What's in a Name? Reputation and Monitoring in the Audit Market

Somdutta Basu and Suraj Shekhar

ERSA working paper 675

March 2017

Economic Research Southern Africa (ERSA) is a research programme funded by the National Treasury of South Africa.

What's in a Name? Reputation and Monitoring in the Audit Market[1]

Somdutta Basu[2] and Suraj Shekhar[3]

We demonstrate a tension between monitoring and reputation incentives when moving from collective reputation environments to individual reputation environments by analyzing a new rule. After January 2017, the name of the engagement partner has to be disclosed in all audit reports issued in the USA.
We study the resulting change in auditor incentives and show that while the consequent higher reputation incentives can improve audit quality, partners have a lower incentive to monitor other partners when names are disclosed. This may lead to a fall in audit quality when the rule is implemented. We present several solutions to this problem.

JEL: L14, L51, M42

Keywords: PCAOB, Audit, Disclosure, Collective Reputation, Engagement partner, Reputation, Monitoring

[1] This is a working paper. Please do not quote or distribute without the authors' permission. Most of the research in this paper was conducted while Basu was a fellow at the Public Company Accounting Oversight Board (PCAOB) and Shekhar was a graduate student at the Pennsylvania State University. The PCAOB, as a matter of policy disclaims responsibility for any private publication or statement by any of its Economic Research Fellows and employees. The views expressed in this paper are the views of the authors and do not necessarily reflect the views of Board, individual Board members, or staff of the PCAOB. We would like to thank Kalyan Chatterjee, Vijay Krishna, Luigi Zingales, Christian Leuz, Patricia Ledesma, Michael Gurbutt, Marcelo Pinheiro, Joon-Suk Lee, Morris Mitler, PCAOB staff, seminar participants at the 2016 Junior Accounting Theory Conference at NYU Stern and Baruch College, and seminar participants at PCAOB for helpful discussions on earlier versions of this work.

[2]Somdutta Basu is currently a researcher at EconOne and (email: somdutta.basu@gmail.com)

[3] Suraj Shekhar is currently a post-doctoral research fellow at the African Institute of Financial Markets and Risk Management (AIFMRM), University of Cape Town. Email: suraj.shekhar22@gmail.com

Contents

1 Introduction

Currently, audit reports issued in the USA do not reveal the name of the lead partner at the audit firm who conducted the audit. In December 2015, the erPublic Company Accounting Oversight Board (PCAOB) approved a new rule which mandates that the lead partner's name be disclosed in audit reports. This rule was approved by the Securities and Exchange Commission (SEC) in May 2016 and will come into effect after January 2017[1]. In this paper, we analyze partner incentives under the two regimes (with and without disclosure of partner names) and explore the possible impact of the new rule on audit quality. This paper highlights an important tussle between monitoring and reputation incentives in a partnership under two different information structures - a collective reputation environment and an individual reputation environment. Thus, our paper contains a more general message but we set it in the audit market environment for two reasons - a) To analyze the impact of the proposed rule and b) To develop a rich model which incorporates many details particular to the audit industry in the hope that this model can be used for analyzing several questions related to the audit market.

We show that when there are similar incentives to monitor in the two regimes, an engagement partner has greater incentive to produce higher quality audit reports under the disclosure regime (as compared to the non-disclosure regime). However, an unintended consequence of this regime change is that the incentives to monitor a fellow partner are lower under the disclosure regime, which in turn can lead to lower audit quality. The intuition is as follows. While identification of the partner makes his reputation (and therefore future payoffs) more sensitive to his actions, the incentives to monitor a fellow partner reduce with identification because bad actions taken by one partner no longer affect the reputation of other partners (since reputation is not collectively shared with others under partner identification). This creates a trade off which makes the impact of the new rule on audit quality uncertain. We argue that this unintended consequence can be mitigated through a realignment of incentives inside the audit firm or external monitoring from regulators or through increased audit fees.

Before we describe our analysis and results, a bit of context is in order (we will give more details and context in section 4). An external auditor scrutinizes the financial statements of a legal entity or organization in accordance with specific laws or rules. This auditor is independent of the entity being audited. For example, Deloitte could be the audit firm which checks the financial statements of Coca-Cola. Users of the entity's financial information, such as investors, government agencies and the general public, rely on the external

[1]Securities and Exchange Commission (Release No. 34-77787; File No. PCAOB-2016-01) May 9, 2016 Public Company Accounting Oversight Board; Order Granting Approval of Proposed Rules to Require Disclosure of Certain Audit Participants on a New PCAOB Form and Related Amendments to Auditing Standards

auditor to present an unbiased and independent audit report. Audit firms usually operate as partnerships and audit partners are responsible for managing the audit department and engaging in client audits. Unlike other jurisdictions such as several European Union (EU) countries and Australia, in the USA, the name of the lead audit partner is not disclosed to investors and other users of financial statements of publicly traded companies. This can be problematic for the following reasons. The Public Company Accounting Oversight Board's oversight activities reveal that audit quality varies across engagements within the big accounting firms (PCAOB (2013)). Knechel, Vanstraelen and Zerni (2015) provide evidence that reporting 'style' varies systematically across individual auditors and persists over time. They argue that such differences could be due to systematic differences in risk tolerance or other idiosyncratic attributes of the partner which can affect decisions made during the course of the audit. Researchers also argue that differences across individual partners may influence audit quality (DeFond and Francis (2005)). Consequently, compared to the identity of the audit partner, the identity of the accounting firm may constitute a less informative signal of audit quality for individual engagements. At this juncture, it is important to ask the following question - in real life, do capital market participants (like investors) indeed value the information contained in the identity of individual audit partners beyond the information provided by the identity of the audit firm? In a recent study, Aobdia et al. (2015) use data from Taiwan and document positive association between the partner's quality and the client firm's earnings response coefficient. They also report positive market reaction when a firm replaces a lower quality partner with a higher quality one and they find evidence that firms audited by higher quality partners experience smaller Initial Public Offering (IPO) underpricing which allows them to obtain better debt contract terms. Overall, their results suggest that capital market participants place (and should place) positive value on information which reveals the identity of the audit partner to them. The other reason for revealing partner names is the argument of transparency leading to improved audits. The idea here is that if an audit partner's name is revealed in the audit report, it could generate stronger incentives for the partner to build/protect his reputation via high quality audit reports. This may lead to an improvement in audit quality. Next, we describe the key relationships affecting incentives.

Our model includes three types of bilateral relationships unique to the audit market that affects audit quality. The first is the partner-issuer manager[2] relationship, which arises because of the manager's ability to pressure the auditor by imposing a cost (external exclusion) on the auditor in the event of a disagreement about the issuer's financial statements. The second is the partner-partner relationship. Here the 'monitor' partner (who can be an engagement quality reviewer or a successor partner) may observe the behavior of the engagement partner and disclose it to the accounting firm. The third is the audit firm - audit partner

[2]Manager at the client firm.

relationship, which captures the audit firms' ability to impose sanctions on a partner or fire (internal exclusion) and replace a partner if the partner is found to be guilty of succumbing to the issuer's pressure. Next, we describe these relationships and give an intuitive idea of our model.

Investors base their investment decisions on the issuer firm's financial statements. An audit report on the issuer firm's financial statements is the product of the interaction between the issuer-manager and the auditor. The interests of the investors and the manager are not always perfectly aligned for various reasons. For example, the manager's compensation may be tied to the company's performance. As a result, the manager has a direct incentive to paint a positive picture of the company's financial state. The auditor's role is to form an opinion about the quality of the issuer's financial statements and disclose this audit opinion to the investors. This helps mitigate the information risk for investors. While investors value accurate information, managers of issuer firms may prefer favorable reports from auditors. This conflict of interest between the investors and managers affects the auditor because the manager of the issuer firm has considerable influence on decisions regarding hiring and compensating of the auditor (Beck and Mauldin (2014)). Therefore, managers can pressure auditors into issuing favorable opinions and succumbing to this pressure impairs auditor independence, thereby reducing audit quality (DeFond and Zhang (2014), Carcello and Neal (2000)). To guard against this, accounting firms have monitoring systems in place. A partner's behavior is therefore controlled by the internal monitoring activities and sanctions that the accounting firm may impose in case of low quality of audits. In addition, compensation of the partner plays a key role in driving incentives for the partner. The novelty of our analysis is in exploring how partner identification can directly and indirectly affect the key drivers of incentives, namely compensation and sanctions.

In our two-period model, revenue from auditing an issuer is increasing in reputation, where reputation is directly linked to the perceived audit quality on that particular engagement. The partner auditing the issuer obtains a noisy signal about the issuer's cash-flows, which is to be announced to the investor. The issuer prefers a favorable signal and can commit to put pressure (make it costly for the partner to announce his realized signal) on the engagement partner to issue a favorable audit report. By acquiescing, a partner avoids the cost (pressure) the issuer would have imposed on him. However, acquiescing to the issuer leads to lower quality of audits and adversely affects the reputation of the firm and the engagement partner depending on the disclosure regime. Whether a partner acquiesced to the client may be detected by a successor partner or an engagement quality reviewer. A successor partner is one who is assigned to the issuer in the second period. Under the mandatory audit partner rotation rule, a partner must be replaced by a new successor partner every five years. In the model, there is a positive probability that the partner assigned to an issuer in the first period is replaced by a different partner in the second period. In this case, the new successor partner acts as a monitor and can report against the engagement partner if the audit evidence does not support the audit opinion. If an engagement partner is reported by the monitor partner and is found to have acquiesced, he faces sanctions from the leadership of the audit firm. There is a fixed cost[3] of reporting which the monitor partner has to incur in case he reports the other partner of acquiescing. Hence, the incentives to raise a flag against the engagement partner depend on how reporting affects the expected payoff of the monitor partner, which in turn depends on the sharing rule, how reputation affects audit fees, and the cost of reporting. An engagement partner's incentives similarly depend on how the investor updates his belief about the partner and the accounting firm, the existing payment rule inside the audit firm and the expected sanctions.

Note that a partner's payoff depends on the collective[4] reputation of the audit firm when partner names are not disclosed. On the other hand, when partner names are disclosed, the payoff of the partner is directly linked to his own reputation. Thus, for a given level of monitoring, the engagement partner has lower incentives to acquiesce under the disclosure regime because the action of a partner directly affects his own future payoff by changing beliefs about his reputation. However, incentives to monitor may be higher in the non-disclosure regime as partners share reputation. The intuition for this is as follows. In the disclosure regime, a partner's payoffs are more heavily dependent on his own reputation since partner names are observed. Bad behavior of the other partner does not affect the reputation of the monitor partner and therefore has minimal effect on his payoffs. In comparison, in the non-disclosure regime, investors don't observe the identity of the engagement partner. Thus, bad behavior by one partner reduces the reputation of both partners. This generates incentives for the successor partner to report the other partner and clear his name (increase own reputation) whenever he observes bad behavior. Thus, if there is no cost of reporting, or if an outside third party can compensate or punish partners and ensure reporting, then disclosing the name of the partner can lead to higher quality audit reports. On the other hand, if the cost of reporting is positive (but not so high as to discourage monitoring), then not disclosing the name of engagement partners may provide incentives to the monitor to report on the erring partner. Note that monitoring by the successor partner is important because of two reasons. First, it improves the quality of an audit in the future, since the partner who has been reporting incorrectly in the first period faces internal exclusion and is replaced by another partner. Second, the threat of being detected provides additional incentives for the engagement partner to not acquiesce to the client in the first period.

One caveat to this model is that monitoring by the successor partner does not improve audit quality

[3] This cost can be interpreted as a personal cost of accusing a fellow partner and going through the entire process of investigation and internal inquiry subsequently. Alternatively, we could also interpret the cost as Reuben and Stephenson (2013), who show that individuals who report against fellow group members are often shunned later.

[4] An audit firm is a collective body of partners and these partners are heterogeneous in individual characteristics. Since the partner names are not disclosed in the United States, the audit firm's reputation depends on the behavior of each of its partners.

by preventing an incorrect audit report from being issued in the current period. We address this problem in section 8 where monitoring comes from the engagement quality reviewer. An engagement quality reviewer can prevent an incorrect audit report by reporting against the engagement partner before the audit report is issued. When monitoring comes from an engagement quality reviewer instead of a successor partner, reporting against an erring partner not only improves audit quality in the future, but also improves audit quality in the current period. We show that under the disclosure regime, like the successor partner, the engagement quality reviewer too has lower incentives to monitor. This can keep the policy from achieving the benefits to its full potential.

In section 10 we discuss three different solutions to the monitoring problem. The first solution is to increase external monitoring by regulators, which raises expected costs for the monitor if he fails to detect that the engagement partner had acquiesced. The Auditing Standard No. 7 (AS7), Engagement Quality Review, requires that an "engagement quality reviewer is to perform an evaluation of the significant judgements made by the engagement team and the related conclusions reached in forming the overall conclusion on the engagement and in preparing the engagement report, if a report is to be issued, in order to determine whether to provide concurring approval of issuance." Thus the Auditing Standard No. 7 works as a complement to the disclosure of partner names. Second, we argue that the problem can be addressed even without external intervention through realignment of incentives within the audit firm. The desired goal can be achieved by treating the monitor as the "sink" who collects penalty from the engagement partner for acquiescing to the client. The third potential solution is to increase audit fees which in turn leads to increased revenue for the firm. For a given sharing rule, an increased audit fee can provide incentives for both the engagement partner and the monitor partner. The proposed solution is also supported by the empirical findings of Carcello and Li (2013) where the authors report the joint occurrence of higher quality of audits and higher audit fees after audit partners were mandated to sign the audit report in the UK.

Our paper contributes to the literature by providing a theoretical model on how partner identification interacts with profit sharing rules and sanctions inside the accounting firms and affects incentives of partners. To the best of our knowledge this paper is the first to model the three relational aspects unique to the audit market (the leadership of the accounting firm to audit partner relationship, the partner-partner relationship via monitoring, and the partner's interaction with the client) to explore the consequences of a disclosure of partner names. Although the model is streamlined to fit the audit context, our analysis speaks to the broader issue of incentives under collective reputation versus those under individual reputation models of partnerships. We show that there may be trade off in monitoring and reputation incentives when moving from collective reputation environments to individual reputation environments.

The remainder of the paper is organized as follows. The next section describes some of the related literature. We go on to describe a simplistic toy model in section 3 to highlight the intuition in our paper without going into technical or institutional detail. Before going into our model, in section 4, we discuss the history and context of our setting to help readers who are unfamiliar with the audit market environment. Section 5 presents the formal model with partner rotation. Section 6 presents the analysis of equilibria in our benchmark model for the disclosure and non-disclosure regimes. Section 7 analyzes the model with external transfer under the two regimes. Section 8 analyzes monitoring incentives of the engagement quality reviewer. Section 9 provides a brief discussion on an alternative model of multitasking, which yields results with similar policy implications as the earlier sections. Section 10 discusses potential solutions to the monitoring problem. Section 11 presents the summary and possible extensions of the model.

2 Literature

In this section we describe the related literature. While this paper analyzes the change in incentives of partners and the impact on audit quality of the partner identification rule, at its heart this paper explores the more general issue of monitoring in collective reputation environments versus individual reputation environments. Thus, this paper is related to at least two strands of literature: first, the work on analyzing the impact of such laws in other countries (like Carcello and Li (2013)) and second, the literature on collective reputation and monitoring. Additionally, our paper shares some common themes with other papers who look at incentives in the audit market like Lee and Levine (2016). We describe some of these papers next and highlight how our paper makes a contribution.

Empirical evidence on whether partner identification can lead to higher audit quality is mixed. Blay et al. (2014) find no evidence of improved audit quality following the implementation of the parter identification rule in Netherlands. Carcello and Li (2013), on the other hand, document an increase in audit fees as well as an improvement in audit quality in United Kingdom after this law was approved. The implications of our theory are consistent with the findings of Carcello and Li (2013). Our theory predicts that audit quality may go down when the regime changes from non-disclosure to disclosure. This is due to the reduced incentives to monitor. However, we show that a sufficient increase in audit fee can raise reputation building incentives enough to compensate for the lack of monitoring incentives, thereby leading to an increase in audit quality.

Tirole (1996) was the first to present a formal model of collective reputation exploring the effects of internal exclusion (by the firm) and external exclusion (by the clients). However, Tirole does not discuss the issue of collective reputation versus individual reputation, which is the focus of our analysis. Most theoretical research on collective reputation since, has focused on the overlapping generations model of collective reputation (Bar-Isaac (2007), Chen, Morrison and Wilhelm (2013)). Bar-Isaac (2007) argues that agents expend effort for individual reputation when young (since their prior reputation is low) and work for collective reputation (the reputation of the firm) when they are old. A similar analysis is conducted by Jeon (1995) who addresses an important organizational issue and finds that inter-generational grouping may be more efficient than intra-generational grouping in the presence of moral hazard in joint production. These papers sidestep adverse selection issues and concentrate on moral hazard while in our model, we set aside issues of moral hazard and focus on reputation and monitoring in the presence of adverse selection. Within the literature on group monitoring, we must mention the literature on micro finance which has received a lot of attention over the last two decades (see Ghatak and Guinnane (1999)). Mutual monitoring in groups is an important aspect of the joint liability group lending model adopted by many micro-finance institutions across the globe. Under joint liability lending, every member of the group is liable for the loan. Members suffer punishment from the bank if any member of the group fails to repay the loan. This generates incentives for the group members to monitor fellow members. The difference from our work is the following - In micro-finance models, the incentives to monitor and report against a fellow group member exist because the borrowers want to avoid the punishment imposed on the entire group by the bank. However, these papers do not formally discuss how the incentives to protect the collective reputation of the group may induce reporting or monitoring, which is the focus of our paper. Additionally, they have not paid attention to the change in monitoring incentives caused by the change in reputation building incentives when micro-finance institutions started shifting from group liability models to individual liability models.

