

Insurance Fraud: Issues and Challenges

by Stijn Viaene and Guido Dedene*

This article is devoted to the phenomenon of insurance fraud. We start by surveying the various forms of insurance fraud as well as its extent and cost. We proceed to analyse the problem as the product of motivation and opportunity, and address the complexities of fraud control. Finally, we provide a high-level overview of current anti-fraud activity.

1. Introduction

The insurance industry has positioned itself as a basic pillar of our modern society. It will undoubtedly continue to assume that status in the future, even though, under impulse of technological advancement and trends toward globalization and deregulation of financial and real markets, the nature of the insurance business and its value proposition are likely to undergo considerable changes. Insurance has become an essential ingredient of the risk and complexity management strategies for individuals, social groups and businesses. It has enabled us to cope with increasingly complex and uncertain circumstances. The insurance business's core functions of collection, accumulation and management of contractual capital savings have made insurance companies into very important institutional investors and key players on the international financial markets. The insurance industry is one of the largest industries worldwide and the interdependencies with other industries are not to be underestimated.

The insurance industry, however, is facing the pressure of intensified competition as banks and other financial players continue to move onto their turf, providing financial alternatives to traditional insurance. At the same time, large corporations are getting more direct access to the capital markets without the need for intermediation of traditional insurers. Also, the convergence between banking and insurance toward all-encompassing, integrated risk management continues to project onto the insurance function a banking rationale based on the assessment of shareholder value and financial performance gauging. The demand for transparent asset management and the efficient use of excess capital that results, are putting extra pressure on the competitive position of insurers. Serious cost control is now claimed to be of vital importance for the industry's financial attractiveness and future viability. Many lines of business are facing a decline in earnings, reserve deficiencies, rising loss costs and other insurance expenses, as well as pricing difficulties.

The issue of fraud control has gradually been gaining momentum as a means of keeping down insurance costs. Insurance fraud has most certainly been around from the very beginning (see e.g. Dornstein, 1996). Nevertheless, the amounts involved in fraud have certainly increased as insurance made its transition into modern consumer society. The

* Stijn Viaene is Assistant Professor at the Department of Applied Economics of the Katholieke Universiteit Leuven (K.U. Leuven) and Information Management Professor at the Vlerick Leuven Gent Management School, Belgium. Guido Dedene is Full Professor at the Department of Applied Economics of K.U. Leuven, Belgium and Full Professor at the Faculty of Economic Sciences and Econometrics of the Universiteit van Amsterdam, The Netherlands.

industry has been facing a problem of increasing prevalence and of sizeable proportions. Insurers, who have long passed the cost of fraud onto their policyholders in the form of increased premium rates, as well as other stakeholders such as legislators, prosecutors, judges and consumer interest groups, have started to realize that the fraud problem can no longer be ignored. Insurance fraud and, more generally, abuse of insurance not only put the profitability of the insurer at risk, but also negatively affect its value chain, the insurance industry, and may be extremely detrimental to established social and economic structures. They are believed to materially escalate the cost of certain types of insurance (e.g. automobile, fire and health insurance). Eventually, they form a threat to the very principle of solidarity that keeps the insurance concept alive.

We start this article with a discussion on the essence, typology and cost of insurance fraud. We proceed to analyse the problem as the product of motivation and opportunity, and address the complexities of fraud control. Finally, we provide a high-level overview of current anti-fraud activity.

2. The essence of insurance fraud

Insurance is a contractual relationship in which an insurer party agrees with an insurance taker party or policyholder, against payment of a premium, to make monetary provision on behalf of an insured party to cover, after a formal claim has been filed by a (first- or third-party) claimant party, the loss of an insurable interest due to one or more future, well-defined, but uncertain events.¹ At any time, all parties transacting in the context of this contract are legally required to act with the utmost good faith toward one another, which obliges them to reciprocally disclose all material information known to them.

The duty of the utmost good faith applies throughout the life of the insurance contract and binds all parties equally. Material information to be disclosed to the insurer is information that would influence the decision of a prudent underwriter on whether to accept a risk for insurance and, if accepted, on what terms and at what cost, or would allow the insurer to assess the real extent of the loss. In the absence of bad faith on behalf of its counterpart, the insurer is legally obliged to honour the obligations of coverage stipulated in the clauses of the contract. In addition to clearly stating what is and, especially, what is not covered by the insurance contract at the time of underwriting, the insurer then primarily demonstrates its good faith by co-operating with the claimant and promptly and generously settling compensation under the terms of the policy. Moreover, at all times, the insurer is expected to act professionally and organize accordingly, i.e. in accordance with professionally accepted standards and ethics.

A lack of good faith does not, however, as such, imply fraud. In legal terms, though its exact specification may vary across legal systems, fraudulent activity on behalf of any of the transacting parties generally requires the presence of (at least) the following elements: (1) material misrepresentation (in the form of concealment, falsification or lie), (2) intent to deceive, and (3) aim of gaining an unauthorized benefit.² The absence of one or more of

¹ Note that this definition distinguishes between different roles played in the context of an insurance contract, rather than different physical or legal persons *per se*. This makes the definition very broadly applicable in practice.

² Note that an important part of the legal case for fraud is introducing evidence attesting to the actual transferral of money or value. Without this evidence even attempted insurance fraud will tend to be very difficult to substantiate legally.

these key elements makes an undesirable activity at most qualify as so-called abuse of insurance, where the latter is typically defined as any practice that uses insurance in a way that is contrary to its intended purpose or the law. Although fraud has a particular meaning in legislation, the concept of insurance fraud is often used broadly in practice to encompass abuse of insurance, and is often used without implying direct legal consequences.

Information asymmetries underlie the very existence of fraud. At important transaction moments in the life of an insurance contract, access to certain relevant information is typically confined to one (or a subset) of the transacting parties. The party with the information advantage often has a clear incentive to commit fraud. In particular, a lot of information about the nature of the risk put up for insurance is private information known only to the party seeking insurance. This clearly provides the latter with the opportunity to intentionally omit or misrepresent material facts or circumstances to obtain a better bargain. In the same way, the claimant is put in a natural position to fraudulently misrepresent the circumstances and nature of the loss. The insurer typically is the one with an information advantage as far as the clauses of the contract and the quality of the cover sought or paid for are concerned.

3. Typology of insurance fraud

Three commonly encountered functional classifications of insurance fraud are: (1) internal vs. external, (2) underwriting vs. claim, and (3) soft vs. hard.

3.1 *Internal vs. external*

Internal fraud is committed by insiders of the insurance industry such as insurers, agents, brokers, managers and other insurer employees or representatives. This covers, for example, selling insurance without a proper licence, embezzlement of insurance funds and obstruction of regulatory body investigations. External fraud is fraudulent activity on the part of outsiders of the insurance industry such as applicants, policyholders and claimants, sometimes perpetrated in collusion with insiders such as agents or brokers, or third-party service providers. This covers, amongst others, providing false statements and submitting bogus claims. It also includes cases of professional providers of services (to insurers, middlemen, or claimants³) billing insurance for non-existent or unnecessary procedures or services; misrepresenting services provided; and charging insurance for the same services more than once.

3.2 *Underwriting vs. claim*

Fraud can be committed both at underwriting as well as at claim time. Underwriting fraud, which also includes fraudulent acts perpetrated at renewal of the insurance contract, covers, for example, the dissimulation of information during application (application fraud) to obtain coverage or a lower premium (premium fraud), the deliberate concealment of existing insurance contracts covering the same property and casualty (P&C) risk, and

³ As noted by Picard (2000), a claimant is not fraudulent if he relies in good faith on an erroneous valuation of an apparently competent third-party service provider. See also Dionne (1984) for an economic analysis of this kind of provider fraud.

underwriting coverage for fictitious risks. Note that the policyholder is obliged to report any new information that comes to his attention during the course of the contract and is likely to affect the insured risk. Nonetheless, the concept of insurance fraud is most often associated with, and sometimes reduced to, the case of deliberately inflated, false or fictitious claims (claim fraud).

3.3 *Soft vs. hard*

When using a broad definition of insurance fraud, one typically distinguishes between soft and hard fraud. The label “soft” tends to be broadly associated with unwanted opportunistic behaviour of normally honest people. What behaviour exactly falls under this category is not always made explicit and depends on the stakeholder using the vocabulary, but it generally includes claimants seizing an opportunity to inflate the damages of an otherwise legitimate claim (claim padding or build-up). The adjectives “soft” and “opportunistic” have been used interchangeably. The label “hard” tends to be associated with carefully premeditated and minutely executed scams to rip off insurance. The adjectives “hard” and “planned” have been used interchangeably. The terminology “hard fraud” is often reserved for criminal offences (see e.g. Derrig and Krauss, 1994; Derrig and Zicko, 2002; Sparrow, 1998, 2000). While some crooks work alone, others are part of well-organized fraud rings. Examples of hard insurance fraud are filing claims for bogus or staged injuries, accidents, burglaries, fires; conspiracies involving medical doctors, lawyers and patients defrauding workers’ compensation insurance; dishonest insurance agents intentionally failing to remit premiums to the insurance company; and insurers negotiating contracts or claims in bad faith.

