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A Co-payment Auditing Scheme For Financial Misreporting

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Abstract

The innovative idea of introducing a third party (Ronen,2002) into the agency relationship has motivated our proposal of a co-payment scheme as a solution to financial misreporting. In the co-payment scheme, both the client firm and a third party such as FASB are asked to share the auditing fee. We will demonstrate that the participation of a third party can create an endogenous collusion cost to the client firm, to such an extent that in the equilibrium the client firm will not make any offer of bribery. Most importantly, the total equilibrium auditing fee is the same as in the social optimal contract.

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1 Introduction

From early 2000s, a wave of corporate scams like those of Enron, Worldcom, Global Crossing, and Tyco International has brought financial scandals and the liability of auditors to policy debates. The auditor is supposed to serve as the public's watchdog in insuring good financial disclosure, but the auditor's actual client is the audited company itself, whose interests concerning disclosure are not necessarily aligned with those of investors. As mentioned by Ronen (2002), the fact that auditors are paid by the companies they audit creates an inherent conflict that is endemic to the relation between the client's management and the auditor. The better informed auditors might be motivated to collude with the client firm and give a report of compliance for the clients. The "motives" involving collusion between the CUC International and the auditors from Ernst and Young is estimated at \$19 billion.[1].

Moreover, with this conflict of interest, even the threat of legal liability is not capable to eliminate the incentive to comply with the clients' wishes. Ronen (2002) concluded that "only severing the agency relation between the client management and the auditors can remove the inherent conflict of interest", and suggested that the financial statement insurance scheme can effectively change the principal-agent relationship". But again, "disputes arise between the auditor working for the insurer and the management of the company being audited with respect to how best to apply the accounting standards". Ronen (2002, 2006) suggested that the Financial Accounting Standards Board (FASB) can resolve the disputes by offering professional guidance.

This innovative idea of introducing a third party (FASB) into the agency relationship has motivated our proposal of a co-payment scheme as a solution to financial misreporting. In the co-payment scheme, both the client firm and a third party such as FASB are asked to share the auditing fee. We will demonstrate that the participation of a third party can create an endogenous collusion cost to the client firm, to such an extent that in the equilibrium the client firm will not make any offer of bribery. Most importantly, the total equilibrium auditing fee is the same as in the social optimal[2] contract. On October 13th 2010, the EU-commission issued the new "green paper" that presents an agenda for audit market reforms in the future. Among

[1] See Khalil and Lawarrée (2006).

[2] The notion of "social optimality" is used here to denote the contract incurring full effort as the social optimal contract, to distinguish the optimal contracts offered by the client firm under the current system.

the many proposals for modifications, the green paper also recommends to change the procedure of hiring an auditor by explicitly invoking a *third party*, that is responsible for selecting the auditor and designing the audit contract. The co-payment scheme proposed here provides an idea how a third party could help in designing the audit contract and in guaranteeing high audit quality and truthful audit reports.

Our analysis starts by characterizing the current auditing system in a simple principal-agent model,[3] considering the possibility that if the status turns out bad, the client firm can bribe the auditor to lie (i.e. to collude with the auditor). We first explain why the existence of legal penalties will indeed squeeze the range of feasible bribes, but the bad status will not be reported under the current auditing system. Then we try to characterize a collusion-proof contract that can deter collusion by rewarding the reporting of bad state more. However, our results show that there is no reward for which the client firm can precommit not to outbid (by making offer) in the interim stage. The possibility of collusion has driven the client firm to compete (in price) with itself in the interim stage and the client firm is willing to pay out all its benefit from bribery.

In other words, the social optimal contract will never be adopted by the client firm under the current auditing system, whether the penalty is harsh enough to eliminate all feasible bribes or not. We need a device to combine both the social optimal contract and the penalty to have a better chance for truthful reports. For this aim, we propose a co-payment scheme, which requires the auditing fee to be shared by a third party. We will demonstrate that the presence of a third party can possibly help to create an "implicit" collusion cost to the client firm. There exists an equilibrium in this scheme where the social optimal contract is offered, the auditor puts in full effort and the client firm does not offer any bribe. The overall equilibrium rewards will be the same as the social optimal contract.

Finally, our approach is different from the line of literature that relies on the introduction of multiple auditors to increase the collusion cost.[4] First, since the current auditing system requires the client firm to pay the auditing fee itself, the client firm will not have intention to hire another auditor. Even if this external auditor is required by law, the client firm could be better

[3] According to the Generally Accepted Auditing Standards (GAAS), each firm needs to sign an employment contract with an auditor to check on the firm's financial status.

[4] For example, Laffont and Martimort (1999) introduce a second internal auditor.

off setting a contract to implement zero effort, or also offering a bribe. We share the viewpoint by Ronen (2002) that "adding layers of supervision and monitoring by the government would be inefficient and socially wasteful". Second, as we will demonstrate, the equilibrium rewards in our co-payment scheme will be exactly the same as the social optimal contract. The endogenous collusion cost comes from the alternative offering subgame between the client firm and the third party. The equilibrium bribe in this setting is zero, due to competition among principals not auditors. There is no need to pay extra bonus to hire another auditor to achieve the no collusion result.

The remainder of the paper is organized as follows. Section 2 addresses the employment contract between a client firm and an auditor. We will demonstrate that under the current auditing system, the bad status will not be reported. Also, there is no collusion-proof contract which rewards the auditor high enough for turning down the bribe. In Section 3, we propose a co-payment scheme, and characterize an equilibrium which will implement the auditor's full effort and the client firm does not offer any bribe. Moreover, the overall equilibrium rewards will be the same as the social optimal contract. Finally, Section 4 provides a brief discussion on how two existing institutions, the Financial Services Authority (FSA) in the UK and the Public Company Accounting Oversight Board (PCAOB) in the US, do capture the underlying assumptions of the model and thus can practically play the role of the third party in our co-payment scheme.

2 Incentive to Misreport

This section describes the current auditing system in a principal-agent model where an auditor is paid by a client firm to check on its financial status. We consider the possibility that in the interim stage (after the auditor knows the truth), the client firm can approach the auditor and offer bribes to conceal the financial status. We will ask two questions associated with the optimal contract: Is it better for the client firm to offer an employment contract to implement full effort and then bribe, or to implement zero effort? Whether we can deter collusion by rewarding the reporting of bad state more? The equilibria are characterized considering the setting of penalties on fraud reports.

The Environment and Timing According to GAAS, the client firm needs to hire an auditor to report on its financial status. We will denote the client firm by 1 and the auditor by 0. It is assumed that when the contract is signed, the financial state is unknown to either side. The client firm will later be informed of its own state automatically, and the auditor will know[5] the truth with a probability depending on his effort decision. For an example of this setting, imagine that an auditor is hired at the beginning of each accounting year, and the client firm's true status will only be realized at the end of the accounting year. We will describe the details of sequential actions and the timing of the game with the illustration of Figure 1.

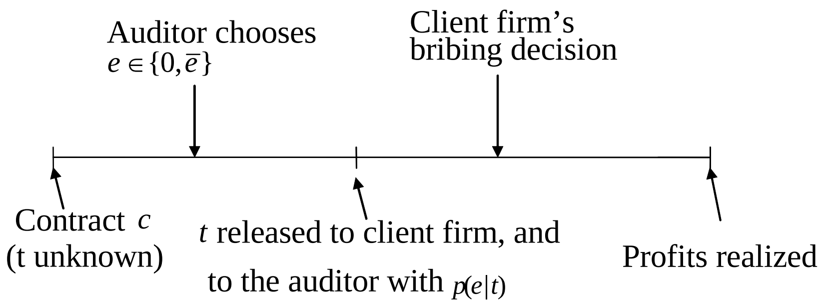

Figure 1: The contracting process between an auditor and the client firm.