Chen, Morrison and Wilhelm (2013) discuss a case where individuals may do worse on their own as compared to when they are part of a firm. Thus, it is possible to think of this as an analysis which highlights some differences between a collective reputation regime and an individual reputation regime. The authors show that if individual incentives to signal ability by taking actions which may not be optimal for the clients[5] are very strong, then individuals may prefer to work at a firm where there their reputation building incentives will be known to be controlled by internal monitoring. The firm engages in monitoring so that clients are reassured that individual partners will not take actions which are orthogonal to client preferences. This builds the reputation of the firm. In our paper, we consider the situation where partners are already working at a firm and we show how monitoring and reputation building incentives change when a partner identification rule changes the environment from a collective reputation regime to an individual reputation regime. Thus,

[5]Think of investment bankers signalling their ability by coming up with complex derivatives which may not necessarily serve best the interests of their client. Also see Ely, Jeffrey C., and Juuso Valimaki. "Bad Reputation" The Quarterly Journal of Economics (2003): 785-814.

the way profits within the firm are shared makes a big difference to our analysis (payoffs could be correlated across engagements). Moreover, we show that monitoring need not always come from the leadership of the firm - for example, in Chen, Morrison and Wilhelm (2013), the monitoring capability of the owner of the firm is exogenously given. We show that partners will endogenously choose to monitor each other in a collective reputation regime.

In terms of research theme, the paper closest to our paper is Lee and Levine (2016). The authors look at individual partner incentives and the partnership's choice of internal quality control. They show that identifying the individual partner increases the individual partner's incentives by increasing accountability. However, they point out that partner identification decreases the partnership's incentive for choosing high cost-high value internal monitoring to motivate partners to exert high effort. As a result, the partnership's choice of internal quality control could be lower in the partner identification setting. This could lead to lower quality audits. The partnership may be forced to pick a higher level of monitoring if there is sufficient external monitoring. Our paper differs from Lee and Levine (2016) in three significant ways. One, Lee and Levine (2016) have a costly monitoring technology which needs to be selected at the beginning of the game. Thus, there is no problem of *implementing* monitoring in their paper or, in other words, they assume that it is possible to commit to monitoring in the beginning of the game. In contrast, in our paper, partners may choose to monitor or not in equilibrium. Thus, we analyze questions like - will the partners actually monitor in equilibrium given that monitoring is not observed? We feel that this is important since monitoring is rarely done by mechanical devices which are impervious to deviations. Two, in Lee and Levine, the quality of the audit depends upon the effort choice of the partner when the partner knows the cost of effort. In our paper, the partner's problem is whether or not to reveal his true signals in the face of an external cost which is endogenously determined in the model[6]. Finally, Lee and Levine highlight the importance of external monitoring by regulators in the context of partner identification. Our paper, on the other hand, focuses on internal realignment of incentives and audit fees as tools to achieve higher quality of audits under partner identification.

3 Toy Model

We will discuss the reputation and monitoring effects in two different reputation regimes - Collective reputation and Individual reputation. *We want to make it very clear that this is not our formal model.* This is a simplistic model designed to highlight the two forces at play. These opposing forces create a trade off

[6]Cost imposed by the issuer manager.

which should be considered when contemplating a shift from collective reputation institutions to individual reputation institutions. We will outline our formal model and analysis in section 5.

The general set up is that of a multi-period game with a firm with more than one worker and one customer. Each worker has a type which is known only to that worker. The customer prefers one of these types to the other, thereby making the reputation of the worker important to the customer. In the collective reputation regime, the customer does not know which worker from the firm is working on his job, so the workers share a collective reputation. One the other hand, in the individual reputation regime, the customer knows the identity of the worker who works on his job, so the individual reputation of that worker matters more. A simple model which describes this set up follows.

3.1 Toy Model - Reputation Effect

Consider a simple 3 player, 2 period example. There are two workers and one customer. The workers can take one of two actions - good (G) or bad (B). The action choice is not observed by the customer. The good action is costly for the player and cost is c whereas the bad action is free. Each worker can either be Non-Strategic (NS) or Strategic (S). Each worker's type is his private information. The non-strategic worker is behavioral and always takes the action G i.e. the good action whereas the strategic type worker can take either action. The prior probability of either worker being non-strategic is given by p_n. This is common knowledge. Both workers are in a firm which has two jobs. Job 1 belongs to the customer and the pay from job 1 depends upon the reputation of the worker to be of non-strategic type (as perceived by the customer). Suppose the pay in job 1 is equal to the reputation and is given by p which is the probability that the player is of non-strategic type. The pay from job 2 is fixed at W. Job 1 can be a success (S) or failure. This outcome is publicly observed. The probability of success depends upon the action taken:

$$P(S/G) = 1 \tag{1}$$

$$P(S/B) = \frac{1}{2} \tag{2}$$

$$;\ P(S/a)\ =\ Probability\ of\ success\ when\ action\ a\ is\ taken.$$

Thus, the good action always yields success and the bad action has success with probability $\frac{1}{2}$. The timing of the game is as follows. Nature picks the workers' types and the workers learn their own types privately. One of the workers is randomly chosen to work on job 1. **The customer does not observe this selection in the collective reputation model and observes it in the individual reputation model.** The worker takes his private action. The outcome of job 1 is observed. With probability $\frac{1}{2}$, the worker who performed job 1 will work on job 2 next and with probability $\frac{1}{2}$ that worker will continue on job 1 in period 2. **The customer does not observe this change in the collective reputation model and observes it in the individual reputation model.** After this selection is made, the customer pays the firm based on his beliefs about the type of worker assigned to him. Again the worker on job 1 chooses his action, the outcome is observed and the game ends.

Only period 2 payoff matters (this is just to simplify analysis). The customer pays before the job is executed in period 2 and so the payoff to the firm in period 2 is p from job 1 and W from job 2 where p is the reputation of the worker who will perform job 1 in period 2. This payoff is split among the workers in the following way. Each worker gets a share of the payoff from his own job and a share of the payoff from the other worker's job. The worker who is on job 1 gets $\alpha p + \beta W$ and the worker on job 2 gets $(1-\alpha)p + (1-\beta)W$. We assume that you get more from your own assignment i.e. $\alpha > \frac{1}{2} > \beta$.

We will argue that in this model it will be easier to get the strategic type worker to play the good action in period 1 in the individual reputation regime as compared to the collective reputation regime. 'Easier' here will simply mean that the range of parameters under which the good action equilibrium exists in the collective reputation regime is a subset of the set of parameters required for the existence of the same equilibria in the individual reputation regime. Note that the strategic type worker will always play the costless bad action in period 2 since it is the last period. So only period 1 play is interesting.

3.1.1 Collective Reputation

In the collective reputation model, the customer does not see which worker is working on job 1 at any time. We ask the following question - Is there an equilibrium of this game in which the strategic type worker plays the good action in period 1?

Suppose there is. Then the following must be true for the strategic type worker:

$$Payoff\ from\ G \ \geq \ Payoff\ from\ B$$

$$\Leftrightarrow$$

$$\frac{1}{2}[\alpha p_n + \beta W] + \frac{1}{2}[(1-\alpha)p_n + (1-\beta)W] - c \geq \frac{1}{2}[\frac{1}{2}[\alpha p_n + \beta W] + \frac{1}{2}[(1-\alpha)p_n + (1-\beta)W]] + \frac{1}{2}[\frac{1}{2}(\alpha p + \beta W) + \frac{1}{2}((1-\alpha)p + (1-\beta)W)] \tag{3}$$

$$;p = \frac{1}{2}.0 + \frac{1}{2}p_n = \frac{p_n}{2}$$

The above boils down to the condition:

$$p_n \geq 8c \tag{4}$$

3.1.2 Individual Reputation

In the individual reputation model, the customer does see which worker is working on job 1 at any time. We again ask the following question - Is there an equilibrium of this game in which the strategic type worker plays the good action in period 1?

Suppose there is then the following must be true for the strategic type worker:

$$Payoff\ from\ G\ \geq\ Payoff\ from\ B$$

$$\Leftrightarrow$$

$$\frac{1}{2}[\alpha p_n+\beta W]+\frac{1}{2}[(1-\alpha)p_n+(1-\beta)W]-c\geq\frac{1}{2}[\frac{1}{2}[\alpha p_n+\beta W]+\frac{1}{2}[(1-\alpha)p_n+(1-\beta)W]]+\frac{1}{2}[\frac{1}{2}(\alpha p'+\beta W)+\frac{1}{2}((1-\alpha)p''+(1-\beta)W)] \tag{5}$$

$$;p'=0\ \&\ p''=p_n$$

The above boils down to the condition:

$$p_n\geq\frac{4c}{\alpha} \tag{6}$$

Since $\alpha>\frac{1}{2}$, it is easy to see that the range of p_n for which there exist equilibria in which the strategic type worker takes the good action in period 1 is much larger in the individual regime as compared to collective reputation regime.

3.1.3 Intuition

The intuition here is simple. The reason why players may take the good action is that the gains from maintaining a high reputation are more than cost of taking the good action. The reason why this might be more effective in an individual reputation regime is as follows: in a collective reputation regime, the cost of taking the bad action (loss of reputation) is not completely borne by the worker who takes the bad action. Since the customer does not know which worker is working on his job, even when he observes that the worker failed in period 1, he has to allow for the possibility that the worker in period 2 is the other one (who has an untainted reputation). This means that the reputation drop (payoff drop) suffered by the worker in period 1 who took the bad action is not as severe as the drop he would have to face if it was the individual reputation regime (where his reputation would fall to zero after a failure). In this sense, the transparency of the individual reputation regime encourages better behavior by increasing reputation incentives.

3.2 Toy Model - Monitoring Effect

In this section we will present a slightly modified version of the previous model. **This modification will not change the result of the previous section.** However, we do this because the modification allows us to present some intuitive ideas.

The modification to the previous section is to the probability of success functions. For this section we assume that:

$$P(S/G) = \frac{1}{2} \tag{7}$$

$$P(S/B) = 0 \tag{8}$$

So, while in the previous section we assumed that the non-strategic worker always succeeds and the strategic worker can fail if he chooses the bad action, in this section, we make the assumption that the non-strategic worker may succeed or fail and the strategic worker will always fail if he takes the bad action but may succeed if he takes the good action. This modification allows us to present the difference between the two information structures. In the previous section, bad news (news of failure) was fully informative and good news (news of success) may have come from either type worker. In this section, on the other hand, we have that it is not necessary (depending upon the equilibrium being played) that either news of success or news of failure reveal types. The critical difference that comes with this modification is that bad news is not fully informative but is more likely to come from the strategic worker. If we had used the probabilities from the previous section then bad news would have removed the information asymmetry completely while the the news which had the information asymmetry (good news) was more likely to come from the non-strategic worker. We will see how this impacts our analysis. Note once again that the result from the previous section will go through with this environment as well. Next, we describe the monitoring addition to the model.

Suppose that the worker who is assigned to job 1 at the beginning of period 2 learns if the previous worker on job 1 had played G or B. At a cost c_m to himself (independent of worker type) he can initiate an investigation which will find out if the first worker played B. If the investigation finds the first worker guilty, the worker is removed and replaced with another worker from a pool of workers where the probability of any given worker being of non-strategic type is given by p_n. If the new worker incorrectly accuses the previous partner of playing B then he himself is removed and replaced. We assume that the investigation always uncovers the truth. **The customer always observes if a worker is fired but does not observe which**

worker is fired in the collective reputation regime. He does observe the identity of the fired worker in the individual reputation regime.

In such an environment, we ask - when will the second worker report the first worker in equilibrium? The first thing to notice is that if the first period play is a pooling equilibrium (both types playing the good action) then there is no benefit in reporting the other worker. This is because the old worker's reputation is unchanged in a pooling equilibrium and remains at p_n which cannot be improved by getting the worker fired in either regime. Since there is a positive cost and no benefit, we cannot have reporting in an equilibrium in which both types behave in the first period. However, there may be other equilibria of the game in which there is reporting and the strategic worker plays the bad action with positive probability in period 1. The following claim establishes the fact that there are no reporting equilibria in the individual reputation regime. Then we will show that in the collective reputation regime there are reporting equilibria. One might feel that claim 1 uses the fact that the payoff from job 2 is independent of the worker's reputation. However, corollary 1 establishes claim 1 to be a general result.

3.2.1 Individual Reputation

Claim 1. *There is no reporting equilibria in the individual reputation regime.*

Proof. This is easy to see. Suppose the first worker had played the bad action B and failed and suppose there is an equilibrium with reporting under the individual reputation regime where a first period strategic worker plays the bad action with probability $1-q$ and the good action with probability q where $q \in [0,1)$. Then:

$$Payoff\ from\ reporting\ =\ \alpha p_n + \beta W - c_m \tag{9}$$

$$Payoff\ from\ not\ reporting\ =\ \alpha p_n + \beta W \tag{10}$$

This is because in the individual reputation regime, the identity of the worker on job 1 is revealed to the customer. So the payoff to the worker from his own job is guaranteed at αp_n. In this simple construction, the payoff from job 2 is independent of the worker's reputation so the result follows. □

Corollary 1. *Even if the payoff from job 2 depended upon the worker's reputation (the worker engaged on job 2), there is still no reporting equilibria in the individual reputation regime.*

Proof. Suppose the payoff from job 2 to the worker engaged on job 1 is $\beta p'$ where p' is the reputation of the worker engaged on job 2. If the worker on job 1 reports the first worker, then the worker is fired and replaced by another with reputation p_n. So the payoff to the reporting worker is $\alpha p_n + \beta p_n - c_m$. If the worker does not report the first worker, the worker is not fired and since the customers believe that the players are playing an equilibrium with reporting they interpret the no firing to be because the first worker played the good action. This makes the reputation of the worker engaged in job 2 equal to p_n. This is because both types have the same probability of success when they play the good action[7]. Thus, the payoff of the worker on job 1 is $\alpha p_n + \beta p_n > \alpha p_n + \beta p_n - c_m$. □

3.2.2 Collective Reputation

Suppose the first worker had played the bad action B and had failed. Consider an equilibrium with reporting under the collective reputation regime where the first period strategic worker plays the bad action with probability $1 - q$ and the good action with probability q where $q \in [0, 1)$. We don't show the optimality of the first period actions (that mixing is equilibrium behavior) here but it can easily be shown that such an equilibrium exists under simple conditions like the cost of taking the good action not being too high. We concentrate our attention on showing that under the collective reputation regime, unlike the individual reputation regime, there exists an equilibrium with reporting.

Theorem 1. *Under the collective reputation regime, if $\frac{\alpha p_n}{2}(1 - p_n)(1 - q) \geq c_m$ holds, then there exists a reporting equilibrium where the strategic type worker in period 1 plays the good action with probability q.*

Proof. Notice first that a worker would never report on himself in equilibrium. This fact will be useful in constructing this equilibrium. This is because of the following. Since the customer does not observe if the worker has been switched or not, the customer assigns positive probability to the same worker returning. Thus, when the customer sees no firing after a failure, the interpretation is that either the worker was switched and the first worker took the good action (else the worker would have been reported) or the worker was not switched in which case the worker would never have been reported. So, the customer places positive probability on the event that the first worker took the bad action, failed, and was not reported because the same worker was assigned in period 2. Consider the incentives of the worker who has to make the reporting decision.

$$Payoff\ from\ reporting \ = \ \alpha p_n + \beta W - c_m \tag{11}$$

$$Payoff\ from\ not\ reporting \ = \ \alpha P' + \beta W \tag{12}$$

where P' is the probability that the worker engaged on project 1 is of non-strategic type after the cus-

[7]The corollary result would also go through if the non-strategic worker had a higher probability of success when taking the action G (compared to the strategic worker).

tomer observes the history - *failure, no firing*. This probability is given by the following expression:

$$P' = \frac{p_n}{2}(1 + p_n + (1 - p_n)q) \tag{13}$$

It is easy to show that $P' < p_n$ since $q < 1$. So the second worker can actually improve his reputation by reporting the first worker and getting him fired. If the gains from this improvement are large enough then there is a reporting equilibrium. Formally, there is a reporting equilibrium if:

$$\begin{aligned}
&\alpha p_n + \beta W - c_m \geq \alpha P' + \beta W \\
&\Leftrightarrow \\
&\alpha(p_n - P') \geq c_m \\
&\Leftrightarrow \\
&\frac{\alpha p_n}{2}(1 - p_n)(1 - q) \geq c_m
\end{aligned} \tag{14}$$

The above expression would hold for small c_m. Thus, if costs are positive but small then there are reporting equilibria in the collective reputation regime but not in the individual reputation regime. □

3.2.3 Intuition

Essentially, the idea here is as follows. Consider the monitoring incentives of a worker who has been assigned job 1 in period 2 and observes that the previous worker had taken the bad action in period 1 which resulted in failure. In the collective reputation regime, bad behavior of the first period worker lowers the reputation of the second period worker as well since they share a collective reputation. This generates incentives for the second period worker to report the first period worker who took the bad action which led to failure. On the other hand, if it is an individual reputation regime, then the customers know that a new worker has been assigned to the job so the reputation of the new worker is unaffected by the bad action taken by the first period worker.

4 History and Context

Unlike several other jurisdictions such as the EU countries and Australia, in the U.S.A., the name of the lead audit partner is not disclosed to investors and other users of financial statements of publicly traded companies.

We have pointed out some criticisms for this in the introduction. In response to a recommendation by the U.S. Department of Treasury, the Public Company Accounting Oversight Board (PCAOB) issued a *Concept Release Requiring the Engagement Partner to Sign the Audit Report* (No. 2009-005 – Concept Release). Greater transparency and higher accountability of individual auditors were the two main goals this new standard aimed to achieve. The proposed rule was strongly opposed by the major accounting firms (Deloitte, Ernst & Young, KPMG, PricewaterhouseCoopers) who were of the opinion that given the nature of checks and balances existing in most audit firms, the signature requirement would be irrelevant to audit quality and would subject engagement partners to additional liability risks. Moreover, they felt that this additional exposure would lead to inefficiently high levels of effort by partners trying to play it safe. Investors, on the other hand, supported the proposal and argued that greater transparency would enhance audit quality by increasing the engagement partner's sense of accountability to financial statement users. After four rounds of public comments, in December 2015, the PCAOB approved the new rule which mandates that the lead engagement partner's name be disclosed in the new PCAOB Form AP, Auditor Reporting of Certain Audit Participants. The PCAOB believes that this approach will achieve the objectives of transparency and accountability of the audit while appropriately addressing concerns regarding liability of the auditor (PCAOB, 2015). The Securities and Exchange Commission (SEC) approved this rule in May 2016 and the new rule for engagement partner name disclosure will apply to auditor reports issued on or after January 31, 2017.