Potential victim profiles are as diverse as potential perpetrator profiles. Any insurance taker is either directly (e.g. through lost savings) or indirectly (e.g. through higher premiums) victimized by insurance fraud, though some segments of the population (e.g. elderly and certain immigrant groups) are more vulnerable to some types of fraud, just as some segments of the population are more likely to perpetrate some types of fraud. The amount involved in fraud may also vary considerably, from typically small amounts for so-called soft forms of fraud to larger amounts (either the result of a single fraudulent act or an accumulation of relatively small amounts from a large number of fraudulent acts) for criminal fraud.

Fraud affects all classes of insurance.⁴ The classes that are most common and used by the public at large are most affected, in terms of frequency, if not in terms of average cost, reports the Comité Européen des Assurances⁵ in its 1996 *European insurance anti-fraud guide* (+ 1997 update). The automobile or motor insurance branch (covering, for example, liability, damage, injury and theft), for instance, is widely believed to be among those most

⁴ The following were found by the U.S. National Insurance Crime Bureau (NICB @ <http://www.nicb.org/>) to be among the most popular claim fraud scams for 2000 (NICB, 2001): (1) bodily injury fraud, often associated with staged car accidents, involving fabricated physical injuries and often involving collusion with dishonest doctors or lawyers; (2) auto repair fraud, involving excessive appraisal of the costs, in collusion with an unscrupulous repair shop; (3) homeowners’ claim fraud, involving, amongst others, arson for profit, fabricating claims for phoney burglaries, falls by visitors and the padding of legitimate claims for theft or damage to the home; (4) workers’ compensation fraud, involving the faking of injuries or exaggeration of the extent of a minor injury to collect wage loss benefits from an employer’s workers’ compensation policy.

⁵ CEA @ <http://www.cea.assur.org/>.

affected by insurance fraud (see e.g. CEA, 1996; Caron and Dionne, 1999; Dionne and Belhadji, 1996; Insurance Information Institute,⁶ 2003; Insurance Research Council,⁷ 1996, 2001; IRC and Insurance Services Office, Inc.,⁸ 2001; Weisberg and Derrig, 1991, 1992). Here, fraudsters try to blend into the mass of honest claims, counting on it to go unnoticed as insurers are pressured by the competition to further reduce their processing lead time for optimal customer service. The problem of workers' compensation fraud has received relatively much attention too (see e.g. Butler *et al.*, 1996; Bolduc *et al.*, 2002; Card and McCall, 1996; Derrig and Krauss, 1994; III, 2003; IRC and ISO, 2001).⁹ Also, according to the Coalition Against Insurance Fraud¹⁰ (2003), the U.S. health care system is a particularly easy target for fraudsters due to its massiveness and complexity. Malcolm K. Sparrow (2000), an authoritative health care fraud expert, shares this opinion.

The prevalence of insurance fraud also varies geographically (see e.g. Hynes *et al.*, 2001; IRC, 1996). Common insurance fraud schemes and profiles also do not always carry over from one location to the other. Variation is bound to occur considering industry, economic, social, demographic, cultural, legal, political and other differences, offering different opportunities and leaving different loopholes in the local systems for fraudsters to exploit. Nevertheless, there is usually a significant degree of similarity in the way fraudsters operate. Moreover, under impulse of globalization, deregulation and technological advancement, insurance criminals' action terrain has been allowed more leeway in their expansion across geographical borders.

4. Cost of insurance fraud

Until the late 1980s, no attempts (i.e. neither at industry level, nor at firm level) were made to systematically chart the insurance fraud phenomenon. At least, we are aware of none. Clarke (1989) established the growing concern in Great Britain regarding fraud in the travel, motor, home and business covers. Clarke (1990) was also among the first to record the emerging consensus (albeit with wide variation in responses) on an evidently growing fraud problem in eight Western industrialized nations (Canada, France, Great Britain, Ireland, Italy, The Netherlands, West Germany and the U.S.). In the face of increasing competition and surging insurance costs, the measurement exercise gradually gained weight as the ultimate attempt to prove the seriousness of the problem. Several sources have since tried to assess the extent and cost of the insurance fraud phenomenon in quantitative terms. They generally draw on information from closed claims analyses (see e.g. Artís *et al.*, 1999; Caron and Dionne, 1999; Hynes *et al.*, 2001; IRC, 1996, 2001; Weisberg and Derrig, 1991, 1992), surveys (see e.g. CEA, 1996; Insurance Bureau of Canada,¹¹ 1994; IRC, 1992, 1997a; IRC and ISO, 2001) or crime statistics (see e.g. CAIF, 2001a; Derrig and Zicko, 2002; IFB, 2003).

The discussion document compiled by the NICB, IASIU and CAIF (2000) on occasion

⁶ III @ <http://www.iii.org/>.

⁷ IRC @ <http://www.ircweb.org/>.

⁸ ISO @ <http://www.iso.com/>.

⁹ For example, approximately 85 per cent of the 17,274 referrals to the Insurance Fraud Bureau of Massachusetts (IFB @ <http://www.ifb.org/>) over the period 1991–2000 pertained to auto and workers' compensation claims (Derrig and Zicko, 2002).

¹⁰ CAIF @ <http://www.insurancefraud.org/>.

¹¹ IBC @ <http://www.ibt.ca/>.

of the National Insurance Fraud Forum (NIFF)¹² includes a list of eight “most-notable” published attempts at quantifying the extent of the problem for the U.S. economy. The NIFF observes that most of the past attempts at quantification show important deficiencies as they are either broad (gu)es(s)timates, one-time snapshots or narrowly focus on a single area, typically claim fraud, for only a limited number of insurance business lines, with P&C, especially workers’ compensation and automobile lines, and health insurance having received the greatest attention. Little is reported, for example, on fraud in the life insurance¹³ and disability branches. The same goes for internal fraud. Also, the reported cost figures typically do not consider costs related to the detection, investigation or prosecution of insurance fraud. In the opinion of the NIFF, “the varying estimates are confusing and often contradictory, and the statistical methods do not always hold up to rigorous analysis”.

Here are some broad estimates. The CAIF (2003) estimates that insurance fraud costs Americans at least U.S.\$ 80 billion a year, or nearly U.S.\$ 950 for each family. Health care fraud alone costs Americans U.S.\$ 54 billion a year, the CAIF estimates. The III (2003) estimated P&C claim fraud at U.S.\$ 27 billion in 2001. The Canadian Coalition Against Insurance Fraud¹⁴ (2003) estimates from a study conducted in 1997 that CAN.\$ 1.3 billion worth of general insurance claims paid in Canada every year are fraudulent. In its 1996 *European Insurance Anti-fraud Guide* the CEA notes that the cost of fraud cannot be less than ECU 8 billion, or approximately 2 per cent of the total annual premium income all classes combined for the European insurance industry. In most European countries claim fraud estimates represent between 5 and 10 per cent of the total yearly amount of indemnities paid for non-life insurance. In spite of the flaws identified by the NIFF, the order of magnitude of these estimates leaves no doubt that insurance fraud, using a broad definition, has taken on quite sizeable proportions.

In *Fighting insurance fraud: survey of insurer anti-fraud efforts* the IRC and ISO (2001) report on asking American P&C insurers of all sizes (respondents represented 73 per cent of the U.S. P&C market for 1999) to rate the seriousness of the insurance fraud problem for the industry. On a scale of one (“not a problem”) to five (“a serious problem”), half of all respondents rated fraud “a serious problem”. The average scores for large, medium and small insurers were 4.6, 4.3 and 4.2, with differences between the three groups statistically significant at the 5 per cent level. The major losses were said to be in soft fraud and in private passenger auto and workers’ compensation lines, although respondents agreed that it was difficult to make an accurate judgement as to the extent of soft or hard fraud overall.¹⁵ And fraud usually becomes more prevalent during an economic downturn or recession, the III (2003) notes. Catastrophe fraud is another important phenomenon. Major disasters have

¹² The National Insurance Fraud Forum (NIFF), held on 5–7 June 2000 in Washington, D.C., was a meeting of U.S. fraud fighters, i.e. representatives of the private insurance industry, law enforcement, state fraud bureaux, government regulators and professional organizations from all over the U.S., aimed to explore key action areas and to set a fraud fighting agenda for the next five years. The organization of the forum was a co-operative effort by three major anti-fraud organizations: the NICB, IASIU and CAIF.

