The fog of fraud – Mitigating fraud by strategic ambiguity ☆

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A B S T R A C T

Most insurance companies publish few data on the occurrence and detection of insurance fraud. This stands in contrast to the previous literature on costly state verification, which has shown that it is optimal to commit to an auditing strategy. The credible announcement of thoroughly auditing claim reports is a powerful deterrent. Yet, we show that uncertainty about fraud detection can be an effective strategy to deter ambiguity-averse agents from reporting false insurance claims. If, in addition, the auditing costs of the insurers are heterogeneous, it can be optimal not to commit, because committing to a fraud-detection strategy eliminates the ambiguity about auditing. Thus, strategic ambiguity can be an equilibrium outcome in the market. Even competition does not force firms to provide the relevant information. This finding is also relevant in other auditing settings, like tax enforcement.

1. Introduction

Fraudulent claims on insurance policies are an important issue for insurers. The extent of insurance fraud varies widely from small overstatements of claims to deliberately pretending damages that never occurred or that were intentionally arranged. Due to the nature of fraud, estimating the losses for the insurance industry is not an easy task. Nevertheless, the Insurance Information Institute, for example, estimates that in both 2004 and 2005 insurance fraud amounted to $30 billion in the U.S. property and casualty insurance market.[1] This number is consistent with the estimate of $20 billion for 1994 by the National Insurance Crime Bureau as stated in Brockett et al. (1998). According to Caron and Dionne (1997), 10% of insurance claims in the automobile insurance are fraudulent to some extent in the Canadian province of Quebec.

Therefore insurers' strategies to deter insurance fraud do matter. Dionne et al. (2009, p. 69), for example, estimate that in their sample, companies could save up to 41% of the costs due to fraudulent claims by implementing the optimal auditing strategy. Such a strategy has to balance auditing costs and benefits, like exposed fraudulent claims. In the mass market and with small claims, it is too costly to audit each claim that is made. Consequently, claim reports are usually

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scanned for known patterns of fraud and only a certain fraction of these reports is verified in detail. Previous literature, like Picard (1996), who analyzes the canonical model of insurance fraud, suggests a commitment problem. Ex ante insurers are interested in announcing a high level of auditing to deter insurance fraud. Given the announced level of auditing, policyholders indeed report only few fraudulent claims. As auditing is costly, however, insurers have an incentive to audit only very few claims ex post, rendering their ex-ante announcement not credible. Credible commitment to a certain level of auditing solves this dilemma. Thus, the absence of commitment implies a welfare loss. In contrast to this theoretical result, empirically it is very unusual for insurers to make their level of auditing publicly available. There are also no observable efforts to overcome the credibility issue by having an industry association scrutinize their level of auditing or using another third-party verification mechanism. Insurance firms not only announce no data on fraud detection and auditing, but even block access to it. Thus, there are very few empirical studies available.[2] This behavior indicates that conventional wisdom neglects some aspects of the setting.

Therefore we suggest that there is an additional issue. We depart from previous literature by assuming ambiguity-averse policyholders and uncertainty about insurers' costs of an audit.[3] We model the ambiguity on the type space, as the insured do not know which type of insurer they are facing. This leads to ambiguity about the probability of an audit. In our model, ambiguity-averse agents undertake less fraud due to this uncertainty. Yet commitment dissolves this ambiguity as it makes the level of auditing common information. We show that, even in a competitive market, it can be optimal for insurers to maintain the ambiguity and forgo commitment.[4] Thus, strategic ambiguity is an equilibrium outcome.[5] First, we prove that holding insurers' behavior fixed, ambiguity makes fraud less appealing. Next, we endogenize the insurers' behavior. In the second step, we show that for a given contract, if the insurer abstains from commitment, ambiguity aversion either lowers the amount of fraud while holding the level of auditing fixed, or vice versa. Third, we prove that avoiding commitment is optimal if the auditing costs satisfy certain conditions discussed in the next paragraph. Finally, we also endogenize contracts. The utility-maximizing contract that just breaks even under no commitment can be the unique equilibrium outcome.