5 Model

In this section we present the benchmark model in a simple two period set up with all agents being risk neutral.

5.1 Players

There is an audit firm with three partners: one managing partner (who acts as the leadership/owner of the audit firm) and two engagement partners who can work on projects/auditing jobs. There is an issuer (client) who wishes to be audited and every period there is an investor for whom the issuer's firm is an investment prospect. In our model, the managing partner of the audit firm and the investor will be passive (behavioral) players[8]. This simplification allows us to focus on the reputation and monitoring incentives faced by the engagement partners in the face of pressure from the issuer to issue favorable reports. The partners maximize discounted sum of payoffs where the discount factor is denoted by δ. The issuer is assumed to be myopic and

[8] We will describe the actions taken by these players further in this section.

he maximises only current period payoff. This assumption is for simplicity and will not change our results qualitatively.

5.2 Projects and State of the World

In each period the issuer's cash flow for that period is picked by nature and could take two values: G and B with probability p and $1 - p$ respectively. This probability is common knowledge. At the end of each period, the true cash flow of that period is revealed to all players. One engagement partner audits the issuer and the partner who does not work with the issuer is engaged in another project that we name Project 2. We assume that Project 2 is one in which a partner of any type (partner types will become clear shortly) plays the same action and therefore the reputation of the partner is unaffected by its outcome. This assumption simplifies our analysis and allows to us focus on the issuer's project. As is clear, we are primarily interested in the issuer's project and we will call it the good state of the world if the cash flow drawn by nature in that period is G, else it is the bad state of the world.

5.3 Partner Assignment and Rotation

The issuer has to hire the audit firm in every period[9]. After the issuer hires the audit firm in Period 1, an unbiased coin is tossed to decide which engagement partner works with the issuer in that period and which partner works on Project 2. The issuer, engagement partners and the managing partner observe the realization of this coin toss. *Under the non-disclosure regime, the investor does not know the identity of the partner chosen to issue the audit report for the issuer. Under the disclosure regime, the identity of the partner is observed by the investor as well.* Partner rotation and monitoring occurs as follows. In Period 2, the partner continues to be with the issuer with probability γ. With probability $1 - \gamma$, the other partner is assigned to the issuer. The investor does not observe the switch in partners in the non-disclosure regime (but does so in the disclosure regime). However, the parameter γ is common knowledge to all players.

5.4 Partner Signals/Auditing

Each period, the partner assigned to the issuer gets a signal $s \in \{g, b\}$ about the true cash flow in that period. The conditional distribution of signals is as follows. The audit partner observes the signal g whenever the true cash flow is G. However, if the true cash flow is B the audit partner observes g with probability ϵ and b with probability $1 - \epsilon$. The partner informs the issuer of his signal truthfully. We assume that he cannot misinform

[9]This may be required by law as observed in the USA.

the issuer. This is to be interpreted as a file documenting the partner's 'assessment' of the issuer which the partner has to show to the issuer. The audit partner has to announce a signal to all players, in particular to the investor. The investor wants to invest in the issuer only if the state is G. He updates his beliefs about the true state being G after observing the signal announced by the partner.

5.5 Conflict and Issuer Actions

A conflict between the issuer and the auditor occurs whenever the audit partner gets the signal b since, if announced, this would indicate to the investor that the true state is bad resulting in zero investment by the investor that period. This hurts the payoff of the issuer (payoffs will be described formally later). If there is a conflict, the issuer can commit to a one period cost[10] (cost$\in [0, \infty)$) which he would impose on the partner if the partner chooses to announce b instead of g. Putting pressure on the partner is costly for the issuer as well. We assume that the cost of putting pressure level B is B[11] i.e. the utility from putting pressure B is $-B$.

5.6 Partner Actions

We assume that the partner reports the signal g whenever he gets g. One may wonder if this is reasonable. In particular, could the partner announce b when his true signal is g? We do not allow for this possibility for the following reasons. One, the issuer may be able to sue the auditor for misreporting if the auditor's signal is g and he chooses to disclose b. Remember, the auditor has no supportive evidence for the opinion as the signal he received does not match the signal he discloses. Two, on a similar note, the client can report the partner to the managing partner and this can initiate an investigation on the partner who misreports. A similar assumption has been made by others including McLennan and Park (2003).

If the partner gets the signal b, he may be pressured into announcing g by the issuer who fears losing that period's investment by the investor. If there is a conflict at time t, then the partner has two action choices. He can either bow to the pressure and acquiesce (A) (by choosing to announce signal g instead of b to avoid the cost B) to the issuer or not acquiesce (NA) (announce true signal b).

Thus, if there is no conflict at t, then the partner's action set is simply $\{NA\}$ and if there is a conflict at time t, the partner's action set is $\{A, NA\}$.

[10]Alternatively, a transfer. This cost can be interpreted as anything from making life hard for the partner to getting him fired or not offering him a job in the future.

[11]This could be interpreted as an expected loss in the future if this action was discovered.

5.7 Partner Types

The partners can be one of two types: Rigid (R) or Flexible (F) (we define types following Dye, Balachandran, and Magee (1990)). At time zero, nature picks the type of the two partners independently from a distribution Γ where the probability of being rigid is p_h. An R type partner is behavioral and never acquiesces. An F type partner is strategic and decides optimally whether to acquiesce or not. A partner's type is his private information. For simplicity we assume that the issuer knows that partner's type but the investor does not. In practice, the issuer's manager has a lot more information about the auditor than the investor. This is because the audit process requires frequent interactions between the management and the auditor.

Naturally, we will describe all strategies for the flexible type partner only since the other type is behavioral.

5.8 Monitoring

The partner assigned to the issuer in period 2 learns if the previous partner had acquiesced or not. We interpret this as the new partner being able to figure out if the audit evidence supports the audit opinion issued by reading the papers filed by the old partner. He then decides whether to report his predecessor to the managing partner with a message correct or incorrect $\{C, NC\}$ (the former indicates that the audit evidence supports the audit opinion). While reporting C is costless, there is a fixed cost c for reporting a partner's action to be NC. This is to be interpreted as a personal cost of confrontation or conflict with a fellow partner. Reuben and Stephenson (2013) show that individuals who report against fellow group members are often shunned later. Alternatively, this cost can be interpreted as the cost of having to go through the entire investigation procedure after making the accusation. It is assumed that if a partner reports that the other partner played A in the previous period, then his accusation will be investigated and the investigation will always reveal the truth. It is also assumed that if the partner reports C, then there will be no further investigation from the leadership of the firm (we could alternatively assume a lower probability of investigation). Both type of partners are strategic when it comes to making the decision of incurring c and reporting on the other partner.

5.9 Managing Partner's Actions, Investor actions and Reputation of Partner

The consequences of monitoring are as follows. Following a report NC, there is an investigation which reveals the true signal obtained by the previous partner to the managing partner. The managing partner is behavioral and fires (action f) a partner if and only if he finds out that the partner had not reported his true signal. The fired partner is replaced by another partner from the distribution Γ immediately (at no cost).

The investor observes if a partner has been fired. However, the investor does not observe the identity of the fired partner. If a partner reports against the other partner, but investigations reveal this to be untrue, then the reporting partner is fired. If the reporting partner reports C, the managing partner takes the action of not firing (action nf).

The reputation of the audit firm at time t indicates the beliefs held by the investor about the probability that the partner assigned to the issuer in period t is of type R. The reputation at time t is given by R_t. In period one, this is the reputation in the beginning of the period, that is, p_h. In period 2, this is the reputation of the audit firm after the managing partner has made his firing decision. Let R_2' indicate the probability that the partner engaged in project 2 is of R type.

The investor wants to invest in the issuer only if the state is G. He updates his beliefs about the true state being G and then makes his investment decision. We assume that the investor invests the amount $I \times Pr(G|s, R_t)$[12] in the issuer where $Pr(G|s, R_t)$ is the posterior probability of the true state being G given that engagement partner i announced the signal s and the reputation of the audit firm is R_t. I is a fixed positive constant indicating size of investment. The investment by the investor in period t is denoted by $i(t)$.

5.10 Errors/Refinements

All partners make an error in announcing the signal with probability ν. Essentially, this means that if the partner wanted to announce a signal, he announces it with probability $1 - \nu$ and announces the other signal with probability ν. We will present all results assuming $\nu \to 0$. Thus, our equilibrium concept will be extensive form trembling hand perfect equilibrium. We make this assumption as a refinement to deal with beliefs off the equilibrium path (for example - what are the beliefs if the signal announced is b but the state is revealed to be G at the end of period 1? Unless partners can make mistakes, this cannot happen as the engagement partner has to receive the signal g in state G and in this case the partner's action set is singleton $\{g\}$). The following assumption also deals with possible off equilibrium events. We assume that there is a small probability that the partner in period one gets fired regardless of his signal or state realization. This is to deal with beliefs following a history where the signal was g, the state realized was G, but the partner was fired.

[12] Any investment function, increasing in the investor's expectation about the probability of the G state, will qualitatively produce similar results.

5.11 Timeline

The sequence of events is as follows. At the beginning of the first period, nature draws the type of the two engagement partners from the distribution Γ and randomly assigns one of the two partners to the issuer. Then, nature picks the true state of the world (true cash flow for issuer) for period 1 and the engagement partner receives a signal ($s \in \{g, b\}$). The engagement partner communicates the signal to the issuer truthfully. If there is a conflict, the issuer commits to how much pressure he would put on the partner in case the partner plays NA and communicates this to the partner. The engagement partner chooses to acquiesce or not and publicly announces a signal. If there is no conflict, the engagement partner announces the true signal g[13]. After observing the signal, the investor makes the investment decision. All players receive their first period payoffs. At the end of the first period, the true cash flow for the first period is observed by all players.

At the beginning of the second period, nature picks the partner to be assigned to the issuer in period 2 (probability of picking the same partner is γ). The partner assigned to the issuer learns about the signals and actions of the previous partner. The new partner decides whether to report against the previous partner if the audit evidence does not support the audit opinion issued by the predecessor partner. The managing partner makes the firing decision. If a partner is fired, he is replaced by a partner drawn from the distribution Γ immediately. The investor observes whether a partner has been fired or not but may not observe the identity of the fired partner[14]. Next, nature draws the true cash flow for period 2 for the issuer and sends a signal to the assigned partner ($s \in \{g, b\}$). The engagement partner communicates the signal to the issuer truthfully. If there is a conflict, the issuer commits to how much pressure he would put on the partner in case the partner plays NA and communicates this to the partner. The engagement partner chooses to acquiesce or not and publicly announces a signal. If there is no conflict, the engagement partner announces the true signal (g). After observing the signal, the investor makes the investment decision. All players get their second period payoffs. The true cash flow for the second period is observed by all players. The game ends.

5.12 Payoffs, Strategies and Equilibrium

In each period, the payoffs of players depend on the reputation of the two partners, the sharing rule, the action taken by the engagement partner and the cost imposed by the issuer in case the partner does not acquiesce in a conflict. Let I_a^i be an indicator function which takes the value 1 when partner i is assigned to the issuer. Let I_c be an indicator function which equals 1 when there is conflict. If a partner is fired in the first period, his payoff in the second period is given by the outside option $v_f (\leq 0)$. Essentially, the audit firm's fees in any

[13] If there is no conflict the signal has to be g.

[14] Observes in the disclosure regime and does not observe in the non-disclosure regime.

period is a linear combination of the reputations of its two partners. The engagement partners get a share of this and the managing partner of the audit firm is the residual claimant. The issuer gets whatever the investor invests. Since we assume the investor to be behavioral, we do not model his payoffs.

Suppose the issuer commits to impose a cost B on the partner if he plays NA in case of a conflict at period t. Then the period payoffs for the players in the game at time t is given by the following functions of the action taken by the engagement partner:

$$\begin{aligned}
Managing\ Partner(A, NA) &= (1-\alpha_1-\beta_1)(WR_t) + (1-\alpha_2-\beta_2)(XR'_t) \\
Partner^i(NA) &= I_a^i[I_c(\alpha_1(WR_t) + \alpha_2(XR'_t) - B) + (1-I_c)(\alpha_1(WR_t) + \alpha_2(XR'_t))] + \\
&\quad (1-I_a^i)[\beta_1(WR_t) + \beta_2(XR'_t)] \\
Partner^i(A) &= I_a^i[\alpha_1(WR_t) + \alpha_2(XR'_t)] + (1-I_a^i)[\beta_1(WR_t) + \beta_2(XR'_t)] \\
Issuer(NA) &= I_c.(I.Pr(G|b, R_t) - B) + (1-I_c)I.Pr(G|g, R_t) \\
Issuer(A) &= I.Pr(G|g, R_t)
\end{aligned}$$

$\alpha_1, \alpha_2, \beta_1, \beta_2 \in (0,1)$ are the shares of the engagement partners. α_1 and α_2 are the shares of the engagement partner assigned to the issuer, where α_1 is his share of the audit fee received from the issuer and α_2 is his share of the revenue from Project 2. Similarly, β_1 and β_2 are the other partner's share of the audit fee and Project 2-revenue respectively. Audit fees for the issuer and Project 2 are WR_t and XR'_t respectively. X and W are positive scalars and R_t and $R_{t'}$ are the probabilities that the partner assigned to the issuer and Project 2 is of the rigid type respectively.

A strategy for an engagement partner is a set of history contingent actions, where the action set in period 1 is $\{A, NA\}$ in case of conflict and $\{NA\}$ if there is no conflict. The action set in period 2 is $\{A, NA\} * \{C, NC\}$ in case of conflict in period 2 and $\{NA\} * \{C, NC\}$ in case of no conflict[15].

The issuer's strategy is a pair of history contingent actions (B_1, B_2), which specifies the amount of pressure he puts on an assigned partner in case of a conflict in period 1 and 2 respectively.

Let E be the set of all equilibrium strategy profiles. $E = \{E_1, E_2\}$ where E_1 represents strategies in period 1. The belief function $\pi_t : [0,1] \times E_t \times \{g, b\} \to [0,1]$ gives the investor beliefs about the probability that the project will generate G at time t, given reputation of the current partner R_t, the equilibrium strategies and the signal report.

[15]Notice that action in period 1 is a function of reputation R_1, the pressure from the manager B_1, and the partner's belief about the second period reporting action $r \in \{C, NC\}$ of the other partner.

The equilibrium concept is extensive form trembling hand perfect equilibrium. Equilibrium consists of action strategies by engagement partners, pressure exerted by the issuer (B_1, B_2), and beliefs held by the investor such that:

1. The strategy of the engagement partner maximizes the expected lifetime utility for the partner.
2. $\{B_1, B_2\}$ maximize the expected lifetime utility for the issuer.
3. R_t, R'_t are calculated using Bayes' rule.

6 Analysis in Benchmark Case

In this section we solve the game described in the previous section using backward induction and characterize the equilibrium strategy profile for all levels of investment I. We introduce a terminology at this point: we will refer to an Acquiesce equilibrium as A-equilibrium, a Not-Acquiesce equilibrium as NA-equilibrium and a mixed strategy equilibrium where partners will mix between A and NA in period 1. Since period 2 actions for the engagement partner will be fixed in any equilibrium (as we will show shortly), these equilibria will differ only in first period actions. In an Acquiesce equilibrium, the F partner plays A in case of a conflict in period 1[16]. In a Not-Acquiesce equilibrium, the F partner plays NA in case of a conflict in period 1. We then analyze the conditions necessary for the existence of these equilibria.

We begin our analysis by characterizing equilibria for our benchmark case where the cost of reporting c is zero. We analyze equilibrium behavior of the engagement partner and the successor partner under two regimes. Finally, we look at the equilibria when an external transfer is allowed to the partner who reports against a partner playing A and the cost of reporting may be positive.

We solve the game using backward induction. Let us first focus on the equilibrium strategies of the partner, the issuer and the investor in the second period. The following two lemmas summarize the second period behavior of the engagement partner, the issuer and the reporting behavior of the successor partner. We then move on to describing the investor's behavior in the second period.

Lemma 1. *At $t = 2$, in case of a conflict, $B_2 = 0$ and if the F type partner is assigned to the issuer then he plays A irrespective of the name disclosure requirement.*

Proof. As the game ends at $t = 2$, an F type partner has no reputation concern and he is indifferent between playing A and NA in period 2 in case there is conflict and the pressure imposed is zero. If $B_2 > 0$, the

[16] In period 2, it will always be weakly optimal to play A.

partner strictly prefers the action A. Thus, the issuer has to impose any positive cost on the partner to make him play A. Thus, in any equilibrium we must have that the partner plays A when he is indifferent (any other play would not be in equilibrium as the issuer can always impose a small positive cost). This implies that the issuer will choose $B_2 = 0$ and the partner will acquiesce. $\square$

Lemma 1 shows that in the second period, which is also the last period of the game, the partner acquiesces to the issuer whenever the issuer puts pressure $B_2 \geq 0$. Also, it is optimal for the issuer to play $B_2 = 0$ in order to make the partner play A. Next, we look at the reporting incentives of the successor partner at the beginning of Period 2. Lemma 2 and corollary 2 show that when the cost of reporting is zero, there are only reporting equilibria (where the successor partner reports against the predecessor if the predecessor partner played A) in both disclosure and non-disclosure regime. We will show later that when the cost of reporting is positive, the reporting equilibrium does not exist in the disclosure regime but may exist in the non-disclosure regime.

Lemma 2. *If $c = 0$, then under both regimes, there is a reporting equilibrium where the new successor partner reports NC if and only if the predecessor partner played A in the first period.*

Proof. See Appendix. $\square$

That the investor does not observe the identity of the partner assigned in the second period is central in driving the reporting incentives of the successor partner under the non-disclosure regime. Suppose the investor believes that the successor partner reports NC if the first partner played A. Consider an equilibrium where the F-type partner plays A with a positive probability. Following a signal g and outcome B, if the investor does not observe that a partner has been fired, he will believe that the first period erring partner has been reassigned with positive probability. This is because the investor realizes that either the first partner got the wrong signal (since their was no firing, the first partner must have played the signal he obtained) and got replaced or the first partner played A but was reassigned to the issuer's project (the partner would never report against himself in equilibrium). In this event, the probability that the assigned partner is of type R is strictly less than the first period reputation p_h. In case the partner was changed and the first partner played A, the successor partner can restore the tarnished reputation by reporting against the predecessor partner, who is fired after a report is made. Under the disclosure regime, the successor partner is indifferent between reporting and not reporting. Since the investor observes the identity of the partners, he can observe when a new partner has been assigned to the issuer in the second period. If he observes a new partner and the history (g, B, nf), he assumes that the partner in the first period made a mistake (got the wrong signal), otherwise the successor partner would have reported against him. Thus, reputation of the predecessor partner remains p_h if he is not fired[17](same as the reputation of the new partner if the first partner would have been fired). Since, the cost of reporting is zero, it is a weakly dominant strategy for the successor partner to report under the disclosure regime.

