, there is an increase in compliance costs for other (honest) consumers when they file an insurance claim, on account of the higher degree of scrutiny the insurance company will apply. This is not a redistribution, but an efficiency loss. The same goes for the additional costs the insurance company incurs to reduce future fraud which will probably again lead to higher premiums. Again, these costs represent an efficiency loss, even when the prevention of fraud leads to the development of an "anti-fraud industry" in which people find employment. It would be fundamentally wrong to think of such a spin-off as "the benefit of fraud".

Thirdly, although the increased premiums as such represent "only" redistribution, insurance as a service will become relatively more expensive. This change in relative prices leads to a distortion of economic behaviour, a so-called excess burden.

Fourthly, there are the rent-seeking costs of the fraudster, that is, his investment in crime. The three examples that involve efficiency loss (increased compliance and prevention costs, the excess burden of distorted economic behaviour due to the change in relative prices, and the rent-seeking costs of the fraudster) may be called the *deadweight costs of fraud*. Again, when the specific "benefits" of fraud are treated as they should, namely as a redistribution from victim to fraudster, it becomes clear that fraud has social costs only, and no social benefits. That is not to deny that preventing fraud can give rise to positive externalities, such as the prevention of related crimes, like corruption and larceny.

## EMPIRICAL ANALYSIS

Statistical data on fraud are notoriously incomplete. According to Professor De Koker of the Faculty of Law at the University of the Free State they are also arbitrary and unreliable for the purpose of empirical analysis (personal interview).

It was therefore decided not to try to estimate any rigorous economic functions in the present case. De Koker argues furthermore that such statistics can hardly be compared between countries, since there are basic differences between the

legal systems of countries, and hence in their definitions of what is fraud (e.g. in Roman-Dutch law and in English law). Also, there may be no clear-cut understanding of the difference between fraud, corruption, forgery and embezzlement. Moreover, data often reflect the number of convictions, not the number of offences. An indication of the latter is usually obtained by means of surveys, and are therefore estimates based on the firms or individuals interviewed.

According to *Transparency International* (an international rating institution), an index which rates countries in terms of their crime rates, is nothing but a *perception* index based on the impressions of international business people. Statistical estimates are therefore very doubtful, thus stressing De Koker's view. For example, assume that a criminal is caught for credit card fraud. If he has used the stolen card 50 times, one police officer might record 50 cases of fraud, whereas another might record just one.

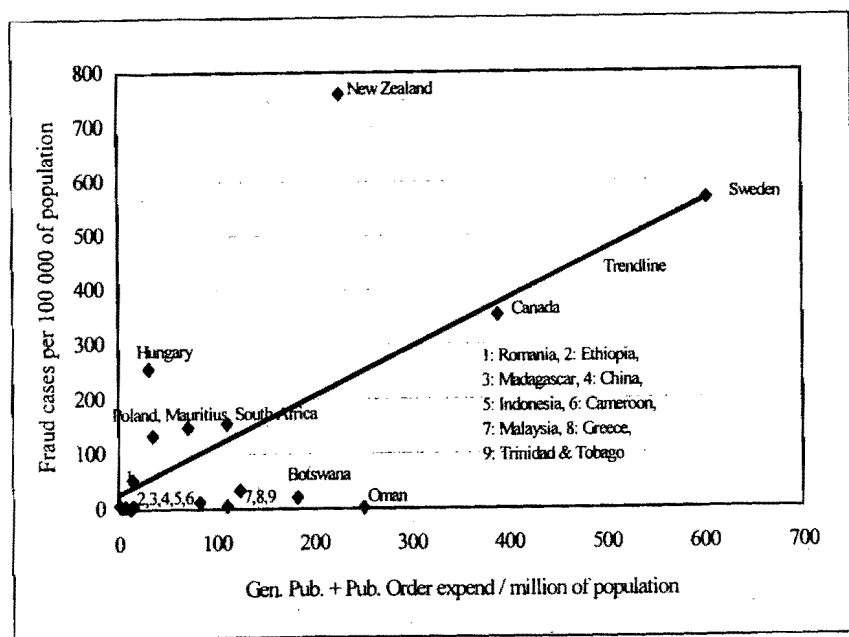
De Koker pointed out that fraud statistics are also unreliable, because governments and firms may not admit that they have a problem, or reveal the magnitude of the problem. Japan, for example, has only started to admit during the last few years that they, too, have experienced major economic crimes like fraud and organised syndicates. In the past the existence of such problems was denied, due to the population's high moral values.