Insurance companies have different reasons to forgo commitment. Insurance companies with high costs save on auditing costs, if they hide their type by abstaining from commitment, because the average auditing probability is higher than their own. Insurance companies with low costs also prefer the uncertainty to commitment, because a higher level of fraud due to the lower average auditing makes their auditing even more profitable. This is caused by the improved ratio between their low costs and recovered indemnities and fines imposed on uncovered fraudsters.

Risk aversion leads to different effects in model than ambiguity aversion. If the degree of risk aversion increases, the deterrence of insurance fraud becomes easier both with and in the absence of commitment. Ambiguity aversion has only deterrence effects if there is no commitment. Therefore, only ambiguity aversion influences the balance between commitment and non-commitment. After all, it is the uncertainty that makes ambiguity-averse agents less inclined to engage in insurance fraud.[6]

In our model, policyholders are ambiguity-averse. Ambiguity denotes uncertainty about probabilities resulting from missing relevant information. We therefore distinguish ambiguity and risk.[7] In the absence of ambiguity, there is a known probability distribution, while under ambiguity the exact probabilities are unknown. Savage (1954) and Schmeidler (1989) have developed two axiomatized approaches to this problem. Subjective Expected Utility of Savage requires the decision maker to be ambiguity-neutral. This approach has been criticized for various reasons. From a normative point of view, it seems appropriate to take into account the amount of information on which a decision is based. This point was first made by Ellsberg (1961). In addition, there are empirical observations, like Kunreuther et al. (1995) or Cabantous (2007), which suggest that the Subjective Expected Utility approach neglects the distinction between risk and ambiguity. Insurers, which face ambiguity, usually request higher premiums and reject to offer an insurance policy in more cases than in the absence of ambiguity. The model in our paper uses the representations of preferences with ambiguity aversion by Klibanoff et al. (2005) and Gilboa and Schmeidler (1989). In both representations, the decision maker judges situations with missing information more pessimistically than an ambiguity-neutral individual.

The problem of costly state verification considered here is not limited to insurance fraud, but also appears in different settings such as financing (Gale and Hellwig, 1985), accounting (Border and Sobel, 1987), principal–agent relationships (Strausz, 1997) or enforcement of TV license fees (Rincke and Traxler, 2011). The main point is that there is often asymmetric information between the parties to a contract. To avoid the exploitation of these asymmetries, the uninformed side has to use costly state verification technologies, like ticket inspections in public transport. Townsend (1979) began this analysis

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[2] A notable exception is Dionne et al. (2009). In the context of tax enforcement, the Internal Revenue Service in the U.S. defended in several court cases its right to keep auditing procedures secret.

[3] See Gilboa and Marinacci (2011) for a survey of the literature on ambiguity aversion.

[4] Notice that this result requires uncertainty about primitives of the model, here the auditing costs. Uncertainty as a purification of mixed strategies, as proposed by Harsanyi (1973), is not sufficient.

[5] Strategic ambiguity denotes here the (strategic) decision to withhold information in order to maintain the ambiguity for the other contract party, not the choice of strategic uncertainty in the sense of ambiguous strategies. The notion is discussed at the end of this section.

[6] We were encouraged in this view when one insurance executive told us that besides being bad publicity, communicating detailed data on fighting insurance fraud, like the level of auditing, might induce more policyholders to give it a try. Moreover, according to Reinganum and Wilde (1988, p. 794), the IRS confirms that 'one of the tools in the arsenal of the IRS which promotes voluntary compliance is the uncertainty in the minds of the taxpayers.'

[7] Unfortunately, the literature uses various notions. Sometimes ambiguity is called (Knightian) uncertainty or imprecision. The technical details of representations with ambiguity aversion are discussed in Appendix A.1.