Corollary 2. *There does not exist an equilibrium without reporting when the cost of reporting is zero.*

Proof. Suppose there is a no-reporting equilibrium. Consider the incentives of the newly rotated in successor partner. If no one gets fired, the investor will assume that it was because either the first period partner played A but there was no reporting or the first period partner played NA. Therefore, after a history of (g,B,nf) the reputation of the first period partner will fall below p_h as it allows for the former possibility. However, the reporting partner has incentives to deviate and report. This is because of the belief of the investor when he does observe a firing. Our assumption on errors says that there is a small positive probability that the first period partner gets fired irrespective of his signal or state. Therefore, if the investor believes that no-reporting is happening in equilibrium but still observes firing, he must think that this is because the first period partner got fired by mistake and therefore the reputation of the other partner will be p_h (since the fired partner will get replaced from the pool randomly). This is above the reputation that can be achieved by the other partner if there was no reporting. Since the cost of reporting is zero and the successor partner's payoff is positively dependent upon the other partner's reputation in either regime, he will report. Thus, there is profitable deviation. Therefore, there does not exist any no-reporting equilibrium when the cost of reporting is zero. $\square$

6.1 Benchmark case without disclosure of partner name

In this subsection we consider the equilibria in the non-disclosure regime. Thus, investors do not know the identity of the partner who gives the audit signal about the issuer. We have already described the equilibrium behavior of the partner, the issuer and the reporting actions taken by the partner in period 2. Next, we describe how the investor updates beliefs about the reputation of the engagement partners and makes his investment decision.

Investor's behavior in period 2

The investor does not observe the identity of the partner in the second period and bases his investment decision on his belief that the assigned partner is of type R. The investor forms his belief about the assigned

[17]Since probability of making a mistake is same for both types.

partner's type based on the history which consists of the first period audit report, the true cash-flow, whether a partner has been fired and his belief about the equilibrium being played. Let us first define the belief revision functions for all possible histories in order to obtain the optimal investment decision of the investor in period 2. As Lemma 1 indicates (we can infer that the b signal arrives only when the state is bad), the investor never invests if the signal in period 2 is b. So we only consider his investment decision when the signal in period 2 is g. The investor's decision depends on the reputation of the partner who discloses the signal in period 2, while the reputation of the partner depends on the equilibrium being played and the history of the game. Notice that under monitoring (successor partner reports A play), reputation of the partner remains unchanged following all histories but (b, B, nf) and (g, B, nf) i.e. histories in which the state in period 1 turned out to be B and there was no firing. In histories in which there is firing, the engagement partner's reputation is p_h since the investor can infer from observing that a partner was fired that the old partner must have been reported by the rotated partner[18].

For the F type partner, let x be the probability of playing A in the first period in equilibrium. We define $\phi(x)$ as the probability that the engagement partner assigned to the issuer in the first period is of type R given history (b, B, nf) and $\phi'(x)$ as the probability that the engagement partner assigned to the issuer in the first period is of type R given history (g, B, nf). Let $\hat{\gamma}$ be the perceived probability that the same predecessor partner is assigned to the client in the second period following the history (g, B, nf)(where $\hat{\gamma}(g, B, nf) = Pr(same\ partner|g, B, nf) = \frac{\gamma}{\gamma+(1-\gamma)\epsilon} > \gamma$). Note that we have to use perceived probability because the fact that there was no firing after the history (g, B) is an informative signal of whether the partner was rotated or not (since a partner would never report against himself if he is not rotated out). Following history (g, B, nf), the probability that the partner assigned to the issuer in the second period is of type R is given by:

$$R_2(x) = \hat{\gamma}\phi'(x) + (1-\hat{\gamma})p_h \tag{15}$$

$$= \hat{\gamma}\frac{p_h\epsilon}{p_h\epsilon + (1-p_h)[\epsilon + (1-\epsilon)x]} + (1-\hat{\gamma})p_h.$$

Also let $R_2'(x)$ be the probability that the partner assigned to Project 2 in period 2 is of type R following the history (g, B, nf, g). $R_2'(x) = \hat{\gamma}p_h + (1-\hat{\gamma})\phi'(x)$.

Now define $R_2h(x)$ to be the probability that the partner assigned to the issuer is of type R following the history (b, B, nf). $R_2h(x)$ is given by the following expression:

$$R_2h(x) = \gamma\phi(x) + (1-\gamma)p_h \tag{16}$$

[18]A partner would never report on himself.

$$= \gamma \frac{p_h}{p + (1-p)(1-x)} + (1-\gamma)p_h$$

and $R_2h'(x)$, the probability that the partner assigned to Project 2 is of type R following the history (b, B, nf) is given by $R_2h'(x) = \gamma p_h + (1-\gamma)\phi(x)$. The following table summarizes, for all possible histories, the optimal investment decision of the investor in the second period, when the equilibrium behavior dictates that the partner in the first period plays A with probability x.

History	i^*
g, G, f, g	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$
b, G, f, g	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$
g, B, f, g	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$
b, B, f, g	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$
g, G, nf, g	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$
b, G, nf, g	-
g, B, nf, g	$\hat{\gamma}\frac{pI}{p+(1-p)[R_2(x)\epsilon+(1-R_2(x))]} + (1-\hat{\gamma})\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$
b, B, nf, g	$\gamma\frac{pI}{p+(1-p)[R_2h(x)\epsilon+(1-R_2h(x))]} + (1-\gamma)\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$
$., ., ., b$	0

Thus, the investor invests more in the second period if the history is (b, B, nf), where the audit report and the actual cash-flows match. This particular history is followed by a favorable belief revision for the audit firm. On the other hand, the investor revises his belief downward following the history (g, B, nf), where the realized cash flow does not match the audit report, and invests less.

To summarize the second period behavior of the players, we have the F partner playing A in case of a conflict, the issuer putting pressure $B_2 = 0$, the successor partner reporting on the previous partner if the previous partner played A, and the investor revising beliefs in favor of (against) the accounting firm whenever the signal matches (differs from) the true outcome. We now move on to analyzing optimal actions for players in the first period.

Equilibrium behavior at $t = 1$:

Note that at $t = 1$, the F partner faces reputation incentives in case of a conflict. Playing NA might invite a cost $-B_1$ (chosen in equilibrium by the issuer) but it may increase reputation in the second period which leads to higher payoffs at $t = 2$. Playing A avoids the cost $-B_1$ in the first period, but may lower reputation in the second period. Additionally, playing A might result in the partner getting fired in the next period. The optimal action for the engagement partner clearly depends on the maximum pressure the issuer is willing to put on the partner. Since putting pressure on the partner is also costly for the issuer, the maximum pressure the issuer puts on the partner must not exceed the difference between payoffs to the issuer from actions A and NA. We define max_B as the maximum pressure the issuer is willing to put on the partner to persuade him to play A in case of conflict in period 1. In any equilibrium, this will be given by the following expression:

$$max_B = \text{payoff for issuer if partner plays } A \; - \; \text{payoff for issuer if partner plays } NA \tag{17}$$

For the rest of our analysis we refer to partner strategy as the F type engagement partner's strategy in case of a conflict. By successor partner we refer to the partner who is assigned to the issuer in the second period, but was not assigned to the issuer in the first period. If the same partner is reassigned we mention this separately. As we already know the actions which all players in period 2 will take for all histories and equilibria being played, we focus the rest of our analysis on period 1 incentives and strategies.

In period 1, the flexible partner's strategy can be described by a single variable x, where x refers to the probability of announcing the signal g when the actual signal was b. We call a pure strategy equilibrium the Acquiesce equilibrium (A-equilibrium) if $x = 1$ and the Not-Acquiesce equilibrium (NA-equilibrium) if $x = 0$.

Suppose, in equilibrium, the partner in the first period plays A with probability $x \in [0, 1]$. The function $Payoff\ A$ formally defines the returns for the partner who plays action A.

$$Payoff\ A \;=\; \alpha_1 W p_h + \alpha_2 X p_h + \delta[\gamma(\alpha_1 W R_2(x) + \alpha_2 X R_2'(x)) + (1-\gamma) v_f I_f]$$

$$+\delta(1-\gamma)(\beta_1 W R_2(x) + \beta_2 X R_2'(x) I_{nf}),$$

where I_f and I_{nf} are indicator functions assuming value 1 if the partner is fired and not fired, respectively. $R_2(x)$ is the belief held by the investor that the partner assigned to the issuer is of type R following the history (g, B, nf) and $R_2'(x)$ is the belief held by the investor that the other partner is of type R.

In case of a conflict if the engagement partner chooses to play action NA, the only history that the investor observes is (b, B, nf) and formally the payoff to the partner is:

$$Payoff\ NA \;=\; \alpha_1 W p_h + \alpha_2 X p_h - B_1 + \delta[\gamma(\alpha_1 W R_2 h(x) + \alpha_2 X R'_2 h(x)) +$$

$$(1-\gamma)(\beta_1 W R_2 h(x) + \beta_2 X R'_2 h(x))],$$

where $R_2 h(x)$ is the probability that the partner assigned to the issuer is of type R following the history

(b, B, nf) and $R_2'h(x)$ is the probability that the other partner is of type R.

The following proposition characterizes equilibrium behavior of the engagement partner under monitoring for a given reputation p_h.

Proposition 1. Given $p_h \in (0,1)$ and $c = 0$, there exist $\underline{I} > 0$ and $\overline{I} > \underline{I}$ such that the following strategy profile constitutes an equilibrium.

At $t = 2$, a new successor partner reports NC if and only if the predecessor partner played A. In case of a conflict, $B_2 = 0$ and the assigned partner plays A. The investor invests i^* if the audit report is g and does not invest otherwise.

At $t = 1$, in case of a conflict,

a) If $I \leq \underline{I}$, the issuer puts pressure $B_1 = 0$. The engagement partner plays NA. The investor invests $\frac{Ip}{p+(1-p)\epsilon}$ if the audit report is g and does not invest if the report is b.

b) For each $I \in (\underline{I}, \overline{I})$, there exists $x^* \in (0,1)$ such that the issuer puts pressure $B_1 = \frac{Ip}{p+(1-p)[p_h\epsilon+(1-p_h)\{\epsilon+(1-\epsilon)x^*\}]}$. The engagement partner plays A with probability x^*. The investor invests $\frac{Ip}{p+(1-p)[p_h\epsilon+(1-p_h)\{\epsilon+(1-\epsilon)x^*\}]}$ if the audit report is g and does not invest if the report is b.

c) If $I \geq \overline{I}$, the issuer puts pressure $B_1 = \gamma\alpha_1 W[R_2h(1) - R_2(1)] + (1-\gamma)[\beta_1 W R_2h(1) + \beta_2 X R_2h'(1) - v_f]$, where, $R_2h(1) = \gamma + (1-\gamma)p_h$, $R_2(1) = \hat{\gamma}\frac{p_h\epsilon}{p_h\epsilon+(1-p_h)} + (1-\hat{\gamma})p_h$, $\hat{\gamma} = \frac{\gamma}{\gamma+(1-\gamma)\epsilon}$, and $R_2h'(1) = \gamma p_h + (1-\gamma)$. The engagement partner plays A. The investor invests $\frac{Ip}{p+(1-p)[p_h\epsilon+(1-p_h)]}$ if the audit report is g and does not invest if the report is b.

Proof. See Appendix □

Proposition 1 characterizes the conditions under which the F type partner plays NA in the first period. The proposition states that the F-partner, in case of a conflict, always plays NA for lower values of I , plays NA with positive probability in the middle range, and always plays A for high values of I.

It is interesting to note that the pure strategy NA-equilibrium does not exist if the cost of reporting c is positive. The idea here is as follows[19]. Suppose the cost of reporting is positive and there exists a NA equilibrium. Since the investor does not observe the partner's identity, if the investor believes that both types of partners are reporting correctly in period 1, then there will be incentives to misreport because all such incorrect reports will be attributed to the partner receiving the wrong signal, thereby leaving the partner's reputation untarnished. Thus, we cannot have reporting in equilibrium. However, we cannot have an NA equilibrium without reporting as deviating and playing A would become profitable. This is a contradiction

[19]This is easy to show as a corollary to proposition 5 when $T = 0$. We avoid the formal proof for now.

as we started with an NA equilibrium. Thus, for the NA-equilibrium to exist we must have $c = 0$ and $\frac{pI}{p+(1-p)\epsilon} < \delta(1-\gamma)(\beta_1 W p_h + \beta_2 X p_h - v_f)$. These conditions are met if I is small or v_f is a large negative number. The conditions have the following implications in the context of our model. From the second condition, it is clear that the strategic partner has strong incentives to misreport if the size of the investment on the line is large. This is because the issuer is willing to put more pressure on the partner to make him report favorably when the size of the investment is big. Also, the higher the reputation of the audit firm, the lower are the incentives of the partner to misreport.

The A- equilibrium exists if the investment on the line is above a certain threshold. Above this threshold, the issuer pressures the partner enough to make him play A. Another necessary condition for the existence of the A-equilibrium is that the expected sanction (internal exclusion) is not too large. We make the following observations regarding Proposition 1. If γ is low, that is, there is a high probability of partner rotation, then the partner's incentive to disclose the correct signal increases. This is due to two reasons. First, the partner expects sanctions with a high probability if he plays A. Second, the partner can build reputation in period 1 by disclosing his signal correctly and gaining from it in period 2 via β_1 and β_2. As $\gamma \to 1$, the engagement partner has high incentives to acquiesce and report the wrong signal. This is because the probability of sanctions goes to zero and the only channel through which reputation incentives play a role is the partner's share of his own project. This observation reinforces the importance of monitoring and sanctions (internal exclusion) to discourage misreporting.

The mixed strategy equilibrium completes our analysis by specifying equilibrium strategies for the middle range of I. The partner for this range of I is indifferent between actions A and NA and plays A with a positive probability x^*. Notice that x^* monotonically increases with I and reaches value 1 at $\overline{I}$, which is the threshold for the existence of the $A-$equilibrium.

Our next proposition states that, for a given value of I and $c = 0$, the equilibrium described in Proposition 1 is unique.

Proposition 2. Given $p_h \in (0, 1)$ and $c = 0$, the equilibrium described in Proposition 1 is unique.

Proof. See Appendix. □

6.2 Benchmark case with disclosure

In this section, we characterize the equilibria in an environment where the identity of the engagement partner is disclosed to the investors. First, notice that the NA-equilibrium described in Proposition 1 still holds with the disclosure of partner's identity. This is easy to show so we skip the formal proof.

Thus, we know that the the only equilibrium possible if $I < \underline{I}$ is the NA-equilibrium with reporting. We will now describe equilibria for other levels of I.

We know that there are no equilibria without reporting (Lemma 2 and corollary 2). This leaves us with three possibilities for equilibria - NA equilibrium with reporting, A equilibria with reporting and equilibria in which the flexible partner plays A with positive probability (but not 1) when there is conflict in period 1. We have already found necessary and sufficient conditions for NA-equilibrium. The following analysis describes the conditions required for the other two kinds of equilibria.

Proposition 3. Given $p_h > 0$, and $c = 0$, there exists $\overline{I_d} > 0$ such that for all $I > \overline{I_d}$ the following pure strategy profile constitutes an equilibrium. Moreover, if $I > \overline{I_d}$ then this is the unique equilibrium.

At t=2, a new successor partner reports NC if and only if the other partner played A in the first period. In case of a conflict, $B_2 = 0$ and the assigned partner plays A if F type. The investor invests i^*_D (given for all histories in the appendix) if the report is g and does not invest if the report is b.

At t=1, in case of a conflict, $B_1 = \delta\left[\gamma\alpha_1 W(1 - R'_2) + (1-\gamma)\left(\beta_1 W p_h + \beta_2 X - v_f\right)\right]$ and the assigned partner plays A if F type. The investor invests $I * \frac{p}{p+(1-p)[p_h\epsilon+(1-p_h)]}$ if the report is g and does not invest if the report is b. Where $R'_2 = \frac{\epsilon p_h}{\epsilon p_h+(1-p_h)}$.

Proof. See Appendix. □

As in proposition 1, we can show that there is a mixed strategy equilibrium for all $I \in (\underline{I}, \overline{I_d})$. Thus, similar to the non-disclosure case, we have the following result: The F-partner, in case of a conflict, always plays NA for lower values of $I \in [0, \underline{I}]$, plays NA with positive probability x^*_d in the middle range $I \in (\underline{I}, \overline{I}_d)$, and always plays A for values of $I \geq \overline{I}_d$. This leads us to our next proposition which shows that the engagement partner's incentive to acquiesce is lower under the disclosure regime when cost of reporting is zero.

Proposition 4. *Given $p_h \in (0,1)$ and $c = 0$, for α_2,$\beta_1 \to 0$ $\overline{I}_d > \overline{I}$ and for any $I \in (\underline{I}, \bar{I})$ we have that $x^*_d < x^*$.*

Proof. See Appendix. □

When partners are paid according to their own performance, the disclosure regime provides more incentives to not acquiesce to the client. The intuition is as follows. Under the disclosure regime, a partner's reputation is more sensitive to his actions as the investor can see the identity of the partner. This provides more incentives to build reputation under the disclosure regime as compared to the non-disclosure regime.

Moreover, when reputation is shared (as in the non-disclosure regime), the loss in reputation due to a bad action is also shared (if the partner is not fired). This can reduce the cost of taking the bad action[20]. However, if a partner's compensation is less sensitive to his own reputation, the partner may have lower incentives to build reputation even under the disclosure regime as a substantial part of the cost arising from low reputation is borne by other partners in the partnership. The same argument holds for any given level of monitoring, including no monitoring in equilibria under both regimes.