¹³ The paper by Colquitt and Hoyt (1997) is one of the few reports of empirical analyses of the nature and cost of fraudulent life insurance claims.

¹⁴ CCAIF @ <http://www.fraudcoalition.org/>.

¹⁵ Soft fraud was defined on the survey as “exaggeration of otherwise legitimate claims” and hard fraud was defined as “deliberate attempts to stage a type of loss”.

typically resulted in an increase of the number of fraudulent claims (see e.g. CAIF, 2001b; Hutton, 2002).

At the end of the day, the actual extent and cost of insurance fraud remain hard to quantify with precision. There are several obstacles to its measurement. The first, particular to the nature of fraud itself, is the fact that it is set up as a covert operation and, as such, is not self-revealing.¹⁶ Fraud is not a static phenomenon either. It is as dynamic as the business environment itself and swiftly capitalizes on the latest opportunities. The CEA (1996), for one, is convinced that there is a considerable gap between the real extent of insurance fraud and what is actually discovered. Likewise, the CAIF (2003) speaks of “so much” that goes undetected. The NIFF discussion document is more prudent and speaks of “some” fraudulent acts going undetected.

Another major hindrance in measuring fraud is the lack of consensus on what exactly constitutes insurance fraud and which types of fraud to focus on. This may be coupled with the more fundamental lack of understanding of the insurance fraud phenomenon. As stated by the NIFF: “Insurance fraud means many different things to different people, and therein lies one of the biggest challenges in measuring fraud: There is no universally understood definition of insurance fraud.”^{17,18} In an interview summed up in the NIFF discussion document, Sparrow speaks of a “widespread failure on the part of insurers, employers, politicians, and law enforcement to understand the complex nature of fraud”.

From what precedes it ought to be clear that the registered data on insurance fraud, as well as the estimates or extrapolations based on the data, are best interpreted with caution. Still, despite the manifold obstacles, efforts at systematic and consistent measurement of the extent and the cost of insurance fraud remain paramount to successful insurance fraud control for at least the following reasons (NICB, IASIU and CAIF, 2000): (1) to raise our understanding of the insurance fraud phenomenon; (2) to help prioritize problem areas and to be able to efficiently allocate the scarce resources; and (3) to make documented and credible statements to the public and other stakeholders in the fight against insurance fraud, so that they are more likely to buy into solutions. It also makes the different stakeholders better understand their roles in the fight against fraud.

¹⁶ Dionne (2000) provides a discussion on the difficulties in the empirical measurement of asymmetric information problems with an emphasis on insurance fraud (see also Chiappori, 2000).

¹⁷ For example, Derrig and Zicko (2002) propose adopting a strict legal definition of fraud, i.e. “reserved for criminal acts, provable beyond a reasonable doubt, that violate statutes making the willful act of obtaining money or value from an insurer under false pretenses or material misrepresentations a crime”. The authors (see also Derrig, 2002) note that this working definition of fraud will not be in line with many of the large dollar and claim proportion estimates (such as the ones mentioned earlier in this article).

¹⁸ Interesting findings were published by Weisberg and Derrig (1998) from a study of Massachusetts auto injury closed claims. It was noted that claim adjusters were likely to have a somewhat different perspective on the nature of insurance fraud than more specialized fraud investigators. Investigators, unlike adjusters, generally did not distinguish between build-up and fraud. Whereas adjusters could typically attempt to achieve a compromise of the payment amount, investigators typically did not compromise or consider a continuum of possible responses to the claim fraud question. Also, investigators had access to somewhat different types of evidence and information gathering methods and were hypothesized to be less sensitive to cost-benefit trade-offs. The study illustrates how the assessor’s function profile, the function’s decision and action radius and resource availability impact the assessor’s *de facto* definition of insurance fraud.

5. Fraud = motivation × opportunity

Fraud is the product of both motivation (i.e. a supply of motivated perpetrators) and opportunity (i.e. the availability of suitable targets and the absence of capable guardians) (Cohen and Felson, 1979). By far the most common motivation for fraud is the economic motivation. Explanations based on greed or (perceived) financial strain feature in almost every tale of fraud. Other motivational factors are, for example, the delight taken in the act of fraud itself, the gratification obtained from the mastery of a situation, ego, prestige, pride and revenge (Duffield and Grabosky, 2001). Fraud also follows opportunity (Felson and Clarke, 1998). Insurance, by its very nature, is especially prone to fraud. Information asymmetries leave the players with no option other than to trust each other at transaction time. Due to the absence of perfect information, many opportunities naturally arise in which one or more of the parties involved have a clear economic incentive to commit fraud, either premeditated or opportunistic.

Insurance fraud is regarded by many, for example, the CAIF (2003), as a low-risk, high-reward game for criminals, far safer than committing armed robbery, trafficking or dealing drugs. Among the elements that play to the criminals' advantage are, according to the CAIF, the absence of specific legislation on insurance fraud in several U.S. states, the relatively light sentences compared to other criminal offences, and the lack of determination to root out fraud displayed by insurers, the courts and prosecution authorities. The CEA (1996) too has expressed its genuine concern about organized insurance crime spreading all over Europe, particularly in the motor class. There is every reason to fear, according to the CEA, that criminals will not hesitate to exploit the opportunities offered by the open frontiers within the European Union, the dissimilarity of national legislative systems, and the absence of co-operation between insurance markets.

However, the problem of insurance fraud extends beyond fraud perpetrated by professional criminals. So-called soft fraud has received relatively much attention too.¹⁹ The joint IRC and ISO (2001) U.S. P&C industry survey, for example, reports that more insurers thought that soft fraud was both more frequent and more costly to their companies than hard fraud.²⁰ The relative frequency and costs of soft and hard fraud have also been reported on in the IRC's (1996) closed claims study of approximately 12,000 bodily injury liability claims and 3,000 no-fault personal injury protection claims collected in nine U.S. states and from 28 insurance companies. The study offers a compelling piece of evidence for the hypothesis that claim padding or exaggeration of injuries from real accidents is more of a problem to the insurance industry than outright fraud from explicitly staged accidents.

The epidemic proportions imputed to the unwelcome opportunistic behaviour of normally honest people have been linked to a problem of bad public attitudes. "The public views insurance fraud as a crime of easy money with little risk of getting caught, or of few serious consequences if they are caught", says the NIFF. The CEA (1996) very broadly relates the growth of the problem of insurance fraud, above all, to "the development of the mentality, the prohibitions and the need which citizens in our Western societies feel to satisfy the desires created by the attractions of consumerism". Many observers agree that

¹⁹ We reiterate from the discussion in section 3 that the label "soft" tends to be broadly associated with unwanted opportunistic behaviour of normally honest people. What behaviour exactly falls under this category is not always made explicit and depends on the stakeholder using the vocabulary, but it generally includes claimants seizing an opportunity to inflate the damages of an otherwise legitimate claim (claim padding or build-up).

²⁰ For a definition of soft and hard fraud on the IRC and ISO (2001) survey see Note 15 above.

the omnipresent mentality of the modern age that glorifies wealth is a powerful behavioural driver. It typically feeds the perpetrator's perception of financial strain as a motivational factor of fraud.

Public tolerance has been documented by the IRC, who has been monitoring American public tolerance for insurance fraud since 1989 (see e.g. IRC, 1997b, 2000, 2003), and the CAIF (1997). The CCAIF also reports public tolerance data for Canada on its website (CCAIF, 2003).

Prospective perpetrators often try to nullify internal moral objections or rationalize away the element of criminality by manufacturing rationale and extenuating circumstances justifying their act (Duffield and Grabosky, 2001). Common justifications for acts of insurance fraud are, for example, perceiving insurance fraud as a victimless crime; considering defrauding insurance as a sport; claiming that insurers can afford it; seeing insurers as socially acceptable targets; considering slightly inflating claims to be a just method of recovering past premiums paid or recouping a deductible; arguing that claim padding is normal since everyone does it, and those that do not are seen as naive. The perpetrator may find some additional legitimization for his act in the fact that professionals such as lawyers and doctors are involved in the fraud.

A widespread public feeling of unfairness with regard to insurers, often perceived as making undue profits (see e.g. CAIF, 1997), seems to have a hand in the proliferation of so-called soft fraud. That insurance does not provide pleasure when it is bought and is often mandated are factors that are likely to contribute to this negative image of insurance provision (CAIF, 1993). The same can be said for the actual consumption of the contract, which happens under adverse circumstances. In addition, the image problem can be expected to worsen whenever insurers are turning to tougher underwriting standards and reducing availability.