If fraud is successful, the injured party does not necessarily report it, and it may then not be discovered. If discovered, it might again not be reported, if this would embarrass the injured party. A company's shareholders might decide to sell their shares if the company proves to be vulnerable to fraudulent behaviour. On the other hand they may decide to buy more shares if the company is known for detecting fraud and dealing with the culprits.

There are, however, at least *some* statistics available on the subject and these reveal certain interesting trends. For example, the United Nations *Human Development Report* (1996) shows that education expenditure, as a percentage of GNP, and the adult literacy rate in the economically developed countries, far surpass those in the developing countries. On the other hand, expenditure on general public services and public order in the developing countries (18.2% of total government expenditure) is more than double that of developed countries (8.6%). *Ceteris paribus*, these statistics suggest that the more developed a country becomes, the less it spends on police and justice services, and the more on education. This would imply a re-prioritisation of government spending from less towards more productive ends, that is, from policing to education.

However, despite the fact that the proportion of the government budget spent on public order is smaller in developed countries, the expenditure per one million of the population is much higher, due the huge difference in the size of the respective economies. In 1997, developed countries spent on average \$355.5 per million of the population whereas the developing countries spend \$43,6 per million of the population. It is significant that the number of fraud cases per 100 000 of the population in relative terms are generally higher for developed than the developing countries. A statistically significant relationship is found between the amount money spent on maintaining public order in a country, and its number of convictions for fraud. This relationship for a selection of countries is illustrated in Figure 2.

**Figure 2** The relationship between the number of fraud cases and the amount of money spent on public order



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## CONCLUSION

Fraudulent practices are legion. Three widespread examples (not discussed above) are money laundering, round-tripping and pyramid schemes. The first tries to conceal the origin of illegally obtained money by transfers involving legitimate businesses, often banks. The second means to take advantage, again illegally, of international market imperfections. For example, under South Africa's dual exchange rate system, money was withdrawn from the country at the lower commercial-rand exchange rate, and bought back again at the higher financial-rate exchange rate. Agricultural subsidies in the European Union have again led to the round-tripping of surplus products - and fraudulent profits. The third, pyramid (or Ponzi) schemes, are "a form of fraud in which belief in the success of a non-existent enterprise is fostered by the payment of quick returns to the first investors from money invested by later investors" (NODE, 1998: 1441).

In 1997 such schemes caused anarchy and economic contraction in Albania (some of the several misfortunes to befall that country recently).

Like pollution, crime produces "bads" rather than goods. This, of course, means that national income statistics, which only allow for physical capital depreciation, *ceteris paribus*, exaggerate the welfare implications of the officially recorded data. But national accounting suffers from other omissions too, for example, it has never included the work of the housewife and seldom estimates the value of the goods and services produced in the so-called informal sector of the economy. While it would be over-optimistic to expect major improvements in entrenched national accounting systems in the foreseeable future, there is every reason to continue to investigate and draw attention to the (negative) welfare effects of criminal activity.

## ENDNOTES

<sup>1</sup> The authors are grateful to the Managing Editor of SAJEMS for having drawn their attention to this episode.

<sup>2</sup> It is important to point out that the seminal work by Becker (1968) does not focus on explaining individuals' criminal behaviour as such, but on the analysis of the social cost of crime. The total social loss of crime consists of the damages (the net direct damage of the offence, e.g. harm to society minus the gain to the offender), the costs of apprehension and conviction (or the social costs of obtaining a certain probability of punishment) and the costs of carrying out the punishment (the social cost of punishment to society, including that of the offender) (Becker, 1968:

207; Eide, 1994: 49). Becker's main interest was to determine the optimal amount of crime, e.g. the amount that would minimise the social costs of crime. To determine how to combat crime in an optimal fashion he developed a model that incorporated the behavioural relations behind the costs of crime (Becker, 1968: 172), i.e. a model on the individual level.

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