In the beginning, neither the client firm nor the auditor knows the client firm's financial status. Let $T = \{G, B\}$ denote the set of status, which describes whether the financial status is fine (G) or bad (B). At the time when the employment contract is signed, both the client firm and the auditor possess a common prior belief that, there is probability π that the truth is G and probability $1 - \pi$ that the truth is B. This information structure is common knowledge.

The contract delegating process follows a direct mechanism with moral hazard problem (see Holmstrom and Milgrom, 1990), and the contract is offered to the auditor on a "take it or leave it" basis[6]. Denote the contract offered by the client firm by $c \equiv \{R(r)\}_{r=G,B}$ where $r \in T$ is the

[5] A more realistic assumption might be that the client firms know its own financial status earlier. However, since it makes no difference for the equilibrium in the interim bargaining stage, we will keep this assumption of simultaneous knowledge, for the sake of conciseness.

[6] By the revelation principle (Myerson, 1979), the delegating process can be simplified to a direct mechanism with the individual rationality and incentive compatibility conditions being satisfied.

report by the auditor, and $R(r)$ is the end-of-contract reward as a function of the observable[7] variable r. Notice that GAAS actually prohibits audit fees to be dependent on the audit outcome, that is, the current system requires a flat fee, i.e., $R(G) = R(B)$. Since our goal is to derive the optimal fee schemes in general, we will still keep the more general notation of $R(r)$ and address the current system as a special case with $R(G) = R(B)$. Notice that unlike most of the existing literature, the client firm might not find it optimal to implement the full effort from the auditor.

If the contract is taken by the auditor, he has to make a binary[8] effort decision $e \in E$, with $E = \{0, \bar{e}\}$. Putting in effort is costly and we denote the cost by an increasing function $\phi(e)$, with $\phi(0) < \phi(\bar{e})$. Notice that throughout the paper it is assumed that the auditor's effort is *neither observable nor contractible*. The auditor's effort will be related to the probability of discovering a bad status; that is, let $p(e|t)$ for $t \in T$ denote the probability that the auditor discovers that the status is bad. To simplify, it is assumed that $p(e|G) = 0$ for every possible e, meaning that if status is fine, it is impossible to fabricate[9] the evidence that it is bad. Also, it is assumed $p(0|B) = 0$ and $p(\bar{e}|B) = 1$, meaning that if the financial status is bad, then the probability of discovering the evidence is increasing with the effort level. To simplify, we have normalized the cost for discovering the good state to be zero.

After the auditor's effort decision, the truth is revealed to the client firm automatically. Then depending on the state of truth (t), the client firm will make a decision[10] whether to bribe ($b(t) \in \{0, 1\}$) and pay the bribe L to ask the auditor to lie about the financial status (i.e., reporting differently from what he has discovered). Let $I(r, t)$ denote the auditor's decision whether to accept the bribe. If he accepts the bribery, then $I(r, t) = 1$ and the report is changed;

[7] Notice that the rewards will depend on the *content* of report rather than on the *accuracy* of report; Since the content of report will depend on both the state of truth as well as the auditor's effort on examining the financial status, the accuracy of report is hence not observable if the status is G. Moreover, if the state is G, the auditor's effort will not change the report (i.e., remaining G). Hence, by linking rewards to the content of reports, we have implicitly assumed that the contract will be concerned with the accuracy of reports in the state B.

[8] We have assumed binary efforts in order to emphasize the collusion problem. A continuous setting will change the form of incentive compatibility rewards, but the collusion problem is still the same.

[9] For example, the client firm can raise evidence that the accountant has made mistakes.

[10] By using two binary variables $b(t)$ and $I(t)$, we can simplify the definitions of $u_i()$. Otherwise, we will need to define different utility functions for different states of truth.

otherwise, $I(r,t) = 0$ and the report remains the same. To cope with the existing regulations (i.e., the SOX act), we assume that there will be a penalty[11] D for both the auditor and the client firm, if there exists solid evidence that the report is falsified. The solid evidence will be needed for legal penalty, and can be provided by, say, an external auditor. To simplify,[12] we will denote the chance of discovering the solid evidence of bribery by a fixed probability, denoted by σ. In other words, if the bribe is accepted, there will be an expected penalty σD for both the auditor and the client firm.

Finally, the players are assumed risk neutral, so each player's utility depends on the state of truth as well as the auditor's report. That is, let u_i denote player i's utility where for $i = 0, 1$ and $t = G, B$

$$u_0(r,t,e) = R(r) + p(e|t)b(t)I(r,t)(L - \sigma D) - \phi(e), \tag{1}$$

$$u_1(r,t) = U_1(r,t) - R(r) - b(t)I(r,t)(L + \sigma D). \tag{2}$$

According to the contract, the auditor will receive a reward $R(r)$ and spend an effort cost $\phi(e)$. Moreover, depending on the status, there will be probability $p(e|t)$ that the client firm could bribe (i.e., $b(t)$) and pay an amount L to the auditor. If the offer is accepted (i.e., $I(r,t) = 1$), then there will be an expected penalty σD. Note that if the client firm does not make any offer (i.e., $b(t) = 0$) or the auditor rejects this offer (i.e., $I(r,t) = 0$), then this term will be zero. For the client firm, it will receive a type dependent reservation utility $U_1(r,t)$, and according to the contract, will pay the reward $R(r)$. Moreover, depending on the status, the client firm's decision to bribe and the auditor's decision to accept the bribe, it needs to pay a bribe L for bribery and receive an expected penalty σD.

The process is a mechanism design with moral hazard and collusion problems (e.g., Fudenberg and Tirole, 1990), but notice that in the interim stage, when the bad status is discovered, both the client firm and the auditor actually have the same information. The negotiation process will be like a price competition between the original reward and the bribe; If the bribe makes

[11] To simplify, we assume the *same* penalty for the auditor and the client firm. It is easy to extend to the general case where different penalties are imposed to the auditor and the client firm.

[12] It would be more interesting to endogenize σ, but since the equilibrium characterization is similar to the constant assumption, we will keep the constant assumption.

a better deal for the auditor, then he will accept it. The penalty on fraud reports will create a cost for the auditor to accept such an offer and for the client firm to make such an offer.

2.1 Characterization of Equilibrium

To answer our two questions, we first characterize the optimal contract under the current system, considering the setting of penalties. Then in 2.2, we check if there exists a collusion-proof contract which we hope to deter collusion by rewarding more the bad report. The game is solved backward the timing in Figure 1.

Firstly, the auditor's decision to accept or reject the bribe is type dependent. If $t = G$, then there is no difference between accepting or rejecting. On the other hand, if $t = B$, then[13] the auditor will accept the offer (i.e. $I(r, t) = 1$) if

$$L \geq R(B) - R(G) + \sigma D, \tag{3}$$

and reject the offer, otherwise.

The Client Firm's Bribing Decision The client firm will only need to consider bribery when $t = B$, since as we have assumed that if the truth is G, it is not possible to fabricate the evidence of being B. Hence, although there are four different combinations of (r, t): i.e., (G, G), (B, G), (B, B) and (G, B), the first two cases are not relevant in this sense. The case of status B is our focus, as if the client firm can bribe the auditor to report G instead of B, there would be positive benefit for the client firm to hide the bad. To motivate this, we make the following assumption on the client firm's reservation utility.

Assumption 1 $U_1(G, B) > U_1(B, B)$.