While focusing almost exclusively on the development of the portfolio, that is, pursuing premium income rather than profitability, insurers largely de-emphasized the obligations of the insured to its insurer. This seems to have come up to a point where the insured's familiarity with the nature of insurance can no longer be taken for granted. This leads Clarke (1990) to hypothesize that some so-called soft fraud may actually be due to genuine errors of naive insureds. Whatever the truth of the matter, re-familiarizing the general public with the essence and importance of insurance, as well as with the potentially devastating effects of abuse, may prove valuable anyhow.

Finally, many observers underline individual insurers' and the sector's own responsibility for the current state of affairs, and emphasize that insurers themselves are guilty of displaying high levels of tolerance of insurance fraud. For example, several of the replies to the 1994/1995 survey held by the CEA *vis-à-vis* its member associations (CEA, 1996) regretted the absence of the insurance sector's real desire to fight insurance fraud and denounced the widespread industry contentment with cheap declarations of intent without any real commitment to effective measures. Insurers were blamed for assuming a fatalist position toward fraud, considering it inevitable, too difficult or too costly to combat, and surrendering without a real fight.

6. Complexities of fraud control

Granted, fraud control is a complex issue, "more complex and difficult than is usually appreciated" (Sparrow, 1998). The following impediments stand in the insurer's way to

effective fraud control. The discussion parallels the work of Sparrow (1997, 1998, 2000) and Clarke (1989, 1990).

6.1 *Fraud is not self-revealing*

The ambition of fraud is to be processed as normal. This means that fraud has to be looked for to be discovered. One only sees what is unveiled; and that is never the problem, Sparrow regularly claims. Moreover, unless fraud is detected promptly, it is likely to go unnoticed. Fraud control is subject to the constraints of speedy detection and minimal investigative lead time. This is one of the profound implications of automation and the increasing use of powerful information and communication technologies. Pay and chase is neither effective, nor efficient. As Clarke (1989) points out, “once money is paid out it is of course difficult to recover”.

6.2 *Proving fraud legally is difficult*

Mere suspicion of fraud is not enough to act as legal proof. The warning signs that trigger suspicion may be suggestive of a degree of risk, but often fail as definitive proof (“beyond reasonable doubt”). Thus, insurers contemplating a legal course of action had better be prepared to invest money in specialized investigation. Considering the seriousness of the allegation one needs solid, high-standard legal evidence of fraud. It is therefore not unlikely for an insurer to deem it more appropriate, i.e. less costly according to its calculations, to negotiate or simply pay out if the claimed amount is moderate,²¹ rather than take a visibly aggressive stance and risk being sued for bad faith (Clarke, 1989).

6.3 *Fraud is a dynamic phenomenon*

Fraud evolves with the business (e.g. into the internet economy). It thrives on the complexities and dynamism of the business environment. Sophisticated fraudsters swiftly capitalize on the latest opportunities. To effectively cope with fraud one needs an agile fraud control apparatus that swiftly and systematically spots new and emerging fraud risks.

6.4 *Fraud control is not understood*

The challenge of fraud control is to effectively prevent (deter), detect and investigate fraud in an automated, high-volume, online transaction processing environment without jeopardizing the advantages of automation in terms of efficiency, timeliness and customer service. Automated prevention, terminology coined by Sparrow, is the prevalent design mantra that aims at protecting totally electronic transaction systems by implementing comprehensive batteries of up-front edits and audits that check for procedural correctness, in the belief that these will keep fraud out of the system altogether. It ignores, however, the fundamental nature of fraud control (Sparrow, 1997):

²¹ Dismissing investigation just because a claim is low in value is definitely not a good idea. This creates a fatal flaw in the system for knowledgeable crooks to exploit.

- (1) Fraud control is dynamic, not static. The static transactional quality controls on which automated prevention rests, help guarantee procedural uniformity, but do nothing to check the veracity of the transaction itself. In fact, they make automated transaction-handling systems perfectly predictable. Hence, they create a false sense of security. Effective fraud control requires an element of unpredictability, one that always puts the perpetrator at some risk of getting caught.
- (2) Transaction-level monitoring is not enough. Successful detection of sophisticated fraud schemes generally relies on cross-sectional and longitudinal analysis of context-enriched transaction data and rigorous external validation of the veracity of the submitted transaction data.
- (3) Auto-rejection provides little useful intelligence. Auto-rejection as such offers little opportunity for fraud fighters to learn what fraud perpetrators are up to.
- (4) Auto-rejection lacks deterrent value. When relying solely on auto-rejection, there is virtually nothing deterring fraudsters from attacking the same target over and over, always trying something different. In fact, the worst that can happen is that the transaction bounces.
- (5) Accountability disappears with automated prevention. Fraud control under the automated prevention model aims at running without costly human involvement. But then, who will be in charge of fraud control? Who will be accountable for fraud control?

Neither the purely reactive configuration, which kids itself into thinking that what gets detected is representative of the problem, nor the purely preventive approach, which loses track of new detection opportunities, provide satisfactory answers. Above all, fraud control needs to be proactive, i.e. foster a way of working that keeps up with fraud by minimizing fraudster motivation, opportunity and damage done.

6.5 *News on fraud is always bad news*

Fraud control is not only a complex matter. It is also especially hard to sell to management. As Sparrow (1998) states: "Fraud control — in *any* profession — is a miserable business. Failure to detect fraud is bad news, and finding fraud is bad news too." The very existence of fraud is an embarrassment to insurers and their management. This helps to explain why insurers still seem to prefer not to be associated with fraud in any respect, be it as victim or crusader.

6.6 *Return on investment is hard to quantify*

The proceeds of fraud control, which potentially are massive considering the estimated extent and scope of the phenomenon, are diffuse, typically long-term and largely spill over to other business functions that are more directly related to the bottom line. Moreover, how does one correctly quantify or measure the value of fraud prevention and deterrence?

6.7 *Other strategic objectives prevail*

The following strategic objectives are often perceived to be in conflict with fraud control:

- (1) Image building. The cautionary nature of fraud control is perceived as a threat to the

already extremely hard image-building exercise and is easily interpreted as an anti-consumer move.

- (2) Processing efficiency. Customer service has to a large degree become synonymous with processing efficiency. In this configuration there is little time for lengthy fraud control at underwriting or claim time.
- (3) Development of the portfolio. Premium income has been a historical priority ever since insurance made the transition to consumer society. Concerns about the health of the portfolio have only recently gained ground.

6.8 *Free-riding is an option*

Can one protect the potential benefits from investment in fraud control and use them as a proprietary competitive advantage? If not, then any rational insurer is given the option of benefitting from the efforts of others without itself contributing to these efforts. Among the arguments that stimulate the choice to free ride is the hypothesis that potential fraudsters' perception of the profitability of fraud is formed by looking at the fraud control apparatus of the sector as a whole. Assuming that fraud affects all competitors equally and that the additional cost resulting from fraud is equally spread over every insurer's cost price, it has no impact on competitiveness; a consideration that seems to be made by insurers at company level even when the importance of fraud is recognized, says the CEA (1996).

Many simply claim it is virtually impossible for an individual insurer to make a significant contribution on its own. Also, the fear exists among insurers that going solo in a crusade against fraud risks impairing one's image and reputation *vis-à-vis* the competition. As argued by Clarke (1989), prospective customers may then prefer to go to a competitor to avoid delay, lengthy form-filling and irritation. Still, an insurer willing to commit to fraud control may well create for itself an important competitive advantage over those that do not. The trick is then for this insurer to convince its customers of the added value of its proprietary investment in fraud control. This investment in trust may well be what the customer nowadays is looking for (see e.g. Keen *et al.*, 1999 on "the trust economy"). Another way to break the chain of argumentation for passivity is to get insurers to co-operate and to credibly commit to concerted uncompromising action against fraud. Co-operation would not only take away the threat for individual insurers of being commercially punished for taking a tough stance against fraud, it could also improve the cost efficiency of fraud control and upgrade its effectiveness.

But insurers cannot be expected to completely rein in the fraud problem by themselves. For instance, without the proper vigilance by regulatory and control authorities there is a definite risk that the voids left by cost-cutting insurers and insurers tightening supply and retreating from high-risk areas or areas with unacceptably high claim rates (potentially caused by a fraud problem) are filled by bogus providers. Insurers do not have direct regulatory and legislative authority (to impose severe penalties on the crime of insurance fraud) or prosecution authority (to swiftly get fraudsters convicted for the crime of insurance fraud) either.

Prosecution authorities, courts and legislators have been criticized, and have often been passed the buck by the insurance industry, for not treating insurance fraud as a genuine priority. Insurance crime is in constant competition with other high-profile crimes (e.g. drugs dealing or trafficking and violent crime) for scarce prosecution resources. For the III (2003) it is clear that success in the battle against insurance fraud crucially depends on the following two elements: "the resources devoted by the insurance industry itself to detecting

fraud and the level of priority assigned by legislators, regulators, law enforcement agencies and society as a whole to eradicating it”.