7 Positive Cost of Reporting

In this section we consider the following case - What if the cost of reporting is not zero (as assumed in the previous section) As we saw in the previous section, even when the cost of reporting is zero, it may not always be possible to have the F type partner disclose the correct signals (A equilibria exist). This was despite the fact that monitoring always occurred in equilibrium. When the cost of monitoring is positive, we show that under some parametric conditions we have monitoring equilibria under the non-disclosure regime but not under the disclosure regime. No monitoring may lead to lower audit quality under the disclosure regime which is in stark contrast to proposition 4. It would also be interesting to analyze environments in which the cost of monitoring may be compensated by internal or external rewards for reporting. Thus, we analyze an environment where the cost of reporting (c) is positive, and an amount $T \geq 0$ can be transferred to the monitor partner when he reports correctly against the previous engagement partner. We assume that this transfer is being made by an outside player to keep things simple. Note that the case of no external transfers is simply the case of $T = 0$.

Proposition 5 below says that unless the transfer is bigger than the cost, there cannot be an NA equilibrium i.e. an equilibrium where the F type partner always reports the correct signal in period 1. The intuition for this result is simple - Suppose there was an NA equilibrium. Note that for this equilibrium to exist, reporting must occur in period 2. If there is no reporting in period 2 then we can never have an NA equilibrium since there will be no cost for taking the action A in period 1 and therefore there will be a profitable deviation[21]. Consider the incentives to report for the partner in period 2 when he observes that the first period audit report does not match the audit signal. First note that the new engagement partner's reputation will always be p_h if a pooling equilibrium (like NA equilibrium) is expected to be played in period 1. So his payoffs can only be affected via the reputation of the first partner. If he reports the erring partner, then the first partner will

[20]Unless the loss in payoff when fired is too much.

[21]There are positive costs to taking the action NA (pressure from issuer) but no reputation rewards as beliefs will not be updated in an NA equilibrium since the two types pool on the same action.

be fired and replaced with another from the labor market who will have reputation p_h. If he does not report the partner, the investor will think the following - the first period play is expected to be NA (equilibrium strategy), so no firing is expected along the equilibrium path. The partner must have gotten the wrong signal in period 1 to have announced g instead of b. Since probability of receiving the incorrect signal is the same across types, the reputation of the first period partner is believed to be p_h. Thus, irrespective of whether the successor partner reports the partner or not, if the investor believes that an NA equilibrium is being played, the reputation of the first period partner will be p_h. Thus, if the cost of reporting is not covered by an external transfer, the successor partner would never report an erring partner. As mentioned before, we cannot have an NA equilibrium without monitoring.

Proposition 5. *Given $p_h > 0$ and $c > 0$, if $T \geq c$, then there exists $\underline{I} > 0$ such that for all $I \leq \underline{I}$ the NA-equilibrium exists in both the Disclosure-regime and the Non-disclosure-regime. If $T < c$, the NA-equilibrium does not exist in either regime.*

Proof. See Appendix. □

Note that if we had assumed that it was the managing partner of the audit firm who was making the transfers to ensure monitoring then we would run into the following problem - If the NA-equilibrium is expected to be played, then it is not incentive compatible for the managing partner of the audit firm to transfer any positive amount T to ensure reporting. This is because the reputation of the partners will never change in equilibrium (and therefore not affect the payoff of the managing partner). Thus, to ensure correct reporting of signals in period 1, a necessary condition is that the reward for reporting comes from outside.

We have shown that we need the external transfer to completely cover the cost of reporting for any reporting to happen if an NA equilibrium is expected to be played. Since reporting can affect the quality of audit in period 1 by changing the incentives of the first period partner, next we consider the conditions needed to obtain reporting in either regime in other equilibria. Proposition 6 points out that in the disclosure regime, the reward necessary to induce reporting in the A-equilibrium is also at least c whereas proposition 7 shows that we can get reporting under the non-disclosure regime with smaller transfers as well. We demonstrate in proposition 8 that this can lead to lower quality audit reports in the disclosure regime when compared to those in the non-disclosure regime.

Proposition 6. *Given $p_h > 0$, and $c > 0$. If $T < c$, an A-equilibrium with reporting does not exist in the disclosure regime. If $T \geq c$, there exists $\overline{I} > 0$ such that for all $I \geq \overline{I}$, there exists an A-equilibrium with reporting under the disclosure-regime.*

Proof. See Appendix. □

Proposition 6 shows that in the disclosure regime, the external transfer needs to cover the cost of monitoring completely to have an A equilibrium with monitoring. The intuitive idea here is simple. The new partner's reputation will be p_h (since the change is observed). The new partner's payoff from monitoring and reporting is only affected via the reputation of the other partner. However, if an A equilibrium with monitoring is believed to be played then the reputation of the other partner is p_h irrespective of whether the partner reports him or not. The idea behind this is very similar to that given for the NA equilibrium.

The next two propositions highlight a key difference between the disclosure and the non-disclosure environment. The basic idea is as follows. Consider the case of the non-disclosure regime. Here, the reputation (and therefore the payoff) of the assigned partner depends upon the collective reputation of the audit firm. Thus, if the predecessor partner had played A in period 1 and the equilibrium being played is the A-equilibrium, then the successor partner is faced with the following choice. If he does not report the partner, the investor does not observe any firing. In this case, the investor puts positive probability on the event that no firing occurred because the same partner was assigned to the issuer again in period 2. This causes the investor to have a lower belief (lower than p_h) about the reputation of the current partner which reduces the payoff of the partner assigned to the issuer in period 2. By reporting the other partner, the successor partner can change the investor's belief about himself as an observed firing will inform the investor about the change of partners. This ensures that the investor's belief about the second period partner is p_h which gives the successor partner a higher payoff in that period. On the other hand, in the disclosure regime, the investor observes the rotation of partners so the new partner's (partner rotated in at period 2) reputation is correctly believed to be at p_h. The new partner cannot change the belief about his own reputation by reporting on the previous partner.

Proposition 7. *Let* $\alpha_1 W\gamma(1-\epsilon) - \gamma c(1-\epsilon) - 2\sqrt{\alpha_1 W\gamma(1-\epsilon)c\epsilon} > 0$. *Given* $p_h > 0$, *if*

$$T \geq \begin{cases} c - \alpha_1 W\left(p_h - \frac{\epsilon p_h}{\epsilon p_h + (1-p_h)(\gamma + (1-\gamma)\epsilon)}\right) & ;\ p_h < \frac{1}{\sqrt{a}}\left(\frac{a+b}{2\sqrt{a}} - \sqrt{(\frac{a+b}{2\sqrt{a}})^2 - (b+d)}\right) \\ 0 & ;\ p_h \in \left[\frac{1}{\sqrt{a}}\left(\frac{a+b}{2\sqrt{a}} - \sqrt{(\frac{a+b}{2\sqrt{a}})^2 - (b+d)}\right), \frac{1}{\sqrt{a}}\left(\frac{a+b}{2\sqrt{a}} + \sqrt{(\frac{a+b}{2\sqrt{a}})^2 - (b+d)}\right)\right] \\ c - \alpha_1 W\left(p_h - \frac{\epsilon p_h}{\epsilon p_h + (1-p_h)(\gamma + (1-\gamma)\epsilon)}\right) & ;\ p_h > \frac{1}{\sqrt{a}}\left(\frac{a+b}{2\sqrt{a}} + \sqrt{(\frac{a+b}{2\sqrt{a}})^2 - (b+d)}\right) \end{cases}$$

then there exists $\overline{I} > 0$ such that for all $I \geq \overline{I}$ the A-equilibrium with monitoring exists under the non-disclosure-regime. The parameters in the above expressions are given by : $a = \alpha_1 W\gamma(1-\epsilon), b = \gamma c(1-\epsilon), d = c\epsilon$.

Proof. See Appendix. □

Notice that the condition required for the above proposition works for positive but small c i.e. if the cost of reporting is positive but not too high then there may exist reporting equilibria in the non disclosure regime. The next proposition will contrast this result with the disclosure regime under which there may not be any reporting equilibria.

Corollary 3. *If the following is not satisfied by T, then there is no A-equilibrium with reporting under the non-disclosure regime.*

$$T \geq \begin{cases} c - \alpha_1 W(p_h - \frac{\epsilon p_h}{\epsilon p_h + (1-p_h)(\gamma + (1-\gamma)\epsilon)}) & ; p_h < \frac{1}{\sqrt{a}}(\frac{a+b}{2\sqrt{a}} - \sqrt{(\frac{a+b}{2\sqrt{a}})^2 - (b+d)}) \\ 0 & ; p_h \in [\frac{1}{\sqrt{a}}(\frac{a+b}{2\sqrt{a}} - \sqrt{(\frac{a+b}{2\sqrt{a}})^2 - (b+d)}), \frac{1}{\sqrt{a}}(\frac{a+b}{2\sqrt{a}} + \sqrt{(\frac{a+b}{2\sqrt{a}})^2 - (b+d)})] \\ c - \alpha_1 W(p_h - \frac{\epsilon p_h}{\epsilon p_h + (1-p_h)(\gamma + (1-\gamma)\epsilon)}) & ; p_h > \frac{1}{\sqrt{a}}(\frac{a+b}{2\sqrt{a}} + \sqrt{(\frac{a+b}{2\sqrt{a}})^2 - (b+d)}) \end{cases}$$

Proposition 7 and proposition 6 state that if the cost of reporting is positive (but not too high) and there are no outside transfers ($T = 0$) to facilitate reporting, then monitoring will never be optimal under the disclosure regime but may exist in the non-disclosure regime. Proposition 8 formally describes this. Under these parametric conditions, the quality of audit (described by the probability of F type partner playing A in period 1) under the disclosure regime will be lower than that under the non-disclosure regime.

Proposition 8. *There exists p_h, α_2, v_f, c and a range of I such that in equilibrium, there is no monitoring under disclosure and monitoring under the non-disclosure regime. Moreover, the probability of the flexible partner playing A under the non-disclosure regime is strictly lower than that under the disclosure regime.*

Proof. See Appendix. □

Thus, under some parametric conditions, the probability that the investor gets the correct signal from the engagement partner is lower in the disclosure regime. In other words, the quality of audit is lower under the disclosure regime when compared to the non-disclosure regime.

8 Engagement quality reviewer (EQR)

Our previous analysis explores the incentives of an engagement partner and a monitor partner who may be rotated in to an engagement at the end of the first period. In this section, we study the more specific case of an Engagement Quality Reviewer (EQR). Engagement quality review is a quality control mechanism used by public accounting firms to monitor the quality of audit engagements. The engagement quality reviewer serves as an evaluator of the performance of the engagement partner and the engagement team. According to the PCAOB Auditing Standard No.7, the "objective of the engagement quality reviewer is to perform an evaluation of the significant judgements made by the engagement team and the related conclusions reached in forming the overall conclusion on the engagement and in preparing the engagement report, if a report is to be issued, in order to determine whether to provide concurring approval of issuance."

Unlike the successor partner, an EQR can detect whether the audit evidence supports the audit opinion *before* the audit report is issued. In this section, we consider a variation of our model and show that even if monitoring is done via an EQR (instead of partner rotation) we will still obtain the result that the monitor will be less inclined to report under the disclosure regime. This will serve as a robustness check for our result that audit quality may go down when the regime changes from a non-disclosure regime to a disclosure regime due to the lower incentives to monitor in the latter environment. To analyze the incentives of an EQR as a monitor partner, we incorporate the following changes in our baseline model.

In this extension to our baseline model, the audit firm receives the audit fee in each period and partners get their payoffs upfront in every period. In the first period, the random assignment rule decides which partner is assigned to the issuer. The other partner, who serves on project 2, also serves as an EQR for the issuer's project. With probability $1 - \gamma$ the engagement quality reviewer learns about the signals and actions of the engagement partner. With probability γ, he does not observe the signal obtained by the engagement partner. If he observes that the partner played A, he decides whether to report against the partner or not. The cost of reporting is as before. If the engagement partner is fired then a new partner becomes the engagement partner in period 2, whereas, if the EQR is fired[22], then the new partner takes charge of project 2 and the EQR position in period 2. If the EQR reports a partner and an investigation ensues, the true signal of the engagement partner is reported to the investor, else the engagement partner's original report is announced. We assume that the following is not possible - the EQR changes the signal but does not report the partner. In the second period, the EQR's actions do not affect the payoff of the partners. So, to simplify our analysis, we assume away the EQR's action stage in period 2.

The payoff-structure is the same as described in Section 2. The partner assigned to project 2 does not get any additional payoffs for his role as an EQR. In contrast to the partner rotation model, in this model, the engagement partner in the first period is assumed to continue with the issuer in the second period if the EQR does not report against the engagement partner. If the engagement partner is fired, he is replaced by a new partner who is randomly selected (thus with reputation p_h) and then assigned to the issuer. The big distinction in this section is that we assume that the investor does not observe if an engagement partner is fired. In the disclosure regime, the investor knows the name of the engagement partner so he can infer that the first partner must have been fired if he observes a change in partner. However, he is unable to do this in the non-disclosure regime. Moreover, the investor cannot distinguish between a report with the signal b issued

[22] for wrongful reporting, for example

by the engagement partner playing NA and a report with the same signal which is issued when the EQR discovered that the engagement partner had played A and a corrected report was issued thereafter. Therefore, in the non-disclosure regime, if the investor observes the signal g and learns that the state was B, he may believe that with positive probability the partner played A and this was undetected by the EQR. However, if, in the same regime, the investor observes the signal b and learns that the state was B, he may believe that with positive probability the partner played NA in period 1 and is therefore more likely to be R type. This gives the intuition for our result. From the EQR's point of view, he faces a cost of reporting and his benefit from reporting comes from the increase in his wages due to the increased reputation of the engagement partner. When the EQR learns that the audit report does not match the signal, he has the following incentives to report under the two regimes. In the non-disclosure regime, a report followed by a change in signal would lead to the history b, B. Since the investor does not observe the firing, he places positive beliefs on the event that the partner played NA. In all other events possible under the same history, the reputation of the engagement partner in period 2 is at least p_h[23]. This leads to the revised reputation being above p_h. However, in the disclosure regime, since the investor can infer a change in partner, the maximum reputation for this partner can be p_h (obtained when the EQR reports the partner and a new partner joins the firm as engagement partner in period 2). Thus, the gain from reporting for the EQR is higher in the non-disclosure regime and therefore if the cost of reporting is positive but not very high, the EQR will only report in the non-disclosure regime. Under such conditions, we have higher quality of audits under the non-disclosure regime. The following analysis shows this more formally. Consider equilibria where the EQR always reports and in equilibrium the F type partner plays A in period 1 with probability x. $\phi(x) = P(R|b, B)$ and $\phi'(x) = P(R|g, B)$ are the reputation of the engagement partner assigned to the issuer at period 2. Then:

In case of a conflict, the engagement partner's payoff from playing A in period 1 is

$$\alpha_1 W p_h + \alpha_2 X p_h + \delta(\gamma[\alpha_1 W \phi'(x) + \alpha_2 X p_h] + (1-\gamma)v_f)$$

In case of a conflict, payoff from playing NA is

$$\alpha_1 W p_h + \alpha_2 X p_h + \delta(\gamma[\alpha_1 W \phi(x) + \alpha_2 X p_h] + (1-\gamma)[\alpha_1 W \phi(x) + \alpha_2 X p_h])$$

The EQR's payoff at time t depends on the reputation of the engagement partner in the following way.

[23] Either the first partner reported b (always more likely from the R type partner since the R type always reports correctly) or the first partner reported g incorrectly. In the latter case, the EQR must have gotten the first partner fired before changing the report, thereby making the reputation of the new partner p_h.

$$EQR\,payoff = \beta_1(WR_t) + \beta_2(Xp_h) - I_r.c$$

where R_t is the reputation of the engagement partner at time t, I_r is an indicator function which takes the value one if the EQR chooses to report[24]. If the EQR reports against the engagement partner, the history that the investor observes changes from (g, B) to (b, B). If he does not report, the history observed by the investor is (g, B). Thus the EQR reports if and only if

$$\beta_1 \delta W(\phi(x) - \phi'(x)) \geq c \tag{18}$$

Under the disclosure regime, the investor also observes if the engagement partner is reassigned to the issuer. In case of a conflict, if the partner plays A and the EQR fails to detect it, then the relevant history to the investor is (g, B, nf) under the disclosure regime.

In the disclosure regime, if the EQR reports against the engagement partner, the history the investor observes changes from (g, B, nf) to (b, B, f). Notice that, $R_t = p_h$ following the history (b, B, f). If he does not report, the history observed by the investor is (g, B, nf) and $R_t = \phi'$.The reputation following (g, B) in the non-disclosure regime is the same as the reputation of the engagement partner after the history (g, B, nf) in the disclosure regime because the history (g, B) implies no firing in the non-disclosure regime[25]. Thus the EQR will report if and only if

$$\beta_1 \delta W(p_h - \phi') \geq c \tag{19}$$

Since $\phi(x) > p_h$ for all $x \in (0, 1)$, comparing (18) and (19), we observe that the EQR has higher incentives to report under the non-disclosure regime than in the disclosure regime. A detailed analysis can be found in the Appendix.

9 Multitasking and Collective Reputation

One highly debated aspect of Auditing Standard No. 7 has been the nature of engagement quality review. The debate has been over whether the review partner's role should be independent and almost adversarial in nature versus the review being a collegial, non-adversarial process. In earlier sections, we analyzed the

[24]We know that the EQR does not misreport in equilibrium so we don't consider that possibility here

[25]Firing could have happened only if the EQR reported the engagement partner. However, then the EQR would have changed the report. This is because we assume that the EQR cannot change the report without reporting thee engagement partner. Thus, had there been any firing the history would have been (b, B).

incentives of a monitor partner when the nature of the review process is adversarial (since the erring partner may get fired following a report). In this section, we discuss how incentives change under the two regimes when the EQR has a non-adversarial role and works as a "second pair of eyes". In order to capture this, we describe a modelling choice and show that it has implications similar to those discussed in earlier sections. This discussion also serves the purpose of a robustness check for our results.