However, whether it is worthwhile to bribe and how much L to offer to the auditor will depend on the relative benefits: $U_1(B, B) - R(B)$ and $U_1(G, B) - R(G) - (L + \sigma D)$; If

$$[U_1(G, B) - U_1(B, B)] + [R(B) - R(G)] - \sigma D \geq L, \tag{4}$$

[13] By comparing $u_0(B, B, \overline{e})$ with $u_0(G, B, \overline{e})$.

then the client firm will make the offer L. Combining equation (3) and (4), we know that if

$$\sigma D + [R(B) - R(G)] \leq L \leq [R(B) - R(G)] + [U_1(G,B) - U_1(B,B)] - \sigma D, \tag{5}$$

then L will be accepted by the auditor and affordable by the client firm.

The setting of penalties will squeeze the range of feasible bribes. But since the maximal penalties are constant and given by law, it is still possible for some firms to have feasible bribes. For instance, for the year 2000, the Arthur Andersen's audit fee and the consulting fee for Enron were each approximately \$25 million, which is higher than the penalty of \$ 15 million by the SOX act. Hence, in the following discussion on the auditor's effort and optimal contracts, we will distinguish cases where there are feasible bribes and those where there is no feasible bribe. From equation (5), the condition for no feasible bribe is $\sigma D \geq \frac{[U_1(G,B)-U_1(B,B)]}{2}$.

The Auditor's Effort Decision Here we discuss the auditor's effort decision under two ranges of auditing fees (i.e., $R(B) \leq R(G)$ and $R(B) > R(G)$) and two possibilities about feasible bribes (i.e., $\sigma D < \frac{[U_1(G,B)-U_1(B,B)]}{2}$ and $\sigma D \geq \frac{[U_1(G,B)-U_1(B,B)]}{2}$). Notice that these fees will be determined endogenously in the optimal contract later.

First, we compare the expected utilities associated with no effort and full effort. If no effort is put in, the expected utility is $R(G)$; With putting in full effort, the expected utility[14] is $\pi R(G) + (1-\pi)R(B)$ or $\pi R(G) + (1-\pi)[R(G) + (L - \sigma D)]$, depending on whether the auditor decides to accept the bribe or not. In addition, there is a cost term $\phi(\overline{e})$.

Second, in the case where $R(B) \leq R(G)$ and there is no feasible bribe, no effort will be put in. However, if $R(B) \leq R(G)$ and there are feasible bribes, then the auditor will put in effort if $(1-\pi)(L - \sigma D) - \phi(\overline{e}) \geq 0$, which implies that $L \geq \sigma D + \frac{\phi(\overline{e})}{1-\pi}$. Hence, the set of bribes to implement full effort is that in equation (5) with the lower bound replaced by $L \geq \sigma D + \frac{\phi(\overline{e})}{1-\pi}$, because $R(B) - R(G) \leq 0$ in this case.

Similarly, in the case where $R(B) > R(G)$ and there is no feasible bribe, the auditor will still put in effort if $R(B) \geq R(G) + \frac{\phi(\overline{e})}{1-\pi}$. However, if $R(B) > R(G)$ and there are feasible bribes, then the auditor will put in effort if $(1-\pi)(L - \sigma D) - \phi(\overline{e}) \geq 0$. Then depending on the relative sizes of $\frac{\phi(\overline{e})}{1-\pi}$ and $[R(B) - R(G)]$, the lower bound of feasible bribes for full effort will be lifted up to $L \geq \sigma D + \frac{\phi(\overline{e})}{1-\pi}$, or remains the same as equation (5).

[14] Notice that we have assumed $p(0|B) = 0$ and $p(\overline{e}|B) = 1$.

Lemma 1 summarizes the relation between the auditor's effort decision and auditing fees.

Lemma 2 *(i) If $R(B) \leq R(G)$ (including the flat fees) and the client firm can commit not to bribe, then the auditor will not put in full effort. (ii) The possibility of successful bribery* ***can be*** *higher with $R(B) \leq R(G)$ than with $R(B) > R(G)$. (iii) If $R(B) \geq R(G) + \frac{\phi(\bar{e})}{1-\pi}$ and the client firm can commit not to bribe, then the auditor will still put in full effort.*

Proof. Part (i) and (iii) follow from the discussion above. Part (ii) is obtained by comparing the range of feasible L for full effort. When $\frac{\phi(\bar{e})}{1-\pi} > [R(B) - R(G)]$, the lower bound of L is the same for both $R(B) \leq R(G)$ and $R(B) > R(G)$, but the higher bound is higher with $R(B) > R(G)$. For other cases, the relative probabilities are ambiguous. ■

In other words, under the current system of flat fees, the client firm's future bribe actually motivates the auditor to make the effort in checking the financial status. Moreover, although penalties can squeeze the feasible bribes, as demonstrated in equation (5), in the extreme case where there is no feasible bribe, the auditor will not put in effort in the first place! On the other hand, if incentive fees are provided (i.e., $R(B) \geq R(G) + \frac{\phi(\bar{e})}{1-\pi}$), then the auditor will still put in effort when there is no feasible bribe.

2.2 Optimal Contracts

Given the auditor's effort decision, we first derive the client firm's optimal contract, considering whether it is better to implement zero effort, or to implement full effort and then bribe. We next derive the collusion-proof social optimal contract, which implements the auditor's full effort and also prevents successful bribery.

2.2.1 Optimal Contract for the Client Firm

Unlike the existing literature, the client firm might find it better off to implement zero effort. However, we still need to check if it is feasible and cheaper to implement zero effort. As discussed above, we will separately consider two cases: $R(B) \leq R(G)$ and $R(B) > R(G)$ first, and then decide which range is optimal and what are the cheapest fees.

Firstly, notice that we have adjusted the set of feasible bribes considering the auditor's effort decision in the above discussion. Hence, if there is no feasible bribe, the auditor is better with zero effort. For $R(B) \leq R(G)$, the cheapest fee is to set the flat fees: $R(B) = R(G) = \overline{R}$, where $\overline{R}$ is assumed to be the competitive[15] fee. For $R(B) > R(G)$, the cheapest reward is to set $R(G) = \overline{R}$ first. Then the level of $R(B)$ must not be too high to induce effort, which means that we require $R(B) < R(G) + \frac{\phi(\overline{e})}{1-\pi}$. So for $R(B) \in (\overline{R}, \overline{R} + \frac{\phi(\overline{e})}{1-\pi})$, the client firm can induce zero effort.

Combining both $R(B) \leq R(G)$ and $R(B) > R(G)$, we can conclude that when there is no feasible bribe, the optimal contract will consist of flat fees: $R(B) = R(G) = \overline{R}$.

Secondly, if there are feasible bribes, (that is, for $R(B) \leq R(G)$, the lower bound in equation (5) is replaced by $\sigma D + \frac{\phi(\overline{e})}{1-\pi}$; and for $R(B) > R(G)$, the lower bound of equation (5) is replaced by $\sigma D + \max\{\frac{\phi(\overline{e})}{1-\pi},[R(B) - R(G)]\}$), then implementing zero effort is not possible. We need to compare the total expenditure of auditing fee plus rewards for each case, and then decide which one will be cheaper.

(i) $R(B) \leq R(G)$ Since the auditor will put in full effort in this case, the cheapest fees are the flat fees: $R(B) = R(G) = \overline{R}$. The lowest level for feasible bribe is $L = \sigma D + \frac{\phi(\overline{e})}{1-\pi}$. The total expense in the contract will be $\pi\overline{R} + (1-\pi)[\overline{R} + \sigma D + \frac{\phi(\overline{e})}{1-\pi}]$.

(ii) $R(B) > R(G)$ In this case, the auditor will also put in full effort. The cheapest fee for $R(G)$ is $\overline{R}$, and the setting of $R(B)$ will depend on how this can change the lowest bribe. That is, if $\frac{\phi(\overline{e})}{1-\pi} > R(B) - R(G)$, then the lowest bribe will be $\frac{\phi(\overline{e})}{1-\pi}$; if $\frac{\phi(\overline{e})}{1-\pi} < R(B) - R(G)$, then the lowest bribe will be $R(B) - R(G)$. Hence, the total expense in the contract will be $\pi\overline{R} + (1-\pi)[R(B) + \sigma D + \max\{\frac{\phi(\overline{e})}{1-\pi}, R(B) - \overline{R})\}]$.