7. Current anti-fraud activity

The main defence mechanisms within the insurance industry remain at the firm level, which is most proximal to the origination of the fraud. Community-level anti-fraud activity empowers and complements these firm-level defences.

7.1 Firm-level prevention and detection

Devising ways for insurers to stop fraud from occurring has been the subject of a large body of (mostly theoretical) literature that uses the principal-agent setting of game theory to study optimal insurance contracting and auditing in the presence of asymmetric information creating opportunities for fraud.²² The focus of this literature is on the deterrent effect of anti-fraud measures. The basic model, going back to Townsend's (1979) costly state verification, describes a situation where an opportunistic utility maximizing agent is obliged to report the true state of the world, which is privileged information, to a principal after the occurrence of the hazard, but has an incentive to deliberately misrepresent the state of affairs to obtain an advantage from the insurance contract. The problem of the principal is to design contracting and auditing (against minimal costs, including claim payment and audit costs) in such a way that they deter the opportunistic agent from committing fraud in the first place. For example, fraud-resilient contract design (e.g. via deductibles, no-claims formula, bonus-malus systems and indemnification in kind rather than *in specie*) and the insurer's visible and credible commitment to costly audit strategies (e.g. using special investigators, site investigation, recorded and sworn statements and independent expert opinion) and to imposing legally and contractually defined penalties for fraud are mechanisms that are expected to induce truth-telling behaviour at transaction time and deter potential perpetrators.

The most effective way to fight fraud is to prevent abuse of the system. This has led insurers to, amongst others, improve their applicant screening facilities, provide special training for front-office and claims-handling personnel, invest in specialized investigative skills, intensify communication and co-operation within the industry and between the industry and prosecution and police authorities, and sponsor state- or country-level fraud bureaux. Internal fraud is covered by internal audit solutions. Preventive activity has also taken the form of public education, making the public aware of the detrimental effects of fraud and increasing public vigilance. Yet fraudsters always seem to find new ways of exploiting the inertia of complex systems, especially when there is a lot of money involved. It is then imperative that fraudulent activity is identified at the earliest possible moment, and that cheats are swiftly tracked down. This way, losses due to fraud are minimized.

²² See e.g. Bond and Crocker (1997), Crocker and Tennyson (1999), Kaplow (1994), Picard (1996); and see Picard (2000) for a good overview of this literature. The latter also focuses on the risk of collusion between policyholders and parties in charge of marketing insurance contracts. For the economics of collusion see also Kofman and Lawarrée (1993, 1996a, 1996b) and Tirole (1992). A second important body of literature (addressed later in this section) focuses on the practical difficulties of identifying suspicious claims in an operational context using several flavours of empirical data modelling and automation.

The problem in detecting, and ultimately deterring,²³ fraudulent claims is the identification of characteristics that distinguish them from valid claims. Most insurance companies use lists of fraud indicators or flags (most often per insurance business line), representing a summary of the detection expertise, as a standard aid to claims adjusters for assessing (suspicion of) fraud at claim time. These lists form the basis for systematic and consistent identification of fraudulent claims (Derrig, 2002).

Claims adjusters are trained to recognize (still often informally, judgementally) those claims that have combinations of flags that experience has shown are typically associated with fraudulent claims. This assessment is embedded in the standard claims-handling process that is roughly organized as follows. In a first stage, a claim is judged by a front-line adjuster, whose main task is to assess the exposure of the insurance company to payment of the claim. In the same effort the claim is scanned for fraud. Typically, claims that raise serious questions, or involve a substantial payment, are scheduled to pass a second reviewing phase. In case fraud is suspected, this might lead to a referral to a special investigation unit (SIU).²⁴

The generic operational claim fraud control model encompasses screening, investigation and negotiation/litigation phases.

- (1) Screening. Early claims screening helps to decide upon the nature of incoming claims as either suspicious or not. This is the basis for routing the claim through different claims handling workflows (Derrig, 2002). Claims that pass the initial (automated) screening phase are settled swiftly and routinely, involving a minimum of transaction processing costs. Claims that are flagged as suspicious pass a costly state verification process, involving (human) resource-intensive investigation. The screening process is designed to take into account these cost asymmetries. The claims screen typically takes the form of a scoring device, which relates case-based fraud indicators to levels of suspicion. As indicative information on the level of fraud suspicion only gradually becomes available during the life of a claim, the diagnostic system ought to follow claims throughout their lives.
- (2) Investigation. Cases that raise enough questions during routine processing are referred to specialized investigators, whose task is to try to uncover the true nature of the situation and reach informed judgement through in-depth inquiry. Work here is mainly driven by the experience, skill, creativity and situational empathy of the human investigator, which generally makes work proceed in a non-routine, ad hoc manner and takes considerable time, effort and money. The investigator's workbench ideally is geared towards this exploratory exercise of analysis and synthesis. It should provide an agile virtual window to a multifold of internal and external investigative resources (e.g. up-to-date lists of important contacts, e-mail or bulletin board services, database search and navigational capabilities, specialized analytical software).

²³ See Tennyson and Salsas-Forn (2002) for a discussion on the paired objectives of deterrence and detection for claims auditing.

²⁴ Specific attention to fraudulent insurance transactions began to emerge in the U.S. with the designation of groups of experienced claims adjusters with specialized skills in the investigation of claims. These units came to be known generally as SIUs (Ghezzi, 1983), and are commonplace now in claims operations in the U.S. Canadian and European insurers recognized the fraud problem as well and moved to adopt the SIU format for handling suspicious claims.

(3) Negotiation/litigation. With a strong enough case for fraud (using whatever working definition chosen) the insurer may then decide to dismiss or reduce compensation or even decide to press charges. However, few fraud cases ever reach the courts. Litigation and prior special investigation typically involve lengthy and costly procedure. Insurers also are fearful of getting involved in lawsuits and losing, which may compromise their reputation. Insurers generally prefer to settle cases of soft fraud internally, i.e. through negotiation, except maybe for the most flagrant cases of fraud. And even though it may not be the preferred action for cases of hard fraud, negotiation may be necessary in the absence of evidence of guilt beyond a reasonable doubt. As pointed out by Clarke (1989), the insurer's strategy is then geared to confronting the claimant with the gathered evidence and gently developing pressure to make him reduce or drop the claim. This also ought to deter the claimant from defrauding insurance again. The final decision on what action to undertake will typically not be made without explicit consultation with senior or qualified personnel (e.g. for balancing prudential against commercial arguments).

Offensive fraud control is systematically on the look-out for new fraud opportunities, new schemes and emerging trends, and is equally agile in deploying revised fraud controls. This proactivity is sustained by a number of supporting processes (e.g. archiving, reporting and knowledge discovery in databases) that continuously monitor the operational model and are aimed at its continuous improvement. The use of new technologies (e.g. data warehousing, data mining and high-speed networking) helps enable this proactivity. Moreover, automated types of fraud detection should make it possible to reduce the investigative process lead time and allow for more optimal allocation of scarce investigative resources. The usefulness of these technologies, however, is likely to depend on the judgement and expertise of the people applying them, a belief shared by many insurers, according to the industry poll reported by the IRC and ISO (2001).²⁵

The increasingly systematic electronic collection and organization of, and company-wide access to, coherent insurance data have made the use of automatic pattern-learning techniques for the identification of insurance fraud patterns a valid and worthwhile endeavour. This has, for example, stimulated data-driven initiatives aimed at analysing and modelling the formal relations between fraud indicator combinations and claim suspiciousness in closed claims empirical studies. Studies in automobile insurance include those using Massachusetts data with regression techniques (Weisberg and Derrig, 1998), with fuzzy clustering (Derrig and Ostaszewski, 1995), with unsupervised neural networks (Brockett *et al.*, 1998), with principal component analysis of ridit scores (Brockett *et al.*, 2002), with a spectrum of discriminant analysis techniques (Viaene *et al.*, 2002), and with ensemble methods (Viaene *et al.*, 2004); using Canadian data with regression and probit models (Belhadji *et al.*, 2000); and using Spanish market data with regression models (Artís *et al.*, 1999, 2002). In health care we find Rosenberg *et al.* (1999), who identify non-acceptable hospital utilization claims with hierarchical Bayesian logistic regression. Major

²⁵ Since the end of the 1980s, the IRC has regularly polled U.S. insurers for their perceptions on and attitudes toward insurance fraud and the measures taken to fight it. The joint IRC and ISO report (2001) on a large-scale U.S. P&C industry survey conducted in 2000 is the third in a series from the IRC describing insurer anti-fraud activities (see also IRC, 1992, 1997a). The study discusses anti-fraud programmes, anti-fraud efforts, detection methods and SIU activity. See also Conning Research & Consulting's (2000) survey of major P&C, life and health insurance writers in the U.S., documenting how insurers are combating fraud, what insurers believe is most important and what actions appear to be most successful.

and Riedinger (2002) discuss the development of practical models to sort out health care claims for fraud investigation using database organization and selection strategies. Some important material referenced here is found in the September 2002 special issue of the *Journal of Risk and Insurance* devoted to the theoretical and practical aspects of claim fraud detection and deterrence.