Consider an environment where there are two engagement partners and a managing partner in an audit firm. There are two issuers/clients. Each engagement partner is assigned to one issuer and must perform the role of an engagement quality reviewer for the other engagement partner. For the sake of simplicity we abstract away from issues of collusion between partners. Moreover, in this section, the issuer is not able to pressure the engagement partner into announcing favorable reports. However, the engagement partner can make mistakes (announce the wrong signal by mistake) and this affects the quality of the audit. Let's assume that the R type partner never makes a mistake (and always detects if acting as the EQR[26]) and the F type partner can make mistakes with positive probability (may detect with positive probability if EQR). For the flexible type partner, the probability of a mistake depends upon the time spent on that engagement. Each partner is endowed with a fixed amount of time to be allocated between his own engagement and the EQR job. If the EQR finds that the audit opinion is not supported by the signal then he simply changes it to the correct signal. Thus, in this section the EQR acts as a "second pair of eyes". We assume away the role of the EQR as a whistle-blower i.e. there is no reporting and firing of partners. Audit quality of an engagement (probability of no mistake) depends on the time spent by the engagement partner on the engagement and the time spent by the EQR (for that engagement) looking for errors committed by the engagement partner. Suppose the quality of an audit is increasing in the time a partner spends on that engagement. That is, the probability that an engagement partner makes a mistake, declines with the time spent on the engagement. Also, suppose that the probability of finding a mistake as a reviewer is increasing in the time the EQR spends on the job. Therefore, audit quality of an engagement is increasing in time spent by both the engagement partner and the EQR on that particular engagement.

Under the non-disclosure regime, the reputation of both the partners in period 2 depends on the perceived audit quality of the two engagements in period 1. Under the disclosure regime, the investor can observe which partner is with which engagement. Notice that under both regimes, the optimal time allocation for a partner depends on his share of revenue from his own engagement and his share of revenue from the other engagement. Suppose each partner can only spend a total time of T. Let x, y be the time allocated to one's

[26]Since the R type partner will never make mistakes (independent of the time he chooses to spend on his engagement client), he can choose to spend no time on his engagement project and all his time on the EQR project. This justifies an extremely high likelihood of detecting mistakes. Alternatively, we can think of the R type partner as a very conscientious partner who does each job as well as humanly possible.

own engagement and the EQR job respectively such that $x+y \leq T$. Given the other partner's time allocation (a,b), a partner allocates his own time in a way such that the marginal gain from spending time on his own engagement equals the marginal gains from spending additional time on the EQR job.

Suppose both partners are drawn from a distribution where it is much more likely that they are Flexible type[27]. Consider the following kind of symmetric equilibrium in the disclosure regime. The engagement partner puts in a lot of time on the engagement and very little time on the EQR job. This will be an equilibrium for the following reasons. Given that the other partner is not going to put in much effort to review the engagement and that the partner is expected to put in a lot of time in the engagement, the outcome of an engagement is believed to be more heavily influenced by the engagement partner's actions. Thus, the reputation of an engagement partner is closely related to the audit quality of his own engagement and less with his EQR job. Therefore, he puts in a lot of effort towards his own engagement. Also, given that the engagement partner is putting in a lot of time on his engagement, an EQR's incentive to monitor goes down even further since the engagement partner is less likely to make a mistake and therefore it becomes optimal to put in low effort in the EQR job.

A similar equilibrium will exists in the non-disclosure regime. However, from the EQR's point of view, the marginal gains from monitoring are stronger in this regime since his payoff depends upon the collective reputation. So, in a symmetric equilibrium, both partners are likely to spend a little more time on the EQR job (less time on the engagement job) in the non-disclosure regime than in the disclosure regime. If the marginal *gain* in audit quality is sufficiently decreasing in time spent i.e. audit quality is a concave function of time spent in EQR activity then this can lead to a fall in audit quality when one shifts from a non-disclosure regime to a disclosure regime. Obviously, this assumes this kind of equilibrium was being played in both regimes. Another kind of equilibrium where both partners spend most time on EQR activity and very less time on own engagement will not lead to the same result. However, this equilibrium would be unusual in real life as this would be akin to "*I do your work, you do mine*".

10 Potential solutions to the monitoring problem

It is clear from our analysis that disclosure of the engagement partner's identity reduces the monitoring incentives of a successor partner/engagement quality reviewer. It is also evident that an additional external transfer or, analogously, an increased expected external sanction, can help mitigate this problem. This class of solutions can be implemented only through an increased cost for regulators. In this section, we propose

[27] If the randomly selected partner is very likely to be R type, then an F type partner would believe that if he makes a mistake, it will be detected with high probability. So he is likely to free ride on this.

three other solutions. These can be implemented through increased audit fees or through a realignment of incentives within the audit firm.

10.1 Increase in audit fee

Carcello and Li (2013) report improved audit quality and increased audit fees in U.K. firms after the partners were required to sign the audit report. The increased audit fee can reflect an increased audit effort to counter the increased risk for individual partners. In the context of our model, however, there is another explanation for a rise in audit fees following the implementation of the signature rule. In our model, the audit fee for the partner with the issuer is a linear function of WR_t. Therefore, a higher W will lead to increased incentives for the engagement partner to not acquiesce to the issuer's demands in the case of a conflict. Thus, the increased audit fee may be because the audit firm's management want to compensate for the reduced incentive to report with an increased incentive to not misbehave. When monitoring comes from the engagement quality reviewer, since the reporting incentives of the EQR are also increasing in audit fees, an increased W can lead to both increased incentives for the engagement partner as well as improved incentives for the EQR.

10.2 Treating the monitor as the "sink"

If the compensation contracts in partnerships can collect penalty from a group of partners and distribute the collected penalty to another group, then the latter is called the "sink." In a natural set up, the risk neutral principal acts as a sink. However, in our model, the managing partner can not act as the sink in equilibrium. This is because only the successor partner or the EQR can observe the action of the engagement partner. Since contracts can only be made on observables, the managing partner cannot impose a penalty on the engagement partner unless the successor partner or the EQR reports against him. To provide incentives for the monitor partner to report, the managing partner must make a transfer T to the monitor. From our previous analysis, it is evident that the minimum transfer the managing partner needs to make in order to ensure monitoring may be higher under the disclosure regime.

10.3 The modified eat-what-you-kill compensation structure

Knechel, Niemi and Zerni (2013) observe that the Big-4 accounting firms vary in their profit sharing arrangements. At one end of the spectrum there are profit sharing rules close to the lock-step arrangement, where partners are paid according to seniority and their compensation is relatively less sensitive to own performance. On the other end of the spectrum there are partnerships that follow sharing rules close to the eat-what-you-kill model. In the context of our model, a partner's compensation is linked to the revenues from the issuer and from project 2 through exogenous parameters $\alpha_{1,}\alpha_2, \beta_1$ and β_2. Clearly, monitoring incentives can be improved by increasing the monitor's share of the revenue from the issuer. In our model an increase in the monitor partner's share of the revenue earned from the issuer can only be achieved by reducing either the share of the engagement partner or by reducing the share of the managing partner. However, we can use this insight in the context of a more general compensation function. Consider the following compensation function for a partner i in a partnership of N partners.

$$Pay_i = \alpha \times \{\text{Revenue from engagement}\}_i + \beta \times \{\text{Revenue from engagements reviewed}\}_i$$

$$+\theta \times \{\text{Revenue from other engagements}\} + \eta \times \{\text{Revenue from nonaudit services}\}$$

A sharing rule relatively less sensitive to own performance will be represented by high values of θ and η while α and β will be low. In order to maximize incentives for the monitor partner and the engagement partner, their share of revenue from other engagements and non-audit services should be minimized, while their compensation should be highly sensitive to their performance as an engagement partner and as a reviewer.

11 Summary and possible extensions

This paper uses a model of reputation to examine the incentives of auditors at the audit-partner level under two policy regimes: the disclosure regime and the non-disclosure regime. Under the non-disclosure regime, investors and other financial statement users do not observe the identity of the engagement partner who performs the audit. They only observe the identity of the audit firm who issues the audit report. Under the disclosure regime, the identity of the engagement partner is disclosed to the investor. Currently, the name of the audit partner is not disclosed in the USA. Our study is motivated by a new rule to disclose the names of audit partners with audit reports issued in the United States. We examine whether partner identification can lower incentives of a strategic engagement partner to misreport. We also investigate the impact of such a regime change on the incentives of a 'monitor' partner to raise a flag against an engagement partner who misreports. Our analysis shows that if monitoring incentives remain the same, an engagement partner has lower incentives to misreport under the disclosure regime. This is because the reputation of a partner is more sensitive to the partner's own actions under the disclosure regime. However, our analysis also shows that the incentives for a monitor partner to raise a flag are actually higher under the non-disclosure regime. This is because, under the non-disclosure regime, a partner's actions affect the collective reputation of the firm which is shared by other partners in the firm. Hence a monitor partner may report a partner who misreports to improve the collective (and therefore his own) reputation. Using these intuitions we provide conditions under which the audit quality might actually go down when the regime changes from non-disclosure to disclosure.

Our model puts structure to the organizational design of audit firms and emphasizes the role of different relational aspects that affect the incentives of auditors. This sort of model can be used to study multiple interesting extensions. For example, we could look at the incentives of the leadership of the audit firms to create the right incentives for partners. In our model, we assume that the managing partner imposes sanctions against the engagement partner whenever the latter is found to misreport. We also assume that the compensation structure remains the same under the two regimes. A study exploring strategic behavior of the managing partner and endogenous realignment of compensation structure in this context will provide further insights into this matter. We hope to work on these issues in the future.

References

[1] Antle R. (1984). Auditor Independence. Journal of Accounting Research, 22(1), 1-20.

[2] Aobdia, D., Lin, C. J., & Petacchi, R. (2015). Capital Market Consequences of Individual Audit Partners. Accounting Review, 90(6), 2143-2176.

[3] Bailey, R. L., Dickins, D., & Reisch, J. T. (2010). A discussion of public identification of US audit engagement partners: Who benefits? Who pays?. International Journal of Disclosure and Governance, 7(4), 334-343.

[4] Bar-Isaac, H. (2007). Something to prove: reputation in teams. The RAND Journal of Economics, 38(2), 495-511.

[5] Basu, S. & Ray, K.(2016) : Limits to Auditor Reputation Incentives. Working paper.

[6] Beck, M., and E. Mauldin. (2014). Who's really in charge? Audit committee versus CFO power and audit fees. The Accounting Review, 89(6), 2057-2085.

[7] Beyer, A., & Dye, R. A. (2012). Reputation management and the disclosure of earnings forecasts. Review of Accounting Studies, 17(4), 877-912.

[8] Blay, A. D., Notbohm, M., Schelleman, C., & Valencia, A. (2014). Audit quality effects of an individual audit engagement partner signature mandate. International Journal of Auditing, 18(3), 172-192.

[9] Carcello, J. V., & Li, C. (2013). Costs and benefits of requiring an engagement partner signature: Recent experience in the United Kingdom. The Accounting Review, 88(5), 1511-1546.

[10] Carcello, J.V., Neal, T.L. (2000). Audit committee composition and auditor reporting. The Accounting Review, 75(4), 453-467.

[11] Chen, Z., Morrison, A.D., & Wilhelm, Jr., W.J. (2013). Investment Bank Reputation and Star Cultures. Review of Corporate Finance Studies, 2(2), 129-153.

[12] DeFond, M.L., Francis, J.R. (2005). Audit research after Sarbanes-Oxley. Auditing: A Journal of Practice & Theory, 24(1), 5-30.

[13] DeFond, M., & Zhang, J. (2014). A review of archival auditing research. Journal of Accounting and Economics, 58(2), 275-326.

[14] Dye, R.A., B.V. Balachandran, and Magee, R.P. (1990). Contingent Fees for Audit Firms. Journal of Accounting Research, 28(2), 239-266.

[15] Emby, C., & Favere-Marchesi, M. (2010). Review partners and engagement partners: The interaction process in engagement quality review. Auditing: A Journal of Practice & Theory, 29(2), 215-232.

[16] Epps, K. K., & Messier Jr, W. F. (2007). Engagement quality reviews: A comparison of audit firm practices. Auditing: A Journal of Practice & Theory, 26(2), 167-181.

[17] Fischer, P.E. and Hughes, J.S. (1997). Mutual Monitoring and Best Agency Contracts. Journal of Institutional and Theoretical Economics, 153(2), 334-355.

[18] Gul, F. A., Wu, D., & Yang, Z. (2013). Do individual auditors affect audit quality? Evidence from archival data. The Accounting Review, 88(6), 1993-2023.

[19] Holmstrom, B. & Milgrom, P. (1991). Multitask Principal-Agent Analyses: Incentive Contracts, Asset Ownership, and Job Design. Journal of Law, Economics, & Organization, Special Issue: Papers from the Conference on the New Science of Organization, January 1991(7), 24-52

[20] Huddart, S., & Liang, P. J. (2003). Accounting in partnerships. American Economic Review, 93(2), 410-414.

[21] Huddart, S., & Liang, P. J. (2005). Profit sharing and monitoring in partnerships. Journal of Accounting and Economics, 40(1), 153-187.

[22] Huddart, S. (2013). Discussion of Empirical Evidence on the Implicit Determinants of Compensation in Big 4 Audit Partnerships. Journal of Accounting Research, 51(2), 389- 397.

[23] King, R. R., Davis, S. M., & Mintchik, N. (2012). Mandatory disclosure of the engagement partners identity: Potential benefits and unintended consequences. Accounting Horizons, 26(3), 533-561.

[24] Knechel, W. R., Niemi, L., & Zerni, M. (2013). Empirical evidence on the implicit determinants of compensation in Big 4 audit partnerships. Journal of Accounting Research, 51(2), 349-387.

[25] Knechel, W. R., Vanstraelen, A., Zerni, M., (2015). Does the identity of engagement partners matter? An analysis of audit partner reporting decisions. Contemporary Accounting Research, 32 (4), 14431478.

[26] Lee, K. and Levine, C. (2016). Partner Identification and Audit Quality. Working Paper.

[27] Levin, J. (2009). The Dynamics of Collective Reputation. SIEPR Discussion Paper No. 08-24.

[28] Morrison, A. D., & Wilhelm, W. J. (2004). Partnership firms, reputation, and human capital. American Economic Review, 94 (5), 1682-1692.

[29] Narayanan, V. G. (1995). Moral Hazard in Repeated Professional Partnerships. Contemporary Accounting Research, 11(2), 895-917.

[30] Public Company Accounting Oversight Board. (2008). Report on the PCAOBs 2004, 2005, 2006, and 2007 inspections of domestic annually inspected firms. PCAOB Release No. 2008-008.

[31] Public Company Accounting Oversight Board. (2009). Auditing Standard No. 7. Engagement quality review and conforming amendment to the boards interim quality control standards. PCAOB Release No. 2009-004.

[32] Public Company Accounting Oversight Board. (2013). Improving the transparency of audits: Proposed amendments to PCAOB auditing standards to provide disclosure in the auditors report of certain participants in the audit. PCAOB Release No. 2013-009.

[33] Public Company Accounting Oversight Board. (2013). Observations related to the implementation of the auditing standard on engagement quality review. PCAOB Release No. 2013-011.

[34] Public Company Accounting Oversight Board. (2015). Supplemental request for comment: rules to require disclosure of certain audit participants on a new PCAOB form. Release No. 2015-004.

[35] Reuben, E. and Stephenson, M. (2013). Nobody Likes a Rat: On the Willingness to Report Lies and the Consequences Thereof. Journal of Economic Behavior & Organization, 93: 384-391.

[36] Tirole, J. (1996). A theory of collective reputations (with applications to the persistence of corruption and to rm quality). The Review of Economic Studies, 63(1), 1-22.

[37] Varian, H. R. (1990). Monitoring Agents With Other Agents. Journal of Institutional and Theoretical Economics, 146(1), 153-174.

[38] Weber, J., Willenborg, M., & Zhang, J. (2008). Does auditor reputation matter? The case of KPMG Germany and ComROAD AG. Journal of Accounting Research, 46(4), 941-972.

[39] Ghatak, M. and Guinnane, T. (1999), The Economics of Lending with Joint Liability: A Review of Theory and Practice, Journal of Development Economics, 60(1), 195228.

[40] SECURITIES AND EXCHANGE COMMISSION (Release No. 34-77082; File No. PCAOB-2016-01) February 8, 2016 Public Company Accounting Oversight Board; Notice of Filing of Proposed Rules on

Improving the Transparency of Audits: Rules to Require Disclosure of Certain Audit Participants on a New PCAOB Form and Related Amendments to Auditing Standards

[41] SECURITIES AND EXCHANGE COMMISSION (Release No. 34-77787; File No. PCAOB-2016-01) May 9, 2016 Public Company Accounting Oversight Board; Order Granting Approval of Proposed Rules to Require Disclosure of Certain Audit Participants on a New PCAOB Form and Related Amendments to Auditing Standards

A Appendix

First we list some definitions which should help the reader go through the proofs. Some of this notation has been listed in the text but we reproduce them here to make the reading of this section easier.

$\Pi(x)$ - This is the payoff from playing NA minus the payoff from playing A in period 1 for the flexible partner who plays A with probability x in period 1. It does not include the cost imposed by the issuer so it can be interpreted as the gain in reputational payoff from taking the right action.

R_2 - This is the reputation of the partner who is assigned to the issuer in period 2.

R_2' - This is the reputation of the partner who is assigned to project 2 in period 2.

$\phi(x)$ - This is the reputation of the partner who was assigned to the issuer in period 1 when the partner was supposed to play A with probability x in a conflict in period 1 and after the history $\{b, B, nf\}$ i.e. when the partner announced the signal b and the state turned out to be B and there was no firing.

$\phi'(x)$ - This is the reputation of the partner who was assigned to the issuer in period 1 when the partner was supposed to play A with probability x in a conflict in period 1 and after the history $\{g, B, nf\}$ i.e. when the partner announced the signal g and the state turned out to be B and there was no firing.

max_B - This is the maximum cost the issuer is willing to commit to putting on the partner if the partner plays NA instead of A when there is a conflict.

Lemma 2 - Statement and Proof

If $c = 0$, then under both regimes, there is a reporting equilibrium where the new successor partner reports NC if the predecessor partner played A in the first period.

Proof. Clearly, no partner will report against himself (since that will get him fired) and reporting NC when the other partner did not play A is not optimal (because truth is always revealed in any inquiry so the partner who reports NC incorrectly will definitely get fired). So the only situation to be considered is one where the partner is rotated and the predecessor partner had played A in period 1.

Consider first the non-disclosure regime.