Combining case (i) and (ii), we know that if $R(B) - \overline{R} \leq \frac{\phi(\overline{e})}{1-\pi}$, then the lowest bribe for case (ii) is $\frac{\phi(\overline{e})}{1-\pi}$. The client firm's total expense will be higher than case (i). However, if $R(B) - \overline{R} > \frac{\phi(\overline{e})}{1-\pi}$, then the lowest bribe is $R(B) - \overline{R}$. The total expense will be $\pi\overline{R} + (1-\pi)[R(B) + \sigma D + (R(B) - \overline{R})]$, in which case the level of $R(B)$ for case (i) and (ii) to be indifferent is $\overline{R} + \frac{\phi(\overline{e})}{2(1-\pi)}$. When $R(B)$ is smaller than this level, then case (ii) is cheaper; when $R(B)$ is higher than this level, then

[15] Here we have assumed that the lower bound of auditing fee is the competitive fee, as it's closer to the reality.

case (i) is cheaper. But since we are considering the case with $R(B) - \overline{R} > \frac{\phi(\overline{e})}{1-\pi}$, we can hence conclude that case (i) is also cheaper in this case.

In overall, we can conclude that when there are feasible bribes, the client firm's optimal contract will be the flat fees $R(B) = R(G) = \overline{R}$, plus the lowest bribe $L = \sigma D + \frac{\phi(\overline{e})}{1-\pi}$. The auditor will put in full effort, but the bad state will not be revealed. The total expense in the contract is $\pi\overline{R} + (1-\pi)[\overline{R} + \sigma D + \frac{\phi(\overline{e})}{1-\pi}]$.

The following proposition summarizes the results in this section.

Proposition 3 *If there are feasible bribes, then the client firm will set the flat fees* $R(G) = R(B) = \overline{R}$*, the auditor will put in full effort and the collusion will happen; If there is no feasible bribe, then still the client firm will adopt the flat fees to implement zero effort. In other words, under the current system the bad status will not be reported.*

2.2.2 Social Optimal Contract

From the viewpoint of social optimality, we need the auditor to put in full effort, and refrain from the client firm's bribes. To distinguish from the optimal contracts offered by the client firm, we will denote the contract that incurs the auditor's full effort by[16] "social optimal contract".

First, from the auditor's effort decision, it is not possible to induce effort with $R(G) \geq R(B)$ if there is no feasible bribe. Hence, we will focus on the case with $R(G) < R(B)$. According to (iii) in Lemma 1, the condition for the auditor to put in full effort when there is no bribe is: $R(B) \geq R(G) + \frac{\phi(\overline{e})}{1-\pi}$. Since there is no further restriction on $R(G)$, it will be cheapest to set $R^*(G) = \overline{R}$, and therefore, $R^*(B) = \overline{R} + \frac{\phi(\overline{e})}{1-\pi}$. We will denote the contract $\{R^*(G), R^*(B)\}$ as the social optimal contract.

Next, in the case where the penalty cannot deter bribery, one solution will be to check if collusion can be deterred by properly designing the rewards. Following the literature (see Tirole, 1986), we will denote this contract as *collusion-proof* contract. The idea is to reward the auditor high enough in the contract so that he would rather choose $R(B)$ when the bad status comes out.

[16] This notion is used for distinction. The contract is *not* derived to maximize payoffs of all participants (i.e., the usual definition of social welfare).

According to the discussion on the client firm's bribing decision (equation (5)), the highest bribe that the client firm can afford is $\overline{L}$=[$U_1(G,B)$-$U_1(B,B)$]+[$R(B)$-$R(G)$]-σD. If $R(B)$ is higher than this value, then the client firm cannot afford. However, when substituting $\overline{L}$ into the auditor's decision in equation (6), we have

$$R(B) = R(G) + [U_1(G,B) - U_1(B,B)] + [R(B) - R(G)] - \sigma D - \sigma D.$$

After eliminating $[R(B) - R(G)]$ from both sides, rewards does not affect the auditor's decision at all. When the auditor is given the client firm's whole rent from bribery, the auditor's net income is the client firm's net expense on rewards (i.e., $R(B)$-$R(G)$). The auditor's collusion decision will be one that maximizes the joint benefit of the collusion, that is, to accept the bribe if $[U_1(G,B)-U_1(B,B)] > 2\sigma D$. In fact, since $[R(B)-R(G)]$ appears on both sides of equation (5), any change on rewards will not change the size of range for feasible bribes. That is, there exists no auditing fee for the auditor to refrain from receiving bribes, once the bad status is realized. In other words, a collusion proof contract does not exist in this case, if $\sigma D < \frac{[U_1(G,B)-U_1(B,B)]}{2}$.

The collusion-proof rewards do not exist, because there is no reward for which the client firm can precommit not to outbid (by making offer) in the interim stage. The possibility of collusion has driven the client firm to compete (in price) with itself at the interim stage. The client firm is willing to pay up to its total benefit from bribery (i.e., $[U_1(G,B) - U_1(B,B)]+$ $[R(B) - R(G)]) - \alpha D)$

The following proposition summarizes our findings.

Proposition 4 *(i) Without bribery, the social optimal auditing contract is* $\{R^*(G), R^*(B)\} = \{\overline{R}, \overline{R} + \frac{\phi(\overline{e})}{1-\pi}\}$*; (ii) A collusion-proof social optimal auditing contract does not exist, if* $\sigma D < \frac{[U_1(G,B)-U_1(B,B)]}{2}$.

The setting of penalties can indeed squeeze the range of feasible bribes. When there are still feasible bribes, we have shown that the zero effort cannot be implemented and the client firm will offer the minimum possible bribe if the bad status comes out. However, when there is no feasible bribe, the client firm will adopt flat fees (i.e., the current system) to implement the zero effort. Hence in both cases, we conclude that the bad status will not be reported under the current system.

The social optimal contract can implement full effort if there is no feasible bribe. It will give the auditor enough incentive by rewarding the reporting of bad status more. However, if we want to set a sufficiently high reward to prevent collusion, it is shown that such a collusion-proof social optimal contract does not exist.

It seems that we need a mechanism to combine both the social optimal contract and the penalty to have a better chance for truthful report. In the next section, we will propose a co-payment scheme, which will combine both the social optimal contract and the penalty. We will demonstrate that the presence of a third party can possibly help to create an "implicit" collusion cost to the client firm. There exists an equilibrium in this scheme, where the social optimal contract is offered, the auditor puts in full effort and the client firm does not offer any bribe. The overall equilibrium rewards will be the same as the social optimal contract.

3 A Co-Payment Scheme

As described, we need a mechanism to provide sufficient incentive for the auditor to put in effort, and to increase the collusion cost to preclude bribery. For the first part, we will consider a co-payment scheme where a third party, which represents[17] the public's interests for truthful reports, shares[18] the incentive part of rewards (i.e., the rewards more than $\overline{R}$). For the second part, we will demonstrate that, in addition to the existing setting of penalties, the presence of a third party can possibly help to create an "implicit" collusion cost to the client firm. For some cases, this device alone can prevent collusion; while for the others, we will show that this device can reinforce the effect of penalties.

The third party can be a non-profit organization or auditor's association, such as FASB as suggested by Ronen (2006). Compared to individual auditors, an organization has less chance to be bribed by the client firm.