7.2 *Fraud bureaux and other anti-fraud alliances*

In response to the growing evidence attesting to the seriousness of the insurance fraud problem, more and more U.S. states have adhered to a strategy of establishing special-purpose, centralized insurance fraud bureaux, often with the help of insurance industry funding, to tackle the insurance fraud problem at the local industry level. These state agencies are charged primarily with helping insurers and other stakeholders investigate cases of suspected insurance fraud so that they can be readily prosecuted. They also aim at creating a smooth connection between the first-line (firm-level) detection capabilities and those responsible for legally sanctioning fraud perpetrators. Some fraud bureaux have prosecutors assigned to them. A CAIF (2001a) study documents U.S. fraud bureaux anti-fraud activity and its evolution.²⁶ Canada (see e.g. CCAIF and IBC websites) and most European countries (see e.g. CEA, 1996, 1997) have undertaken similar action for their respective markets.²⁷

Since the 1980s, several other anti-fraud alliances (e.g. CAIF, NICB and IASIU) have seen the light of day, partnering with insurers, insurer and consumer organizations, public authorities and other stakeholders to facilitate the prevention (deterrence), detection, investigation and prosecution of insurance fraud. In addition to their commitment to study and analysis of the fraud phenomenon and their assisting insurers and public authorities in tracking down and prosecuting fraudsters, these bodies, like fraud bureaux, serve an important information-dissemination and awareness-raising function, fostering understanding, mobilizing the stakeholders to undertake appropriate action and changing the public's and other stakeholders' lenient attitude toward insurance fraud.

Relevant information on fraud, anti-fraud and (potential) fraudsters remains overly dispersed and under-utilized. Much can be gained, for example, in terms of earlier detection, by pooling resources. A single insurer may not have enough means for timely analysis and synthesis of enough aspects of potential fraud cases. A broad, aggregate, centralized intelligence clearing house enables linking up and sharing (within legal limitations) detailed information on policies, applicants, policyholders, claimants, risks, losses, doctors, repair shops, lawyers, and so on. Of course, this only works if the system is able to rely on accurate and timely input from a broad insurer and other organization base, without compromising honest competition, however. Pooling information resources may not mean that competing insurers directly have access to each other's commercially valuable customer database. Otherwise, insurers will not be inclined to participate.

In 2000, the NIFF set a community-level fraud-fighting agenda for the next five years

²⁶ See also Derrig and Zicko (2002) for a report on the process of prosecuting insurance fraud at the Massachusetts IFB from ten years of data (i.e. 1991–2000) on referrals and disposals of incidents of suspected fraud as processed by the IFB.

²⁷ The member information on the International Association of Insurance Fraud Agencies' (IAIFA @ <http://www.iaifa.org/>) website is indicative of the worldwide adoption of the fraud bureau concept.

with five key impact areas: (1) legislation and regulation, (2) public awareness, (3) emerging issues, and (4) public-private partnerships.

- (1) Legislation and regulation. Model legislation and regulation help optimize fraud fighting by securing uniformity. Standardization and compatibility of legislation and regulation across markets increase the efficiency and effectiveness of anti-fraud. They also improve the measurement and comparison of fraud-fighting performance. Initiatives include laws explicitly defining insurance fraud as a specific crime,²⁸ laws establishing insurance fraud bureaux,²⁹ statutory or regulatory requirements for insurer anti-fraud activities,³⁰ and immunity statutes designed to allow insurers and others to share information related to insurance fraud investigations without fear of being sued for defamation or invasion of privacy.³¹
- (2) Public awareness. Public awareness efforts aim at convincing potential perpetrators that fraud does not pay, at empowering individuals to avoid being victimized by fraud scams, and at creating a general environment of intolerance toward defrauding insurance. These sensitization efforts are best embedded in a unified, long-term public awareness programme, piloted by a diverse alliance of insurance and non-insurance groups, and rooted in well-researched problem understanding. The alignment of allies in the fight against insurance fraud can deliver the scale, funding, consistency and credibility of the message needed to effectively and efficiently change bad attitudes.
- (3) Emerging issues. The insurance fraud problem is fundamentally affected by contemporary contextual drivers of change such as fast-paced technological advancement, trends toward globalization and deregulation of commerce, and the changing nature of financial services provision. The NIFF discussion document includes a broad list of emerging fraud-fighting issues classified as strengths, weaknesses, opportunities or threats. It is imperative for all members of the anti-fraud community, among them the public, legislators and regulators, civic leaders, and insurance executives, to reassess

²⁸ Several U.S. states have wholly or partially adopted the CAIF's *Model Insurance Fraud Act* (CAIF, 1999). This comprehensive model law for U.S. states broadly defines insurance fraud, attempted fraud, penalties, restitution, civil remedies, civil immunity for reporting fraud and regulatory requirements for insurers. Another all-in model bill for U.S. state legislators is the National Association of Insurance Commissioners' (NAIC @ <http://www.naic.org/>) *Insurance Fraud Prevention Model Act* (NAIC, 2003).

²⁹ The CAIF has drafted model legislation to help U.S. states create insurance fraud bureaux. Its *Model Fraud Bureau Act*, adopted September 1995, is aimed at giving U.S. states a complete tool to create or upgrade an insurance fraud bureau. It broadly defines terms, levels of authority, immunity for investigators and referral of cases to prosecution. It also suggests how to fund the operations of the bureau and prosecution efforts, and explores civil fining authority.

³⁰ These laws and regulations aim at ensuring that insurers systematically isolate insurance fraud and organize their anti-fraud efforts accordingly. This includes requirements for mandatory fraud plans, annual fraud reporting, mandatory case reporting and SIUs. For an overview of U.S. state regulatory requirements for insurers see CAIF (2001c).

³¹ These laws complement more general immunity for good-faith reporting of all crimes. Information-sharing is paramount in the fight against fraud. The ability to share, access and use (electronic) information for pursuing insurance fraud offenders is, however, limited by, amongst others, libel, fair-trade practice and privacy constraints, increasing the risks of liability lawsuits. The fact that ever more data are being stored electronically can be regarded as a blessing for fraud fighters. However, privacy advocates warn that the illegitimate use of personally identifiable data also is getting easier when data are stored in electronic form. The privacy issue may thus have an adverse or deterrent effect on anti-fraud activity. Striking a balance between broad and stringent privacy preserving laws and rules and the exemptions that allow information to be shared and pooled for fraud fighting is the order of the day.

their view of the role fraud plays in their day-to-day success or failure. How can each of them best contribute to holistic and proactive fraud management?

- (4) Public-private partnerships. Improved communication, co-operation and co-ordination between the public and private sector are required to be able to more effectively fight insurance fraud, i.e. focus and consolidate the overall fight against insurance fraud. This means, amongst others, encouraging effective and efficient public-private information-sharing, streamlining insurance fraud reporting, and developing shared education and training programmes for all involved parties through a strong public-private alliance.³² Issues that, in the eyes of the NIFF, definitely require attention are the lack of insurance fraud prosecution, the use of all civil remedies available to punish insurance fraud perpetrators, and the limited funding for prosecutors, regulators and law enforcement.
- (5) Measuring fraud and anti-fraud. The NIFF acknowledges that a consistent, all-industry and fair measurement system is essential to be able to optimally allocate scarce resources, to create understanding of the degree of impact various solutions have, and to give credibility to insurance fraud fighting. This requires developing clear and concise definitions of fraud for the purpose of uniform measurement, and promoting their understanding and use with industry, government, academia and media. It means, amongst others, developing and comparing methods for conducting closed claims studies, measuring the extent of fraud in the application process, investigating potential sources of valuable information for measurement purposes, and publishing guidebooks and manuals to assist in the measurement process.

8. Summary

We started this article with a discussion on the essence, typology and cost of insurance fraud. We linked the essence of insurance fraud to the existence of information asymmetries between transacting parties and to a breach of the fundamental insurance principle of the utmost good faith. Then we introduced three commonly encountered functional classifications of insurance fraud: internal vs. external, underwriting vs. claim, and soft vs. hard. We argued that producing exact figures on the extent and cost of insurance fraud remains difficult as it is set up as a covert operation and is not well understood. Still, current estimates leave no doubt that insurance fraud, using a broad definition, has evolved into a prevalent and costly problem.