Suppose the partner assigned observes that the other partner played A. At this point, the history observed by the investor is (g, B). If he reports, the partner will be fired and the history observed by the investor is (g, B, f). Thus payoff from reporting is:

$$\alpha_1 W p_h + \alpha_2 X p_h - c \tag{20}$$

Note that reputation of the partner assigned to the issuer is p_h because a partner getting fired reveals to the investor that the partner must have been rotated. Reputation of the partner not with the issuer is also p_h because the partner who got fired must have been replaced from the pool of partners following distribution Γ.

If he does not report, there will be no firing and the history observed by the investor is (g, B, nf). Payoff from not reporting:

$$\alpha_1 W R_2 + \alpha_2 X R_2' \tag{21}$$

where R_2 is the reputation of the partner with the issuer and R_2' is the reputation of the partner not with the issuer.

Suppose, in equilibrium, the predecessor partner plays A with probability x and the investor believes that the successor partner reports NC whenever the previous partner plays A. Then R_2 and R_2' are given by the following two equations under the no-disclosure regime.

$$R_2(x) = Pr(R|g, B, nf) = \hat{\gamma}\frac{p_h\epsilon}{p_h\epsilon + (1-p_h)[\epsilon + (1-\epsilon)x]} + (1-\hat{\gamma})p_h < p_h$$

where $\hat{\gamma}(g, B, nf) = Pr(same\, partner|g, B, nf) = \frac{\gamma}{\gamma+(1-\gamma)\epsilon} > \gamma$ and

$$R_2'(x) = p_h.$$

Notice that $\hat{\gamma} > \gamma$ is crucial as it implies that when the investor observes no firing after the wrong signal was announced in period 1, he believes that it is more likely (than persistence probability) that the first period partner was reassigned to the issuer. This is because the first period partner would never report on himself.

Reporting is better than not reporting if the gains from reporting exceeds the cost of reporting. That is,

$$\alpha_1 W(p_h - \hat{\gamma}\frac{p_h\epsilon}{p_h\epsilon + (1-p_h)[\epsilon + (1-\epsilon)x]} - (1-\hat{\gamma})p_h) + \alpha_2 X(p_h - p_h) > c$$

$$\Leftrightarrow \alpha_1 W\hat{\gamma}(p_h - \frac{\epsilon p_h}{p_h\epsilon + (1-p_h)[\epsilon + (1-\epsilon)x]}) > c$$

Note that $p_h - \frac{\epsilon p_h}{p_h\epsilon+(1-p_h)[\epsilon+(1-\epsilon)x]} \geq 0$ holds with strict equality for $x = 0$ and $\alpha_1, W > 0$. Therefore with $c = 0$, the successor partner has strictly positive incentive to report if $x > 0$.

Consider now the disclosure regime. A partner who played A and was reported is replaced by a new partner whose identity is observed by the investor. Whether or not the monitor partner reports, since the change in partner is observed, the investor assigns p_h to be the probability that the partner with the issuer is of the rigid type (since the partner was rotated and the other partner was assigned to the issuer + there is no change in reputation from the performance on Project 2 where the partner was before) Thus $R_2(x) = p_h$ for all $x \geq 0$ under the disclosure regime.

Now if the monitor partner reports, a new partner with reputation p_h is assigned to Project 2. If the monitor partner does not report, the first period partner is assigned to Project 2. Since it is believed that the partner in the first period is reported and fired if he plays A, not firing of the first period partner is associated with the belief that the first partner announced b because of a mistaken signal and not from action A. Since the probability of a mistake is the same across both types, $R_2'(x) = p_h$. Thus, the reporting partner is indifferent between reporting and not reporting and therefore reporting is an optimal action. $\square$

A.1 Benchmark case with no disclosure

Statement and Proof of Proposition 1

Given $p_h \in (0, 1)$ and $c = 0$, there exist $\underline{I} > 0$ and $\overline{I} > \underline{I}$ such that the following strategy profile constitutes an equilibrium.

At $t = 2$, a rotated successor partner reports NC iff the predecessor partner played A. In case of a conflict, $B_2 = 0$ and the assigned partner plays A. The investor invests i^* if the audit report is g and does not invest otherwise.

At $t = 1$, in case of a conflict,

a) If $I \leq \underline{I}$, the issuer puts pressure $B_1 = 0$. The engagement partner plays NA. The investor invests $\frac{Ip}{p+(1-p)\epsilon}$ if the audit report is g and does not invest if the report is b.

b) Given $I \in (\underline{I}, \overline{I})$, there exists $x^* \in (0, 1)$ such that the issuer puts pressure $B_1 = \frac{Ip}{p+(1-p)[p_h\epsilon+(1-p_h)\{\epsilon+(1-\epsilon)x^*\}]}$. The engagement partner plays A with probability x^*. The investor invests $\frac{Ip}{p+(1-p)[p_h\epsilon+(1-p_h)\{\epsilon+(1-\epsilon)x^*\}]}$ if the audit report is g and does not invest if the report is b.

c) If $I \geq \overline{I}$, the issuer puts pressure $B_1 = \gamma\alpha_1 W[R_2h(1) - R_2(1)] + (1 - \gamma)[\beta_1 W R_2h(1) + \beta_2 X R_2h'(1) - v_f]$, where, $R_2h(1) = \gamma + (1 - \gamma)p_h$, $R_2(1) = \hat{\gamma}\frac{p_h\epsilon}{p_h\epsilon+(1-p_h)} + (1 - \hat{\gamma})p_h$, $\hat{\gamma} = \frac{\gamma}{\gamma+(1-\gamma)\epsilon}$, and $R_2h'(1) = \gamma p_h + (1 - \gamma)$. The engagement partner plays A. The investor invests $\frac{Ip}{p+(1-p)[p_h\epsilon+(1-p_h)]}$ if the audit report is g and does not invest if the report is b.

Proof. From Lemma 1 we know that at $t = 2$, in case of a conflict, $B_2 = 0$ and the assigned partner plays A.

We also know from Lemma 2, that if a new partner is assigned to the issuer in Period 2, the successor partner plays NC if the predecessor partner played A at $t = 1$.

Now let's consider the partner's behavior and the issuer's behavior at $t = 1$. Notice that there can be three types of equilibrium actions played by the flexible partner in period 1. One, where the flexible partner never plays A, two where a flexible partner always plays A and three where the flexible partner mixes between playing A and NA. We establish all these equilibria one by one.

The engagement partner's payoff from playing A is

$$Payoff\ A \;=\; \alpha_1 W p_h + \alpha_2 X p_h + \delta[\gamma\left[\alpha_1 W\{\hat{\gamma}\phi'(x) + (1-\hat{\gamma})p_h\} + \alpha_2 X\{\hat{\gamma}p_h + (1-\hat{\gamma})\phi'(x)\right] + (1-\gamma)v_f] \tag{22}$$

In case of a conflict if the engagement partner chooses to play action NA, his payoff is:

$$Payoff\ NA \;=\; \alpha_1 W p_h + \alpha_2 X p_h - B_1 + \delta\gamma\left[\alpha_1 W\{\gamma\phi(x) + (1-\gamma)p_h\} + \alpha_2 X\{\gamma p_h + (1-\gamma)\phi(x)\}\right]$$

$$+\delta(1-\gamma)\left[\beta_1 W\{\gamma\phi(x) + (1-\gamma)p_h\} + \beta_2 X\{\gamma p_h + (1-\gamma)\phi(x)\}\right] \tag{23}$$

The engagement partner's incentives to play NA is given by the payoff from playing NA minus the payoff from playing A. This is denoted as a function by $\Pi(x) - B_1$ where:

$$\Pi(x) = \delta\gamma[\alpha_1 W\{\gamma\phi(x) + (1-\gamma)p_h - \hat{\gamma}\phi'(x) - (1-\hat{\gamma})p_h\} + \alpha_2 X\{\gamma p_h + (1-\gamma)\phi(x) - \hat{\gamma}p_h - (1-\hat{\gamma})\phi'(x)\}]$$

$$+\delta(1-\gamma)\left[\beta_1 W\{\gamma\phi(x) + (1-\gamma)p_h\} + \beta_2 X\{\hat{\gamma}\phi(x) + (1-\hat{\gamma})p_h\} - v_f\right] \tag{24}$$

The partner plays NA if and only if $\Pi(x) \geq B_1$.

The NA-Equilibrium: This is the equilibrium in which the flexible partner always reports the correct signal.

Notice that under the NA-equilibrium, $\phi(0) = \phi'(0) = p_h$. This is because if the investor expects the flexible partner to play exactly as the rigid partner, then the reputation will not be updated along the equilibrium path.

The partner plays NA in period 1 if the payoff from NA is bigger than the payoff from playing A. This reduces to:

$$\delta(1-\gamma)\left[(\beta_1 W p_h + \beta_2 X p_h) - v_f\right] \geq B_1$$

Now let's consider the issuer's incentives to pressure the engagement partner. If the engagement partner plays A and reports g in a conflict situation, the payoff of the issuer is $\frac{pI}{p+(1-p)\epsilon}$. On the other hand, if the partner plays NA and reports b, the investor does not invest in the project, in which event the payoff of the issuer is 0.

$$Payoff\ A\ = \frac{pI}{p+(1-p)\epsilon} \tag{25}$$

$$Payoff\ NA\ = 0 \tag{26}$$

So the maximum B the manager puts on the partner is:

$$max_B = \frac{pI}{p+(1-p)\epsilon}$$

For the NA-equilibrium to hold we need:

$$\begin{aligned}
& max_B \leq Gains\ from\ NA \\
\Leftrightarrow & \\
& max_B \leq \delta(1-\gamma)(\beta_1 W p_h + \beta_2 X p_h - v_f) \\
\Leftrightarrow & \\
& \frac{pI}{p+(1-p)\epsilon} \leq \delta(1-\gamma)(\beta_1 W p_h + \beta_2 X p_h - v_f)
\end{aligned} \tag{27}$$

Now max_B is a linear monotonically increasing function of I and $v_f \leq 0$. Therefore there exists $\underline{I}$ such that, given $p_h \in (0,1)$, if $I = \underline{I}$ then $max_B = \delta(1-\gamma)(\beta_1 W p_h + \beta_2 X p_h - v_f)$ and $max_B < \delta(1-\gamma)(\beta_1 W p_h + \beta_2 X p_h - v_f)$ if $I < \underline{I}$.

The A-Equilibrium: In this equilibrium, the flexible partner always play A when there is a conflict.

Now consider period 1 incentives for the engagement partner. In case of a conflict :

$$Payoff\ A\ =\ \alpha_1 W p_h + \alpha_2 X p_h + \delta[\gamma(\alpha_1 W R_2 + \alpha_2 X R'_2) + (1-\gamma)v_f] \tag{28}$$

$$Payoff\ NA\ =\ \alpha_1 W p_h + \alpha_2 X p_h - B_1 + \delta[\gamma(\alpha_1 W R'{}_2h + \alpha_2 X R''{}_2h) + (1-\gamma)(\beta_1 W R'{}_2h + \beta_2 X R''{}_2h)] \tag{29}$$

$where\ R'{}_2h = \gamma.1 + (1-\gamma)p_h$

$R''{}_2h = \gamma p_h + (1-\gamma).1$

For the A-equilibrium to hold, we need

$$\begin{aligned}
&Payoff\ A\ > Payoff\ NA\\
&\Leftrightarrow\\
&B_1 > \delta[\gamma(\alpha_1 W R'{}_2h + \alpha_2 X R''{}_2h) + (1-\gamma)(\beta_1 W R'{}_2h + \beta_2 X R''{}_2h) - \gamma(\alpha_1 W R'_2 + \alpha_2 X R''_2) - (1-\gamma)v_f]\\
&\Leftrightarrow B_1 > \delta[\gamma(\alpha_1 W(\gamma.1 + (1-\gamma)p_h) + \alpha_2 X(\gamma p_h + (1-\gamma).1)) + (1-\gamma)(\beta_1 W(\gamma.1 + (1-\gamma)p_h) + \beta_2 X(\gamma p_h + (1-\gamma).1))\\
&- \gamma(\alpha_1 W(\frac{\epsilon p_h}{\epsilon p_h + (1-p_h)(\gamma + (1-\gamma)\epsilon)}) + \alpha_2 X p_h) - (1-\gamma)v_f]
\end{aligned} \tag{30}$$

Now let's consider the issuer's incentives to pressure the engagement partner. If the engagement partner plays A and reports g in a conflict situation, the payoff of the issuer is $\frac{pI}{p+(1-p)(p_h\epsilon+(1-p_h))}$. On the other hand, if the partner plays NA and reports b, the investor does not invest in the project, in which event the payoff of the issuer is 0. The following equations depict the issuer's payoffs when the partner plays A and NA respectively.

$$Payoff\ A\ = \frac{pI}{p + (1-p)(p_h\epsilon + (1-p_h))} \tag{31}$$

$$Payoff\ NA\ = 0$$

So the maximum B the manager puts on the partner is:

$$max_B = \frac{pI}{p + (1-p)(p_h\epsilon + (1-p_h))}$$

Now max_B is a linear monotonically increasing function of I. Therefore there exists $\overline{I}$ such that given p_h, if $I > \overline{I}$ then $max_B > \delta[\gamma(\alpha_1 W R'{}_2h + \alpha_2 X R''{}_2h) + (1-\gamma)(\beta_1 W R'{}_2h + \beta_2 X R''{}_2h) - \gamma(\alpha_1 W R'_2 + \alpha_2 X R''_2) - (1-\gamma)v_f]$ and if $I = \overline{I}$ then $max_B = \delta[\gamma(\alpha_1 W R'{}_2h + \alpha_2 X R''{}_2h) + (1-\gamma)(\beta_1 W R'{}_2h + \beta_2 X R''{}_2h) - \gamma(\alpha_1 W R'_2 + \alpha_2 X R''_2) - (1-\gamma)v_f]$.

Mixed Strategy Equilibrium: Let x be the probability that the F partner plays A in case of a conflict in period 1. Notice that the maximum pressure the issuer is willing to put on the partner is given by $max_B = I \times Pr(G|g,x)$ where $Pr(G|g,x)$ is the probability assigned by the issuer to the state being G if the signal is g and the investor believes that in equilibrium, the flexible type partner plays A with probability x in case of a conflict in period 1.

From the A-equilibrium and the NA- equilibrium we know that,

$$max_B\mid_{I\in[0,\underline{I}]}= I \times Pr(G|g, x=0),$$

and

$$max_B\mid_{I\in[\overline{I},\infty)}= I \times Pr(G|g, x=1)$$

It is easy to check that $\underline{I} < \overline{I}$. Fix any $I_0 \in (\underline{I}, \overline{I})$. We want to show that there exists $x \in (0,1)$ such that the mixed strategy of playing A with probability x is an equilibrium strategy.

The engagement partner's incentives to play NA is given by

$$\mathit{\Pi}(x) = \gamma[\alpha_1 W\{\gamma\phi(x)+(1-\gamma)p_h-\hat{\gamma}\phi'(x)-(1-\hat{\gamma})p_h\}+\alpha_2 X\{\gamma p_h+(1-\gamma)\phi(x)-\hat{\gamma}p_h-(1-\hat{\gamma})\phi'(x)\}]$$

$$+(1-\gamma)\left[\beta_1 W\{\gamma\phi(x)+(1-\gamma)p_h\}+\beta_2 X\{\hat{\gamma}\phi(x)+(1-\hat{\gamma})p_h\}-v_f\right]$$

where $\hat{\gamma}(g,B,nf) = Pr(same\,partner|g,B,nf) = \frac{\gamma}{\gamma+(1-\gamma)\epsilon} > \gamma$. Notice that, $\hat{\gamma}$ does not depend on the probability x .

We can also show that $\phi(x) = \frac{p_h}{p_h+(1-p_h)(1-x)}$ is increasing in x and $\phi'(x) = \frac{p_h\epsilon}{p_h\epsilon+(1-p_h)(\epsilon+(1-\epsilon)x\gamma)}$ is decreasing in x. Therefore, $\mathit{\Pi}(x)$ is a continuous increasing function of x. In a mixed strategy equilibrium, the partner is indifferent between playing A and NA in a conflict situation and $\mathit{\Pi}(x)$ should be equal to $max_B(x)$.

Now $max_B(x)$is given by

$$max_B(x) = I \times Pr(G|g,x)$$

Since, $Pr(G|g,x)$ is decreasing in x, for a given I, max_B is a deceasing function of x.

Also, from the existence of the NA-equilibrium we have,

$$\mathit{\Pi}(x=0) = \underline{I} \times Pr(G|g, x=0)$$

and

$$\mathit{\Pi}(x=1) = \overline{I} \times Pr(G|g, x=1)$$

With $I_0 \in (\underline{I}, \overline{I})$, $maxB(x) = I_0 \times Pr(G|g, x)$ is a continuous monotonically decreasing function satisfying the following conditions

$$\mathit{\Pi}(x=0) < max_B(x=0)$$

and

$$\mathit{\Pi}(x=1) > max_B(x=1)$$

Moreover, $\mathit{\Pi}(x)$ is a continuous monotonically increasing function of x. Therefore there exists $x \in (0,1)$ such that $\mathit{\Pi}(x) = I_0 \times Pr(G|g, x)$.

Hence the existence of mixed strategy equilibrium under collective reputation and monitoring. □

Proof of Proposition 2 We will prove the proposition by contradiction.

Consider $I \leq \underline{I}$. Suppose the engagement partner plays A with probability $x \in (0, 1]$.

For $x \in (0,1)$ to be an equilibrium we must have $\mathit{\Pi}(x) = max_B(x)$ and for $x = 1$ to be an equilibrium we must have $\mathit{\Pi}(x) \leq max_B(x)$. Combining the two we have,

$$\gamma[\alpha_1 W\{\gamma\phi(x) + (1-\gamma)p_h - \hat{\gamma}\phi'(x) - (1-\hat{\gamma})p_h\} + \alpha_2 X\{\gamma p_h + (1-\gamma)\phi(x) - \hat{\gamma}p_h - (1-\hat{\gamma})\phi'(x)\}]$$

$$+(1-\gamma)\left[\beta_1 W\{\gamma\phi(x) + (1-\gamma)p_h\} + \beta_2 X\{\hat{\gamma}\phi(x) + (1-\hat{\gamma})p_h\} - v_f\right]$$

$$\leq \frac{Ip}{p + (1-p)\left[p_h\epsilon + (1-p_h)\{\epsilon + (1-\epsilon)x\}\right]} \tag{32}$$

holding with strict equality for $x \in (0,1)$.