To start with, we consider the following co-payment scheme where both the client firm and a third party (denoted by 2) share the auditing fee. Let $0 < \alpha < 1$ be the proportion shared by

[17] We will assume that this third party is not bribable, and this third party will not particiapte in the checking process.

[18] Here, we will adopt the discussion in 2.2.1 that the client firm will use the flat fees $R(G) = R(B) = \overline{R}$.

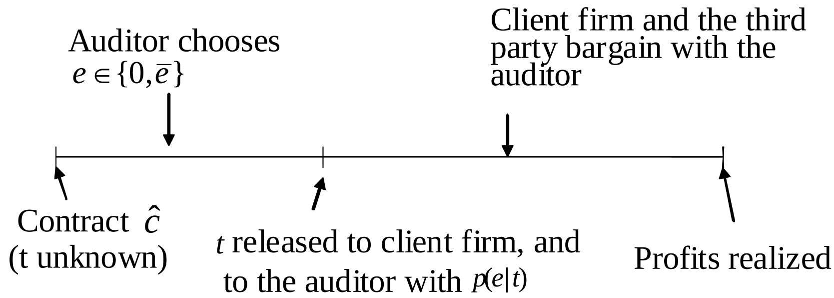

Figure 2: The co-payment scheme.

the third party. We will later demonstrate that the size of α will not affect the outcome. Further details will be introduced when illustrating the timing of the game as in Figure 2.

The Environment and Timing As in Section 2, it is assumed that the financial state is unknown to either side when the contract is signed. The client firm will later be informed of the state automatically, and the auditor will know the truth with a probability related to the auditor's effort decision. The third party, however, does not know the truth. This information structure will be common knowledge.

Firstly, similar to Section 2, we denote T as the set of status and we will assume that the same prior belief is also shared by the third party. Let $\widehat{c}(\alpha) \equiv \{R_i(r)\}_{i=1,2;r=G,B}$ denote the contract offered[19] to the auditor on a "take it or leave it" basis, where $R_i(r)$ is the reward offered by $i = 1, 2$ for reporting r. Here, to simplify, we will assume that $R_1(r)$ is offered first, and then after knowing $R_1(r)$, the third party offers $R_2(r)$. If the contract is taken by the auditor, we assume the same effort set E, effort cost function $\phi(e)$ and a probability of discovering a bad state $p(e|t)$ as defined in Section 2.

After the auditor's effort decision, the truth is revealed to the client firm automatically.

[19] This contracting process fits in the formation of a public agency model, where two principals design contracts for an agent to take a common action that will affect the payoffs of all. An important issue in the common agency model literature is that the mechanism proposed by one principal will, through the agent's action, have influence (directly or indirectly) on the mechanisms proposed by other principals. Our model, however, will avoid this complexity, as we will later demonstrate that the unique equilibrium in the following interim collusion stage will make the direct mechanism the best response to each principal.

We will add in a subscript $i = 1, 2$ to indicate the decisions by the client firm and the party, respectively. So $b_i(t)$ denotes the bribing decision by i, $I_i(t)$ denotes the auditor's decision whether to accept i's bribe, and L_i denotes the bribe by i.

The alternative offering process proceeds as follows. If $t = G$, then there is no need to bribe, hence $b_i(G) = 0$, $i = 1, 2$. On the other hand, if $t = B$, then it is assumed that the client firm will firstly make the bribing decision $b_1(B)$. If $b_1(B) = 0$ (or $L_1 = 0$), then the auditor will report truthfully. On the other hand, if $b_1(B) = 1$ and a feasible bribe L_1 is offered by the client firm, then the auditor can either keep quiet and accept L_1, or inform the third party about L_1 and ask for a counter offer. If the auditor keeps quiet, then the auditor receives $\alpha R_2(G)$+(1-α)$R_1(G)$+ (L_1-σD). If the auditor informs[20] the third party, then the party can take two actions. The first is to make a counter offer L_2 to the auditor for not lying (i.e., $b_2(B) = 1$). The final result of this alternative offering subgame will depend on the relative sizes of L_1 and L_2; that is, if $L_1 > L_2$, then the auditor reports G, and if $L_1 \leq L_2$, then the auditor reports B; The second action is to reject the request (i.e., $b_2(B) = 0$) and report about this criminal activity. However, once being rejected, the auditor will know that misreporting will be reported and prosecuted[21], and hence he will refrain from misreporting.

Finally, in the case where the auditor informs of the bribery (so that the third party has chance to take action), each player's utility is given by $\widehat{u}_i()$, where for $i = 0, 1, 2$ and $r, t = G, B$

$$\begin{aligned}
\widehat{u}_0(r,t,e) &= \alpha R_2(r)+(1\text{-}\alpha)R_1(r) \\
&\quad +p(e|t)\max\{b_1(t)b_2(t)I_1(r,t)(L_1\text{-}\sigma D), b_1(t)b_2(t)I_2(r,t)(L_2\text{-}\sigma D)\}\text{-}\phi(e), \quad (6)\\
\widehat{u}_1(r,t) &= U_1(r,t)\text{-}\alpha R_2(r)\text{-}(1\text{-}\alpha)R_1(r) \\
&\quad -\max\{b_1(t)b_2(t)I_1(r,t)(L_1+\sigma D), b_1(t)b_2(t)I_2(r,t)(L_2+\sigma D)\}, \quad (7)\\
\widehat{u}_2(r,t) &= U_2(r,t). \quad (8)
\end{aligned}$$

The explanations of $\widehat{u}_0(r,t,e)$ and $\widehat{u}_1(r,t)$ are similar to those for $u_0(r,t,e)$ and $u_1(r,t)$ in Section 2. α is the share by the third party, and $R_i(r)$ is the reward by 1 and 2. The main differences

[20] To simplify, we will not consider the case where the auditor might be bluffing (see Ho, 2007).

[21] After receiving the third party's report about cirminal activities, the court can send another auditor to check on the client firm's financial status. To simplify, we assume that there is no incentive problem with this external auditor. Hence, if full effort is put in, the bad status can be uncovered certainly.

here are two. First, the bribing result will depend on the client firm and the third party's bribing decisions ($b_i(t), i = 1, 2$) and the relative sizes of bribes (L_i). When either $b_1(t) = 0$ or $b_2(t) = 0$, there will be no bribery. Notice that in the case $b_2(t) = 0$, we assume that the third party will report about the cheating, which will cause the auditor to refrain from cheating; When both $b_i(t) = 1$, then the auditor will lie or report the truth depending on the relative sizes of L_1 and L_2. σD is the expected penalty for knowingly misreporting and $\phi(e)$ is the effort cost.

Second, in this scheme, it is assumed that the third party's expenses in the contract and the interim stage will be covered by the client firm. The party has no budget of its own, and all of the cost for covering troubles for a particular firm has to be covered by that firm. In Section 4, we will provide practical examples for this assumption. Hence in $\widehat{u}_1(r, t)$, the client firm has to pay for the party's expense for the contract: $\alpha R_2(r)$. In addition, if both make the offer and $L_1 > L_2$, then the report will be changed and the client firm will pay L_1 for *itself*. Alternatively, if $L_1 \leq L_2$, then the report will remain the truth but the client firm will pay L_2 for *the third party*. That is, no matter the client firm wins or loses in the alternative offering game, it has to pay the winning offer and receive an expected penalty σD. This design has a decisive impact on the determination of equilibrium. In the reality, the assumption that a party has to raise its resource through membership seems quite common in practice (see Section 4). In a single firm case, it is also natural to assume that the only client firm has to fully reimburse the expense. For the sake of robustness, we will later address the case when this expense has to be shared by all the other client firms.