We proceeded to analyse the problem as the product of motivation and opportunity. We scoped the problem beyond fraud perpetrated by professional criminals and reported on a serious concern about a widespread public mentality that is rather tolerant of (soft) insurance fraud. We noted that insurers have been blamed too for having displayed high levels of tolerance and for having failed to tackle the problem effectively. However, under pressure of increasing competition and rising costs, insurers seem to be prepared to take a tougher stand in

³² An example of public-private partnership is the NICB-ISO data-integration agreement that became effective on February 1998, moving to build a consolidated all-claims anti-fraud database. Some of the history of this association is available from ISO's web site (<http://www.iso.com/>) in the form of posted press releases. Another example is the NICB-operated *National Insurance Crime Training Academy* (NICTA @ <http://www.nicta.org/>). This Academy was conceived to provide a cyber-portal offering education and training to improve the prevention, detection, investigation, and civil and criminal prosecution of insurance crime. It aims to be the standard, 24-7 on-line venue for anti-fraud training for law enforcement, insurance personnel and the public.

the fight against insurance fraud. Still, several hurdles continue to stand in the insurer's way to effective fraud control. We therefore addressed the complexities of fraud control.

In a high-level overview of current anti-fraud activity we first presented how insurers deal with prevention and detection. Preventive mechanisms are aimed at stopping fraud from occurring. Detection is aimed at accurate and timely identification of fraudulent activity. Visible and credible detection, as well as a commitment to punish fraud perpetrators, also have an important deterrent function. Proactivity demands that anti-fraud activity continuously adapts to changes in its environment. We noted that insurers are counting on fraud-fighting support from other stakeholders and discussed community-level anti-fraud initiatives. We elaborated on the following key action areas to be tackled in concert: legislation and regulation, public awareness, emerging insurance fraud issues, public-private partnerships, and measuring fraud and anti-fraud.

Acknowledgements

Comments by two anonymous referees have been helpful in improving the article in its final form. The authors acknowledge with gratitude financial support from the KBC Insurance Research Chair at K.U. Leuven, sponsored by KBC Banking and Insurance, Belgium.

REFERENCES

- ARTIS, M., AYUSO, M. and GUILLEN, M., 1999, "Modelling Different Types of Automobile Insurance Fraud Behaviour in the Spanish Market", *Insurance: Mathematics and Economics*, 24 (1–2), pp. 67–81.
- ARTIS, M., AYUSO, M. and GUILLEN, M., 2002, "Detection of Automobile Insurance Fraud with Discrete Choice Models and Misclassified Claims", *Journal of Risk and Insurance*, 69 (3), pp. 325–340.
- BELHADJI, E.B., DIONNE, G. and TARKHANI, F., 2000, "A Model for the Detection of Insurance Fraud", *The Geneva Papers on Risk and Insurance: Issues and Practice*, 25 (4), pp. 517–539.
- BOLDUC, D., FORTIN, B., LABRECQUE, F. and LANOIE, P., 2002, "Workers' Compensation, Moral Hazard, and the Compensation of Workplace Injuries", *Journal of Human Resources*, 37 (3), pp. 623–652.
- BOND, E.W. and CROCKER, K.J., 1997, "Hardball and the Soft Touch: the Economics of Optimal Insurance Contracts under Costly State Verification and Endogenous Monitoring Costs", *Journal of Public Economics*, 63 (2), pp. 239–264.
- BROCKETT, P.L., XIA, X. and DERRIG, R.A., 1998, "Using Kohonen's Self-organising Feature Map to Uncover Automotive Bodily Injury Claims Fraud", *Journal of Risk and Insurance*, 65 (2), pp. 245–274.
- BROCKETT, P.L., DERRIG, R.A., GOLDEN, L.L., LEVINE, A. and ALPERT, M., 2002, "Fraud Classification Using Principal Component Analysis of Riduals", *Journal of Risk and Insurance*, 69 (3), pp. 341–371.
- BUTLER, R.J., DURBIN, D.L. and HELVACIAN, N.M., 1996, "Increasing Claims for Soft Tissue Injury in Workers' Compensation: Cost Shifting and Moral Hazard", *Journal of Risk and Uncertainty*, 13 (1), pp. 73–87.
- CANADIAN COALITION AGAINST INSURANCE FRAUD, *Insurance Fraud*. Available at: URL:<http://www.fraudcoalition.org/>. Last accessed 1 September 2003.
- CARD, D. and McCALL, B.P., 1996, "Is Workers' Compensation Covering Uninsured Medical Costs? Evidence from the 'Monday Effect'", *Industrial and Labor Relations Review*, 49 (4), pp. 690–706.
- CARON, L. and DIONNE, G., 1999, "Insurance Fraud Estimation: More Evidence from the Quebec Automobile Insurance Industry", Chapter 9 in Dionne, G. and Laberge-Nadeau, C. (eds), *Automobile Insurance: Road Safety, New Drivers, Risks, Insurance Fraud and Regulation*. Boston, MA: Kluwer Academic Publishers.
- CHIAPPORI, P.A., 2000, "Econometric Models of Insurance Under Asymmetric Information", Chapter 11 in Dionne, G. (ed.), *Handbook of Insurance*. Boston, MA: Kluwer Academic Publishers.
- CLARKE, M., 1989, "Insurance Fraud", *British Journal of Criminology*, 29 (1), pp. 1–20.
- CLARKE, M., 1990, "The control of insurance fraud: a comparative view", *British Journal of Criminology*, 30 (1), pp. 1–23.
- COALITION AGAINST INSURANCE FRAUD, 1993, *Focus on Fraud: An Issues Roundtable*. Washington, D.C., October.
- COALITION AGAINST INSURANCE FRAUD, 1995, *Model Insurance Fraud Bureau Act*. Washington, D.C., September.

- COALITION AGAINST INSURANCE FRAUD, 1997, *Four Faces: Why Some Americans Do — and Don't — Tolerate Insurance Fraud*. Washington, D.C., October.
- COALITION AGAINST INSURANCE FRAUD, 1999, *Model Insurance Fraud Act*. Washington, D.C., February.
- COALITION AGAINST INSURANCE FRAUD, 2001a, *A Statistical Study of State Insurance Fraud Bureaus: a Quantitative Analysis — 1995 to 2000*. Washington, D.C., May.
- COALITION AGAINST INSURANCE FRAUD, 2001b, "Insurance Scams May Inflate Price Tag of WTC Recovery", *Fraud Focus*, Washington, D.C., Fall.
- COALITION AGAINST INSURANCE FRAUD, 2001c, *State Regulatory Requirements for Anti-fraud Activities*. Washington, D.C., October.
- COALITION AGAINST INSURANCE FRAUD, *Insurance Fraud: the Crime You Pay For*. Available at URL:http://www.insurancefraud.org/fraud_backgrounder.htm. Last accessed 1 September, 2003.
- COHEN, L. and FELSON, M., 1979, "Social Change and Crime Rate Trends: A Routine Activity Approach", *American Sociological Review*, 44 (4), pp. 588–608.
- COLQUITT, L.L. and HOYT, R.W., 1997, "An Empirical Analysis of the Nature and Cost of Fraudulent Life Insurance Claims", *Journal of Insurance Regulation*, 15 (4), pp. 451–479.
- COMITÉ EUROPÉEN DES ASSURANCES, 1996, "The European Insurance Anti-fraud Guide", *CEA Info Special Issue 4*. Paris: Euro Publishing System, May.
- COMITÉ EUROPÉEN DES ASSURANCES, 1997, "The European Insurance Anti-fraud Guide 1997 Update", *CEA Info Special Issue 5*. Paris: Euro Publishing System, October.
- CONNING RESEARCH & CONSULTING, INC., 2000, *Insurance Fraud: Renewing the Crusade*. Hartford, CT: Conning & Co, December.
- CROCKER, K.J. and TENNYSON, S., 1999, "Costly State Falsification or Verification? Theory and Evidence from Bodily Injury Liability Claims", Chapter 6 in Dionne, G. and Laberge-Nadeau, C. (eds), *Automobile Insurance: Road Safety, New Drivers, Risks, Insurance Fraud and Regulation*. Boston, MA: Kluwer Academic Publishers.
- DERRIG, R.A., 2002, "Insurance Fraud", *Journal of Risk and Insurance*, 69 (3), pp. 271–287.
- DERRIG, R.A. and KRAUSS, L.K., 1994, "First Steps to Fight Workers' Compensation Fraud", *Journal of Insurance Regulation*, 12 (3), pp. 390–415.
- DERRIG, R.A. and OSTASZEWSKI, K.M., 1995, "Fuzzy Techniques of Pattern Recognition in Risk and Claim Classification", *Journal of Risk and Insurance*, 62 (3), pp. 447–482.
- DERRIG, R.A. and ZICKO, V.A., 2002, "Prosecuting Insurance Fraud — A Case Study of the Massachusetts Experience in the 1990s", *Risk Management and Insurance Review*, 5 (2), pp. 1–28.
- DIONNE, G., 1984, "The Effect of Insurance on the Possibilities of Fraud", *The Geneva Papers on Risk and Insurance: Issues and Practice*, 9(32), pp. 304–321.
- DIONNE, G., 2000, "The Empirical Measure of Information Problems with Emphasis on Insurance Fraud", Chapter 12 in Dionne, G. (ed.), *Handbook of Insurance*. Boston, MA: Kluwer Academic Publishers.
- DIONNE, G. and BELHADJI, E.B., 1996, "Evaluation de la Fraude à l'Assurance Automobile au Québec", *Assurances*, 64 (3), pp. 365–394.
- DORNSTEIN, K., 1996, *Accidentally, on Purpose: the Making of a Personal Injury Underworld in America*. New York: St. Martin's Press.
- DUFFIELD, G. and GRABOSKY, P., 2001, "The Psychology of Fraud", *Trends and Issues in Crime and Criminal Justice*, 199. Canberra, ACT: Australian Institute of Criminology, March.
- FELSON, M. and CLARKE, R.V., 1998, "Opportunity Makes the Thief: Practical Theory for Crime Prevention", *Police Research Series*, 98. London: Home Office, November.
- GHEZZI, S.G., 1983, "A Private Network of Social Control: Insurance Investigation Units", *Social Problems*, 30 (5), pp. 521–530.
- HUTTON, S., 2002, *Disaster Fraud*. Morgantown, WV: National White Collar Crime Center, September.
- HYNES, T., WRIGHT, B., MAHAFFEY, T. and MACAULAY, K., 2001, *Premeditated and Opportunistic Fraud in Personal Injury Claims*. Toronto, OT: Canadian Coalition Against Insurance Fraud, Fall.
- INSURANCE BUREAU OF CANADA, 1994, *Insurance Fraud in Canada — Report of the National Task Force on Insurance Fraud*. Toronto, OT, January.
- INSURANCE FRAUD BUREAU OF MASSACHUSETTS, *IFB Current Statistics*. Available at: URL:<http://www.ifb.org/stats/statistics/mainframe.htm>. Last accessed 1 September 2003.
- INSURANCE INFORMATION INSTITUTE, *Insurance Fraud*. Available at: URL:<http://www.iii.org/media/hottopics/insurance/fraud/>. Last accessed 1 September 2003.
- INSURANCE RESEARCH COUNCIL, 1992, *Fighting Fraud in the Insurance Industry*. Oak Brook, IL, October.
- INSURANCE RESEARCH COUNCIL, 1996, *Fraud and Buildup in Auto Injury Claims — Pushing the Limits of the Auto Insurance System*. Wheaton, IL, September.