Finally, the third party will prefer truthful reporting, and hence it is assumed that $U_2(B, B) > U_2(G, B)$. Compared to Assumption 1, there is conflict of interest between the client firm and the third party when $t = B$. In addition, since all the expenses will be covered by the client firm, and if the third party has to counteract with the client firm's bribe for not lying, there will be no actual limit for the party for making an offer. Together with $U_2(B, B) > U_2(G, B)$, this reflects that the client firm's renegotiation benefit is limited but the third party has no such limit.

3.1 Characterization of Equilibrium

We will demonstrate that in the co-payment scheme, there exists an equilibrium where the social optimal contract is offered, the auditor puts in full effort and the client firm does not offer any bribe. Moreover, this equilibrium exists even if there is no penalty. The presence of the third party will introduce a competitor in the interim stage and form an implicit bribery cost to the client firm, even to such an extent that in the equilibrium, there will be no bribery in the interim stage.

By solving backward the timing of the game, we can firstly describe the auditor's decision rule as follows. If $t = G$, then there is no difference between accepting or rejecting any one's offer. On the other hand, if $t = B$, then the auditor will accept the client firm's offer (i.e. $I_1(r,t) = 1$) and change the report, if $L_1 \geq \alpha[R_2(B) - R_2(G)] + (1-\alpha)[R_1(B) - R_1(G)] + \sigma D$ and $L_1 > L_2$. Otherwise, he will report truthfully.

The Alternative Offering Subgame As explained, the client firm will only need to consider bribery when $t = B$, since we have assumed that if the truth is G, it is not possible to fabricate the evidence of being B. Given that $b_1(t) = 1$ and L_1, the third party will be indifferent between making a counter offer or not. If $b_2(t) = 0$, the auditor will figure out that cheating will be reported and hence will refrain from the bribe; If $b_2(t) = 1$ and the third party makes a counter offer L_2, the bad status will be reported. Since the costs are paid by the client firm, the third party is indifferent between these two alternatives.

Next, after receiving L_1, the auditor has to decide whether to inform. If he keeps quiet, the payoff will be $\alpha R_2(G)$+(1-α)$R_1(G)$+ (L_1-σD). If he informs, since the third party is indifferent between $b_2(t) = 0$ and $b_2(t) = 1$, there can be two possibilities. If the $b_2(t) = 0$, the payoff will be $\alpha R_2(B)$+(1-α)$R_1(B)$; if $b_2(t) = 1$, then the payoff will be $\alpha R_2(B)$+(1-α)$R_1(B)$+(L_2-σD) if $L_2 \geq L_1$. In other words, the decision about whether to inform will depend on the choice of $b_2(t)$ and the setting of $R_i(r), i = 1, 2,\ r = G, B$.

Lemma 5 *If $R_i(G) \leq R_i(B)$, there exists an equilibrium where the auditor will inform and $b_2(t) = 1$, but the equilibrium bribes are $L_1 = L_1 = 0$.*

Proof. Firstly, given any level of L_1, since the third party is indifferent between $b_2(t) = 1$ and

$b_2(t) = 0$, let us suppose it will choose $b_2(t) = 1$ and $L_2 \geq L_1$. Since $R_i(G) \leq R_i(B)$, the auditor is better off informing the bribery. Given this response, the report will remain the truth, and no matter what level of L_1 has been offered, $b_2(t) = 1$ and $L_2 \geq L_1$. According to equation (7), the client firm is better off setting L_1 as small as possible. Therefore, $L_1 = 0$, and hence $L_2 = 0$ in the equilibrium. ■

An immediate question is: if the auditor knows that in equilibrium he will get no bribe by informing, would it be better that he does not inform so he can at least get L_1 instead of 0? For the answer, notice that in this equilibrium, the bribe that if the auditor does not inform is still $L_1 = 0$. Moreover, the action profiles of "to inform" and "$b_2(t) = 1$" is an equilibrium in this subgame for $R_i(G) \leq R_i(B)$. For other setting of rewards, there can be other equilibria such as "not to inform" and "$b_2(t) = 0$". Since our target is truth reporting, we will not further address about these equilibria.

This result of $L_1 = L_2 = 0$ is not surprising, since there is a follower advantage inherited in this setup. It is useful to see if the same outcome will come out when the alternative offering game proceeds repeatedly. The answer is yes, and the reason goes as follows. No matter who starts offering first, for any level of L_1, if the third party outbids, the truth will be reported. Knowing that the benefit will remain the same, i.e., $U_1(B, B) - \alpha R_2(B) - (1 - \alpha) R_1(B)$, the client firm will be better off setting L_1 as small as possible and this applies to every round.

In this scheme, the presence of the third party, by outbidding the bribery offer, has created an implicit collusion cost to the client firm. The third party needs to be informed of the true state, and the auditor will be willing to inform the third party in order to get a higher offer. The equilibrium in this subgame does not need penalties to prevent collusion. However, as described, in cases where the auditor chooses not to inform, the penalties can help reduce feasible bribes, and the discussion follows that in 2.2. Next, we derive the auditing fees in this scheme.

Optimal Contract in a Co-payment Scheme Given the equilibrium of $L_1 = 0$ in the alternative offering subgame, the client firm would like to implement the auditor to take zero effort. From 2.2.1, the client firm's cheapest setting[22] will be the flat fees, $R_1(G) = R_1(B) = \overline{R}$.

[22] The client firm cannot be better off setting $R_1(G) > R_1(B)$, because the third party will modify $R_2(r)$ later and this will cost the client firm more.

Knowing that the client firm will set the flat fees, the truth preferring third party will be better off inducing the auditor to take the full effort, as the fees will be eventually paid by the client firm. From 2.2.2, we know that the social optimal contract $\{R^*(G), R^*(B)\}$=$\{\overline{R}, \overline{R}+\frac{\phi(\overline{e})}{1-\pi}\}$ will induce full effort. Since the third party only shares α of the scheme and given that the client firm will offer $R_1(G) = R_1(B) = \overline{R}$, it will offer[23] $R_2(G)$=$\overline{R}$ and $R_2(B)$=$\overline{R} + \frac{\phi(\overline{e})}{\alpha(1-\pi)}$. The total auditing fees will be the same as the social optimal contract and hence the auditor will put in full effort. The equilibrium of $L_1 = L_2 = 0$ in the bribing subgame indicates that the truth will be reported truthfully if $t = B$. We summarize the result in Proposition 3.

Proposition 6 *In the co-payment scheme, there exists an equilibrium where the social optimal contract is offered, the auditor puts in full effort and the client firm does not offer any bribe. The overall equilibrium rewards will be the same as the social optimal contract.*

Before we move on to address our practical implications to the current institutions, we need to discuss the effects from variant settings. First, the role of the third party can be replaced by any organization that cares for the truth. Section 4 provides the FSA in the UK and the PCAOB in the US as examples. Another question will be, if the third party is so perfect, why not setting $\alpha = 1$ and letting the client firm out of charge. This would be too idealistic, as it is unlikely for the client firm not to take any action. If we consider that the client firm will still make secret offers to the auditor, then in the employment contract, the third party would need to take this into account. As a result, the party will have to pay the upper limit of bribe as the reward. Although the truth will be reported in this case, the overall expense is much higher than our setting of $\alpha < 1$.

Second, we have to consider if the third party's expenses are not fully covered by the client firm itself, for example, all expenses will be shared equally by each member that the auditor party has business with. Let s_i denote this share and let P denote the probability that $b_1(t)b_2(t)I_1(r,t)L_1 > b_1(t)b_2(t)I_2(r,t)L_2$. Then the client firm's payoff will become $U_1(r,t)$-(1-$\alpha)R_1(r) - P[s_i\alpha R_2(r) + L_1] - (1-P)s_i[\alpha R_2(r) + L_2] - \sigma D$. It seems that the client firm's offering cost has been reduced, but there are also shares from other members, which is not described here.

[23] $R_2(B) = R^*(B) - (1-\alpha)\overline{R}$.

4 Current Methods to Prevent Misreporting

The co-payment solution suggested in this paper can help avoid corporate failures, if supplemented with an appropriate regulatory framework. Although there are penalties in place in view of the recently implemented SOX act in the US associated with fraudulent reporting, still the auditor and the client firm could collude for mutual benefit. This can only be prevented if an intermediary institution can be brought in to oversee the process of financial reporting and auditing. From the above discussion, we can single out three factors that are sufficient to make such a the co-payment scheme work: (1) Each firm will be charged; (2) The financial report needs final consent from the third party; (3) The third party is not funded by itself. Here we provide a brief discussion on how the existing institutions, the Financial Services Authority (FSA) in the UK and the Public Company Accounting Oversight Board (PCAOB) in the US, can practically play the role of the third party in our co-payment scheme. Notice particularly that both institutions charge fees from the client firms, and FSA is funded entirely by the client firms. In the last subsection, we will address the requirements on auditors' pecuniary cost, i.e., liability.

4.1 FSA in the UK

The FSA came into existence in 2001 registered as a company, not as a government body. The FSA is an independent non-governmental body, given statutory powers by the Financial Services and Markets Act 2000 (FSMA). It is a company limited by guarantee and *financed* by the financial services industry. The Treasury appoints the FSA board, which currently consists of a chairman, a chief executive officer, three managing directors, and 9 non-executive directors (including a lead non-executive member, the deputy chairman). This board sets the overall policy, but day-to-day decisions and management of the staff are the responsibility of the executive. The FSA is accountable to Treasury Ministers, and through them to Parliament. It is operationally independent of government and is *funded entirely by the firms*[24] *it regulates.*

In general, the FSA charges the client firms, and the larger the firm, the higher the fee it has to pay. The various fees include (1) periodic fees (paid yearly), which provide most of the funding

[24]See www.fsa.gov.uk.

needed to carry out the statutory functions; (2) application fees, which recover some of the costs incurred in processing certain applications under the rules or FSMA; and (3) special project fees where FSA undertakes regulatory activity at the request of fee-payers, and the benefit of that activity primarily accrues to them.

The FSA inspects the independently audited financial statements, particularly the firm-level capital requirements which can reflect the risk of the firm's business. To do this, the FSA uses another independent auditing firm, thus making the FSA as a heavy user of the accounting and auditing profession to maintain financial stability in the UK - one of the key mandates of its existence. Besides, FSA also has the power to impose penalties for any wrongdoings by a firm the FSA regulates. Although the FSA is involved in Financial reporting, it does not directly set rules of financial reporting, which is done by Financial Reporting Council (FRC) (overseen by the Department of Trade and Industry). FSA indirectly contributes by being a member of FRC. Thus it would be desirable to integrate FRC as part of FSA, so that it can do a better job in setting Financial Reporting rules, in the light of its inspection experience with firm-level financial statements.

4.2 PCAOB in the US

Like FSA in the UK, the Sarbanes-Oxley Act (SOA) of 2002 is the most recent act aiming to prevent fraudulent reporting. The most important part of SOA was the creation of the Public Company Accounting Oversight Board (PCAOB or "Peekaboo") - an unique, private sector, non-profit corporation (granted with regulating and taxing authority) to oversee and regulate auditing[25] of public companies. The job of PCAOB as an independent board is to oversee public company audits and inspect all registered firms in the US. The Act required corporate leaders to certify personally the firm's financial statements; and it required that auditors certify the firm's internal controls (the statute's now famous Section 404). The PCAOB *funds itself from fees* paid by issuers of securities in proportion to their market capitalization. The PCAOB, which reports to the Securities and Exchange Commission (SEC), has been given substantial powers over independent public auditors (IPAs) and public companies. It registers public auditing

[25] www.pcaobus.org.

firms, inspects them annually if they audit more than 100 “issues” or at least every 3 years, and conducts investigations and disciplinary proceedings. It then may impose appropriate sanctions against both firms and individual IPAs. It also has authority to establish standards related to auditing, quality control, ethics, independence, and other standards related to the preparation of audit reports (Benston, et. al., 2006).

This has been the main initiative to strengthen corporate governance, following the Enron collapse, in fixing the systems and controls rather than corporate reporting per se. In particular, the goal is to strengthen auditor independence rules, to increase accountability of company officers and directors, to mandate top management to take responsibility for the company's internal auditing system, to enhance the quality of financial reporting and to impose criminal penalties for the destruction, alteration, or falsification of records in federal investigations and bankruptcy.

The PCAOB is charged specifically with keeping tabs on the auditors of public companies. Consequently, unlike the SEC, the PCAOB has a narrow focus that will tend to push it towards close oversight of the auditing industry. The US Congress has given the PCAOB comprehensive authority over the auditing industry, involved in auditing public companies. The Board only inspects large registered firms once a year and small registered firms once every three years. That may not be sufficient to uncover the complex fraud that exists today. However, SOA promises a variety of long-term benefits. Investors will face a lower risk of losses from fraud and theft, and benefit from more reliable financial reporting, greater transparency, and accountability. Public companies will pay a lower cost of capital, and the economy will benefit because of a better allocation of resources and faster growth (Coates, 2007).

Agrawal and Chadha (2005) examine the role of firm level governance (e.g., board of directors) on the decision to misreport and conclude that contingent liabilities or risk perceptions could be the main driver for the firms' decision to misreport. In terms of time line, the institutional arrangement with internal corporate governance should be established first, and then, after observing the intermediate earnings, the manager usually makes a disclosure decision whether to misreport or not, which has implications for the firm's equity prices. With the enactment of the SOA, which calls for imprisonment of executives found guilty of fraudulent reporting, the ex-ante costs could be substantial. Further, auditing in the past was only meant to ensure whether the financial statements were in line with the GAAP (Generally Accepted Accounting Practices) or GAAS (Generally Accepted Auditing Standards). Their job was not to detect fraud. Now with SOA, the auditors are expected to detect fraudulent reporting. So a case for an external independent monitor or auditor to play a third-party role is very important. On the other hand, the effect of the SOA has an added cost to the director and officer liability insurance. Consequently, it brings in higher auditing fees reflecting higher prices for accountancy or auditing services.

4.3 Liability and Insurance

The liability for an auditor is different across countries, as there is insurance for qualified auditors. Most auditing firms purchase professional liability insurance. Auditors professional liability insurance, sometimes called auditor's malpractice - errors and omissions insurance, is a common insurance product in the US and the UK[26]. It enables auditing firms to insure their auditors for their errors and omissions in their professional work. It protects the auditing firms from the high costs of lawsuits resulting from their professional activities. In the presence of such an insurance, misreporting will likely exist. But a co-payment scheme can address such a malpractice or moral hazard problem. Because the auditors have full insurance coverage, they take less care to reduce the likelihood of a bad outcome and no longer have the same incentive to reduce risk that was present without the insurance (see Moizer and Hansford-Smith, 1998).

For better corporate disclosure, a more ambitious financial statement insurance (FSI) has been proposed as an alternative to the existing model of financial statement auditing backed by auditor liability in order to avoid misreporting (see Cunningham (2004) and Ronen (2006)). The FSI concept promises considerable advantages compared to traditional financial statement auditing. Though the audit firm is charged with serving as the public's watchdog in insuring good financial disclosure, the auditor's actual client is the audited corporation itself, whose interests concerning disclosure are not necessarily aligned with those of investors. Instead of working for the audited corporation, under FSI, auditors work for the insurer, whose financial interest in a candid audit is in line with the investing public's need for good information (Shapiro, 2005).