- INSURANCE RESEARCH COUNCIL, 1997a, *Fighting Fraud in the Insurance Industry* (2nd edn). Wheaton, IL, October.
- INSURANCE RESEARCH COUNCIL, 1997b, *Public Attitude Monitor*. Wheaton, IL, December.
- INSURANCE RESEARCH COUNCIL, 2000, *Public Attitude Monitor*. Malvern, PA, June.
- INSURANCE RESEARCH COUNCIL, 2001, *Claiming Behavior in New York's No-Fault Auto Insurance System: An Analysis of Closed PIP Claims*. Malvern, PA, December.
- INSURANCE RESEARCH COUNCIL, 2003, *Insurance Fraud: A Public View*. Malvern, PA, June.
- INSURANCE RESEARCH COUNCIL and INSURANCE SERVICES OFFICE, INC., 2001, *Fighting Insurance Fraud: Survey of Insurer Anti-Fraud Efforts*. Malvern, PA, December.
- KAPLOW, L., 1994, "Optimal Insurance Contracts When Establishing the Amount of Losses is Costly", *The Geneva Papers on Risk and Insurance: Theory*, 19 (2), pp. 139–152.
- KEEN, P.G.W., BALLANCE, C., CHAN, S. and SCHRUMP, S., 1999, *Electronic Commerce Relationships: Trust by Design*. Upper Saddle River, NJ: Prentice Hall PTR.
- KOFMAN, F. and LAWARREE, J., 1993, "Collusion in Hierarchical Agency", *Econometrica*, 63 (3), pp. 629–656.
- KOFMAN, F. and LAWARREE, J., 1996a, "On the Optimality of Allowing Collusion", *Journal of Public Economics*, 61 (3), pp. 383–407.
- KOFMAN, F. and LAWARREE, J., 1996b, "A Prisoner's Dilemma Model of Collusion Deterrence", *Journal of Public Economics*, 59 (1), pp. 117–136.
- MAJOR, J.A. and RIEDINGER, D.R., 2002, "EFD: A Hybrid Knowledge/Statistical-Based System for the Detection of Fraud", *Journal of Risk and Insurance*, 69 (3), pp. 309–334.
- NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS, 2003, "Insurance Fraud Prevention Model Act", *NAIC Model Laws, Regulations and Guidelines*, IV-680-1. Kansas City, MO.
- NATIONAL INSURANCE CRIME BUREAU, 2001, *Common Insurance Fraud Scams Involve Everyone From Organized Criminals to Dishonest Neighbors*. Press release, Washington, D.C., June 19.
- NATIONAL INSURANCE CRIME BUREAU, INTERNATIONAL ASSOCIATION OF SPECIAL INVESTIGATION UNITS and COALITION AGAINST INSURANCE FRAUD, 2000, *National Insurance Fraud Forum — Discussion Papers on Key Issues*. Washington, D.C., October.
- PICARD, P., 1996, "Auditing Claims in the Insurance Market with Fraud: The Credibility Issue", *Journal of Public Economics*, 63 (1), pp. 27–56.
- PICARD, P., 2000, "Economic Analysis of Insurance Fraud", Chapter 10 in Dionne, G. (ed.), *Handbook of Insurance*. Boston, MA: Kluwer Academic Publishers.
- ROSENBERG, M., ANDREWS, R. and LENK, P., 1999, "A Hierarchical Bayesian Model for Predicting the Rate of Nonacceptable In-patient Hospital Utilization", *Journal of Business and Economic Statistics*, 17 (1), pp. 1–8.
- SPARROW, M.K., 1997, "Automation Fosters Health Care Fraud", *Government Technology*, 10 (2), pp. 1, 42, 44.
- SPARROW, M.K., 1998, "Fraud Control in the Health Care Industry: Assessing the State of the Art", *Research in Brief*. Washington, D.C.: National Institute of Justice, December.
- SPARROW, M.K., 2000, *License to Steal: How Fraud Bleeds America's Health Care System* (2nd edn). Denver, CO: Westview Press.
- TENNYSON, S. and SALSAS-FORN, P., 2002, "Claims Auditing in Automobile Insurance: Fraud Detection and Deterrence Objectives", *Journal of Risk and Insurance*, 69 (3), pp. 289–308.
- TIROLE, J., 1992, "Collusion and the Theory of Organizations", in Laffont, J.J. (ed.), *Advances in Economic Theory: Sixth World Congress*, Vol. 2. Cambridge: Cambridge University Press, pp. 151–206.
- TODD, J.T., WELCH, S.T., WELCH, O.J. and HOLMS, S.A., 1999, "Insurer vs. Insurance Fraud: Characteristics and Detection", *Journal of Insurance Issues*, 22 (2), pp. 103–124.
- TOWNSEND, R.M., 1979, "Optimal Contracts and Competitive Markets with Costly State Verification", *Journal of Economic Theory*, 21 (2), pp. 265–293.
- VIAENE, S., DERRIG, R.A., BAESENS, B. and DEDENE, G., 2002, "A Comparison of State-of-the-art Classification Techniques for Expert Automobile Insurance Claim Fraud Detection", *Journal of Risk and Insurance*, 69 (3), pp. 373–421.
- VIAENE, S., DERRIG, R.A. and DEDENE, G., 2004, "A Case of Applying Boosting Naive Bayes to Insurance Claim Fraud Diagnosis", *IEEE Transactions on Knowledge and Data Engineering* (forthcoming).
- WEISBERG, H.I. and DERRIG, R.A., 1991, "Fraud and Automobile Insurance: A Report on the Baseline Study of Bodily Injury Claims in Massachusetts", *Journal of Insurance Regulation*, 9 (4), pp. 497–541.
- WEISBERG, H.I. and DERRIG, R.A., 1992, "Massachusetts Automobile Bodily Injury Tort Reform", *Journal of Insurance Regulation*, 10 (3), pp. 384–440.
- WEISBERG, H.I. and DERRIG, R.A., 1998, "Quantitative Methods for Detecting Fraudulent Automobile Bodily Injury Claims", *Risques*, 35 (July–September), pp. 75–101.