[26]See, for example, www.aicpa.org; www.fasb.orgm; www.accountantsprofessionalindemnityinsurance.co.uk; www.uk-professional-indemnity-insurance.com; www.professionalinsuranceagents.co.uk.

The FSI can act as an intermediary or third party. It is in their interest to ensure that there is no fraud so that the insurance firm does not incur any financial loss if there is a company failure. But the risk that needs to be emphasised in the case of FSI is that it raises questions about the solvency of the insurance firm. Preserving insurer solvency is crucial if FSI is placed at the center of the public-company financial reporting system. If the insurance firm goes bankrupt, the client firm can only be bailed out by the government, making it costly for the tax payers in an attempt to rescue the stakeholders of a failing company due to misreporting as happened in the case of the corporate failures in the US in the early part of this decade. In such a FSI setting, it is still possible for an auditor to collude with a client firm, if the firm offers a better incentive to misreport.

Ewert, et. al. (2000) show that an insurance contract based on strict auditor liability is welfare increasing relative to negligent auditors, considering unobservable but verifiable auditor's effort and costly litigation. So the alternative we propose in the form of a co-payment scheme with the existing institutions is more pragmatic and can be implemented if the PCAOB or the FSA type of institution play a more pro-active role in corporate reporting rather than just corporate governance. In this context, La Porta, et. al. (2006) find that private enforcement of liability rules does benefit stock markets more than the public enforcement mechanisms. Thus it is crucial to emphasize the importance of enforcement rather than regulations. But the privately managed regulation boards like PCAOB or FSA may be strengthened as alternative frameworks to the self-regulation of auditors. The FSA type of supervision and monitoring mechanism can play a better role in such private enforcement. Besides, the auditor ethics should be the key driver in reducing failed audits (see Coates et al., 2002). On the flip side, the rigid obligatory compliance with financial reporting rules of SOA may increase the amount of misreporting because corporate boards spend more valuable resources fulfilling statutory mandates rather than involving themselves in forward-looking business strategy. The higher audit fees in the post-SOA era seem to have a negative effect in terms of encouraging firms to go private by delisting from the US stock exchanges or moving to European stock exchanges. Thus, the FSA type intermediary may do the job more effectively for a fee so that they can detect any gap via their early reporting system, as opposed to an infrequent inspection under the SOA system, which has been perceived by public policy analysts that certain sections of SOA are harmful for the US economy.[27]

5 Concluding Remarks

This paper tries to understand why the incentive schemes failed to prevent misreporting in the wave of corporate failures such as Enron 2001. In a simple principal-agent model, we show that the social optimal contract will never be adopted by the client firm under the current auditing system, whether the penalty is harsh enough to eliminate all feasible bribes or not. We need a mechanism to combine both the social optimal contract and the penalty to have a better chance for truthful reports. For this aim, we proposed a co-payment scheme, which requires the auditing fee to be shared by a third party. We demonstrated that the presence of a third party can possibly help create an "implicit" collusion cost to the client firm. There exists an equilibrium in this scheme where the social optimal contract is offered, the auditor puts in full effort and the client firm does not offer any bribe. The overall equilibrium rewards are the same as the social optimal contract.

The failure of Enron suggests that the company concentrated exclusively on financial performance to increase shareholder value at the cost of wider stakeholder interests of customers and employees. Given the catastrophic effect a company failure can cause, it is important to put in place an alternative mechanism to avoid the financial misreporting problem. This paper has contributed to the literature in this direction suggesting ex-ante implicit costs as in the SOA that can prevent firms from misreporting. Moreover, the compliance with the SOA in the US and FSA in the UK is likely to bring benefits to a private company, improving the quality of financial and internal reporting, thereby reducing fraud, improving the exercise of fiduciary duties by directors and officers, and increasing the attractiveness and possibly the valuation of the company to lenders and investors.

[27] See www.cato.org.

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無研發成果推廣資料

98 年度專題研究計畫研究成果彙整表

計畫主持人：何靜嫺	計畫編號：98-2410-H-004-188-
計畫名稱：財務誤報，賄賂與懲罰	

成果項目			量化：實際已達成數（被接受或已發表）	量化：預期總達成數(含實際已達成數)	量化：本計畫實際貢獻百分比	單位	備註（質化說明：如數個計畫共同成果、成果列為該期刊之封面故事...等）
國內	論文著作	期刊論文	0	0	100%	篇	
		研究報告/技術報告	0	0	100%		
		研討會論文	0	0	100%		
		專書	0	0	100%		
	專利	申請中件數	0	0	100%	件	
		已獲得件數	0	0	100%		
	技術移轉	件數	0	0	100%	件	
		權利金	0	0	100%	千元	
	參與計畫人力（本國籍）	碩士生	0	0	100%	人次	
		博士生	0	0	100%		
		博士後研究員	0	0	100%		
		專任助理	0	0	100%		
國外	論文著作	期刊論文	1	0	100%	篇	投稿至 journal of accounting and public policy
		研究報告/技術報告	0	0	100%		
		研討會論文	1	0	100%		
		專書	0	0	100%	章/本	
	專利	申請中件數	0	0	100%	件	
		已獲得件數	0	0	100%		
	技術移轉	件數	0	0	100%	件	
		權利金	0	0	100%	千元	
	參與計畫人力（外國籍）	碩士生	0	0	100%	人次	
		博士生	0	0	100%		
		博士後研究員	0	0	100%		
		專任助理	0	0	100%		

其他成果 (無法以量化表達之成果如辦理學術活動、獲得獎項、重要國際合作、研究成果國際影響力及其他協助產業技術發展之具體效益事項等，請以文字敘述填列。)	1 重要國際合作：此次計畫，我主動邀請 Professor Sushanta K. Mallick（任教於倫敦大學 馬莉皇后學院）一起合寫．我們同時已有延伸的續後研究計畫． 2 研究成果國際影響力：對目前理論無法解釋會計審計人員謊報仍然存在，提出解釋並提供解決辦法

	成果項目	量化	名稱或內容性質簡述
科教處計畫加填項目	測驗工具(含質性與量性)	0	
	課程/模組	0	
	電腦及網路系統或工具	0	
	教材	0	
	舉辦之活動/競賽	0	
	研討會/工作坊	0	
	電子報、網站	0	
	計畫成果推廣之參與（閱聽）人數	0	

國科會補助專題研究計畫成果報告自評表

請就研究內容與原計畫相符程度、達成預期目標情況、研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）、是否適合在學術期刊發表或申請專利、主要發現或其他有關價值等，作一綜合評估。

1. 請就研究內容與原計畫相符程度、達成預期目標情況作一綜合評估

■達成目標

□未達成目標（請說明，以 100 字為限）

□實驗失敗

□因故實驗中斷

□其他原因

說明：

2. 研究成果在學術期刊發表或申請專利等情形：

論文：□已發表 ■未發表之文稿 □撰寫中 □無

專利：□已獲得 □申請中 ■無

技轉：□已技轉 □洽談中 ■無

其他：（以 100 字為限）

投稿至： Journal of Accounting and Public Policy

3. 請依學術成就、技術創新、社會影響等方面，評估研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）（以 500 字為限）

近年來有許多國際性著名的公司危機均來自會計或審計人員的謊報財務報表. 根據 agency model, 謊報應該可以透過一精心設計的機制來防範. 但事實告訴我們, 理論可能漏掉了某些重要部分.

本計畫針對此, 提供一 agency model 的解釋, 說明若考慮的 principal 與 agency 的 collusion 時, 謊報是唯一的均衡結果. 進而, 本文依此模型為本, 提出一 co-payment 制度, 此制度利用第三者譬如會計師工會的力量, 可以防止勾結發生. 本文證明, 會存在沒有謊報的均衡.

本計畫所題的新的制度, 不但在理論上提供一個新的思考方向, 而且可供實際上的應用.