Notice that the right hand side is strictly deceasing in x. That is, $max_B(x > 0) < max_B(x = 0)$, for a given I. Similarly, $\mathit{\Pi}(x=0) < \mathit{\Pi}(x>0)$.

From the NA- equilibrium we know that, for all $I \leq \underline{I}$, $\mathit{\Pi}(x=0) \geq max_B(x=0)$. Thus (32) can never hold. That is, the flexible partner does not play A with positive probability when $I < \underline{I}$.

Now consider $I \geq \overline{I}$. Suppose, the engagement partner plays A with probability $x \in [0,1)$. For x to be an equilibrium we must have

$$\gamma[\alpha_1 W\{\gamma\phi(x)+(1-\gamma)p_h-\hat{\gamma}\phi'(x)-(1-\hat{\gamma})p_h\}+\alpha_2 X\{\gamma p_h+(1-\gamma)\phi(x)-\hat{\gamma}p_h-(1-\hat{\gamma})\phi'(x)\}]$$

$$+(1-\gamma)\left[\beta_1 W\{\gamma\phi(x)+(1-\gamma)p_h\}+\beta_2 X\{\hat{\gamma}\phi(x)+(1-\hat{\gamma})p_h\}-v_f\right]$$

$$\geq \frac{Ip}{p+(1-p)\left[p_h\epsilon+(1-p_h)\{\epsilon+(1-\epsilon)x\}\right]} \tag{33}$$

holding with strict equality for $x \in (0,1)$.

From the $A-$equilibrium we know that, for all $I \geq \overline{I}$, $\Pi(x=1) \leq max_B(x=1)$. Since, $\Pi(x)$ is an increasing function and $max_B(x)$ is decreasing (33) can never hold. That is the flexible partner will not play A with any probability strictly below 1.

The uniqueness of the mixed strategy equilibrium follows from strict monotonicity of the functions $\Pi(x)$ and $max_B(x)$.

Hence the proof.

□

A.2 Benchmark case with disclosure

This is the benchmark case i.e $c = 0$. In this subsection, we consider the case where the investor can observe the identity of the partner assigned to the issuer. As we already said in the main body of the paper, there are three possibilities for equilibria - NA equilibria with reporting, A equilibria with reporting and equilibria in which the flexible partner plays A with positive probability (but not 1) when there is conflict in period 1. We have already discussed necessary and sufficient conditions for NA-equilibrium in the main body of the paper. The following analysis describes the conditions required for the other two kinds of equilibria.

A**-equilibrium:** If such an equilibrium exists then we can calculate the optimal investment decisions in equilibrium. Define i^*_D to be the optimal investment decision by the investor in period 2 when the signal announced is g. Notice that, i^*_D depends on the history of outcome in period 1, the equilibrium being played, and R_2. The following table gives us the optimal investment decision for the investor in the A-equilibrium with reporting in the disclosure regime. Now in the disclosure regime, the investor can see exactly which partner is assigned to the issuer in period 2. We will denote by $\{g, B, nf, S\}$ the history in which the signal in period 1 was g, the state realization at the end of period 1 was B, there was no firing and the same partner is with the issuer in period 2. If the partner is rotated then the history observed by the investor can be represented by $\{g, B, nf, D\}$ (D is for different partner).

History	i_D^* in A-equilibrium given signal g
$g, G, nf/f, S$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$
$b, G, nf/f, S$	NA
$g, B, nf/f, S$	$\frac{pI}{p+(1-p)[\frac{p_h\epsilon}{p_h\epsilon+(1-p_h)}\epsilon+(1-\frac{p_h\epsilon}{p_h\epsilon+(1-p_h)})]}$
$b, B, nf/f, S$	$\frac{pI}{p+(1-p)\epsilon}$
$g, G, nf/f, D$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$
$b, G, nf/f, D$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$
$g, B, nf/f, D$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$
$b, B, nf/f, D$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$

Proof of proposition 3 Period 2 actions post reporting are optimal for the same reasons as outlined in previous equilibria. So let's consider the reporting decisions.

Suppose the partner assigned observes that the other partner played A. At this point, the history observed by the investor is (g, B).

If he reports, the history is (g, B, f, D). Thus payoff from reporting is:

$$\alpha_1 W p_h + \alpha_2 X p_h - c \tag{34}$$

If he does not report, history is (g, B, nf, D). Payoff from not reporting:

$$\alpha_1 W p_h + \alpha_2 X R_2'' \tag{35}$$

where R_2'' is the reputation of the partner not assigned to the issuer at history (g, B, nf, D). Since the investor believes that the monitor partner always reports, if the other partner is not fired, then the predecessor partner is believed to have issued g on account of getting the wrong signal. Thus $R_2'' = p_h$ since both type players can get the wrong signal with the same probability. Thus, the new rotated partner is indifferent between reporting and not reporting. Therefore, reporting is optimal. Consider period 1 incentives: in case of a conflict if the assigned partner chooses to play A, his payoff is given by,

$$Payoff\ A \ = \ \alpha_1 W p_h + \alpha_2 X p_h + \delta[\gamma(\alpha_1 W R_2' + \alpha_2 X p_h) + (1-\gamma)v_f] \tag{36}$$

where $R_2' = \frac{\epsilon p_h}{\epsilon p_h + (1-p_h)}$.

In case of a conflict if the engagement partner chooses to play action NA, his payoff is,

$$Payoff\ NA \ = \ \alpha_1 W p_h + \alpha_2 X p_h - B_1 + \delta[\gamma(\alpha_1 W + \alpha_2 X p_h) + (1-\gamma)(\beta_1 W p_h + \beta_2 X)] \tag{37}$$

Therefore, for the A-equilibrium to hold we must have that payoff from playing A is higher. This holds if:

$$B_1 > \delta\left[\gamma\alpha_1 W(1-R_2') + (1-\gamma)\left(\beta_1 W p_h + \beta_2 X - v_f\right)\right] \tag{38}$$

Now let's consider the issuer's incentives to pressure the engagement partner. If the engagement partner plays A and reports g in a conflict situation, the payoff of the issuer is $\frac{pI}{p+(1-p)(p_h\epsilon+(1-p_h))}$. On the other hand, if the partner plays NA and reports b, the investor does not invest in the project, in which event the payoff of the issuer is 0. The maximum B the issuer imposes on the partner is given by the difference in payoff to the issuer when the partner plays A in period 1 versus when he plays NA. Since the latter is zero, max_B is given by:

$$max_B = \frac{pI}{p+(1-p)(p_h\epsilon + (1-p_h))}$$

Now max_B is a linear monotonically increasing function of I. Therefore there exists $\overline{I_d}$ such that for all $I > \overline{I_d}$, $max_B > \delta\left[\gamma\alpha_1 W(1-R_2') + (1-\gamma)\left(\beta_1 W p_h + \beta_2 X - v_f\right)\right]$ for all $p_h \in (0,1)$.

Clearly, here $\overline{I_d} = \frac{p+(1-p)(p_h\epsilon+(1-p_h))}{p}\delta\left[\gamma\alpha_1 W(1-R_2') + (1-\gamma)\left(\beta_1 W p_h + \beta_2 X - v_f\right)\right]$.

Proof of uniqueness is similar to the uniqueness proof given in proposition 2. □

Proof of Proposition 4: Under the non-disclosure regime, partner's incentive to play NA is given by

$$\mathit{\Pi}(x) = \delta\gamma[\alpha_1 W\{\gamma\phi(x)+(1-\gamma)p_h - \hat{\gamma}\phi'(x) - (1-\hat{\gamma})p_h\} + \alpha_2 X\{\gamma p_h + (1-\gamma)\phi(x) - \hat{\gamma}p_h - (1-\hat{\gamma})\phi'(x)\}]$$

$$+\delta(1-\gamma)\left[\beta_1 W\{\gamma\phi(x)+(1-\gamma)p_h\} + \beta_2 X\{\hat{\gamma}\phi(x) + (1-\hat{\gamma})p_h\} - v_f\right]$$

Under the disclosure regime, partner's incentive to play NA is given by

$$\mathit{\Pi}_d(x) = \delta\left[\gamma\alpha_1 W(\phi(x) - R_2'(x)) + (1-\gamma)\left(\beta_1 W p_h + \beta_2 X R(x) - v_f\right)\right]$$

Since we want to show that the result holds for low values of α_2, β_1, we will simply show that the result holds when $\alpha_2 \approx 0$ and $\beta_1 \approx 0$ and we will have our result by continuity in α_2, β_1

Therefore rewriting the above equations in terms of $\phi(x)$ and $\phi'(x)$ we get,

$$\Pi(x) = \delta\gamma[\alpha_1 W\{\gamma\phi(x) + (1-\gamma)p_h - \hat{\gamma}\phi'(x) - (1-\hat{\gamma})p_h\}] + \delta(1-\gamma)\left[\beta_2 X\{\hat{\gamma}\phi(x) + (1-\hat{\gamma})p_h\} - v_f\right]$$

and

$$\Pi_d(x) = \delta\left[\gamma\alpha_1 W(\phi(x) - \phi'(x)) + (1-\gamma)\left(\beta_2 X\phi(x) - v_f\right)\right]$$

It is clear from the above equations that, $\Pi(x) < \Pi_d(x)$ for $x \in (0, 1]$.

Now $\bar{I}, \bar{I}_d$ are linear functions of $\Pi(1), \Pi_d(1)$ respectively with the same coefficient since

$$\begin{aligned} \bar{I} &= \frac{p + (1-p)(p_h\epsilon + (1-p_h)(\epsilon + (1-\epsilon)1))}{p}\Pi(1) \\ \bar{I}_d &= \frac{p + (1-p)(p_h\epsilon + (1-p_h)(\epsilon + (1-\epsilon)1))}{p}\Pi_d(1) \end{aligned} \tag{39}$$

Thus, $\Pi(x) < \Pi_d(x)\ \forall x \Rightarrow \bar{I} < \bar{I}_d$.

More generally, given an $I \in (\underline{I}, \bar{I})$, there exists unique x^*, x_d^* such that, in equilibrium in the non-disclosure regime, the flexible partner will play A with probability x^* when there is a conflict in period 1 and in equilibrium in the disclosure regime, the flexible partner will play A with probability x_d^* when there is a conflict in period 1. x^*, x_d^* satisfy the following respectively:

$$\begin{aligned} I * \frac{p}{p + (1-p)(p_h\epsilon + (1-p_h)(\epsilon + (1-\epsilon)x^*))} &= \Pi(x^*) \\ I * \frac{p}{p + (1-p)(p_h\epsilon + (1-p_h)(\epsilon + (1-\epsilon)x_d^*))} &= \Pi_d(x_d^*) \end{aligned} \tag{40}$$

Since $\Pi(x)$ and $\Pi_d(x)$ are increasing in x and $\Pi(x) < \Pi_d(x) \forall x$, it is clear that $x^* > x_d^*$

□

Proof of Proposition 5: Suppose players are expected to play the NA-equilibrium in period 1.

At the end of $t = 1$, the partner assigned observes that the other partner played A. At this point, the history observed by the investor is (g, B).

In either regime, if he reports, the payoff from reporting is:

$$\alpha_1 W p_h + \alpha_2 X p_h - c + T \tag{41}$$

If he does not report the payoff is:

$$\alpha_1 W p_h + \alpha_2 X p_h \tag{42}$$

Thus if $T < c$, reporting is not optimal in either regime. Note that if the partner does not have incentives to report, then we cannot have the NA-equilibrium. A F-partner plays NA in period 1 despite facing pressure from the issuer for two reasons: first, for reputation gains, and second, due to the threat of sanctions. If NA is expected to be played in period 1 then there is no reputation gain (since both types of partners are expected to play in the same way in period 1 and any incorrect signal will be attributed to the player receiving the wrong signal). With no reporting as well, a player has no incentive to play NA in period 1. Therefore, for the NA-equilibrium to hold, we must have that the reporting partner reports the behavior of the other partner.

For the successor partner to report the other partner's behavior, we must have $c \leq T$. Now, let $c \leq T$. Then there is an NA-equilibrium with reporting if:

$$\delta(1-\gamma)\left[(\beta_1 W p_h + \beta_2 X p_h) - v_f\right] \geq B_1$$

The maximum pressure the manager puts on the partner:

$$max_B = \frac{pI}{p + (1-p)\epsilon}$$

Since, max_B is a linear monotonically increasing function of I, there exists $\underline{I}$ such that $max_B < \delta(1-\gamma)(\beta_1 W p_h + \beta_2 X p_h - v_f)$ for all $p_h \in (0,1)$.

Hence the proof. □

Proof of Proposition 6: Suppose the partner assigned observes that the other partner played A. At this point, the history observed by the investor is (g, B).

If he reports, the history is (g, B, f). Thus payoff from reporting is:

$$\alpha_1 W p_h + \alpha_2 X p_h - c \tag{43}$$

If he does not report, history is (g, B, nf). Payoff from not reporting:

$$\alpha_1 W p_h + \alpha_2 X R_2'' \tag{44}$$

where R_2'' is the reputation of the partner not with the issuer.

We want to find conditions for an A-equilibrium with reporting. Since the investor believes that the monitor partner always reports in equilibrium, $R_2'' = p_h$. Therefore, for the monitor partner to report A, we must have $c \leq T$.

The rest of the proof is similar to the proof of Proposition 3.

□

Proof of Proposition 7 Consider the monitoring decision. Suppose the partner assigned in period 2 observes that the other partner played A in period 1.

If he reports, the history is (g, B, f). Thus the payoff from reporting is:

$$\alpha_1 W p_h + \alpha_2 X p_h - c + T \tag{45}$$

If he does not report, history is (g, B, nf) and the payoff is:

$$\alpha_1 W R_2 + \alpha_2 X R_2' \tag{46}$$

where R_2 is the reputation of the engagement partner and R_2' is the reputation of the monitor partner.

Now from the proof of proposition 1, we know that, $R_2 = \frac{\epsilon p_h}{\epsilon p_h + (1-p_h)(\gamma + (1-\gamma)\epsilon)}$ and $R_2' = p_h$.

With $T = 0$, reporting is better than not reporting if:

$$\begin{aligned}
&\alpha_1 W (p_h - \frac{\epsilon p_h}{\epsilon p_h + (1-p_h)(\gamma + (1-\gamma)\epsilon)}) + \alpha_2 X (p_h - p_h) > c \\
&\Leftrightarrow \alpha_1 W (p_h - \frac{\epsilon p_h}{\epsilon p_h + (1-p_h)(\gamma + (1-\gamma)\epsilon)}) > c \\
&\Leftrightarrow \alpha_1 W p_h [(1-p_h)(1-\epsilon)\gamma] > c(\epsilon + [(1-p_h)(1-\epsilon)\gamma]) \\
&\Leftrightarrow -\alpha_1 W \gamma (1-\epsilon) {p_h}^2 + (\alpha_1 W \gamma (1-\epsilon) + \gamma c (1-\epsilon)) p_h - \gamma c (1-\epsilon) - c\epsilon > 0
\end{aligned} \tag{47}$$

Note that the above is a quadratic inequation which does not hold when p_h is too small or too large. Also note that $p_h - \frac{\epsilon p_h}{\epsilon p_h + (1-p_h)(\gamma + (1-\gamma)\epsilon)} > 0$, so fixing all other parameters, the above inequation definitely works for small values of c.

We can write equation 47 as :

$$-a{p_h}^2 + (a+b)p_h - (b+d) > 0$$

To make sure that there is a range of p_h for which the above has a solution, we need to make sure that the following has a solution:

$$-a{p_h}^2 + (a+b)p_h - (b+d) = 0$$

This has a solution in p_h if the discriminant is positive if:

$$\begin{aligned}
&D > 0\\
&\Leftrightarrow (a+b)^2 - 4a(b+d)\\
&\Leftrightarrow a - b - 2\sqrt{ad} > 0\\
&\alpha_1 W\gamma(1-\epsilon) - \gamma c(1-\epsilon) - 2\sqrt{\alpha_1 W\gamma(1-\epsilon)c\epsilon} > 0
\end{aligned} \tag{48}$$

Now we can solve equation 47 and show that, if $\alpha_1 W\gamma(1-\epsilon) - \gamma c(1-\epsilon) - 2\sqrt{\alpha_1 W\gamma(1-\epsilon)c\epsilon} > 0$, then the monitor partner always reports for all $T \geq 0$ if $p_h \in [\frac{1}{\sqrt{a}}(\frac{a+b}{2\sqrt{a}} - \sqrt{(\frac{a+b}{2\sqrt{a}})^2 - (b+d)}), \frac{1}{\sqrt{a}}(\frac{a+b}{2\sqrt{a}} + \sqrt{(\frac{a+b}{2\sqrt{a}})^2 - (b+d)})]$.

If $p_h < \frac{1}{\sqrt{a}}(\frac{a+b}{2\sqrt{a}} - \sqrt{(\frac{a+b}{2\sqrt{a}})^2 - (b+d)})$, then to ensure monitoring we must have, $T \geq c - \alpha_1 W(p_h - \frac{\epsilon p_h}{\epsilon p_h + (1-p_h)(\gamma + (1-\gamma)\epsilon)})$.

Similarly, if $p_h > \frac{1}{\sqrt{a}}(\frac{a+b}{2\sqrt{a}} + \sqrt{(\frac{a+b}{2\sqrt{a}})^2 - (b+d)})$, to ensure monitoring we must have $T \geq c - \alpha_1 W(p_h - \frac{\epsilon p_h}{\epsilon p_h + (1-p_h)(\gamma + (1-\gamma)\epsilon)})$.

The rest of the proof follows from the proof of proposition 1.

□

Proof of Proposition 8: Note first that when the cost of reporting is positive, there does not exist a pure strategy reporting equilibria under the disclosure regime. The argument is as outlined in proposition 5, 6. The basic idea is that if there was a reporting equilibrium then the monitor partner would have incentives to deviate and not report. This is because of the following. The gain from reporting the other partner comes from increases in reputation (self and other partner) which leads to higher payoffs. If he reports the previous partner, he pays a cost c and the reputation of the new partner is p_h and his own reputation is also p_h since he was just rotated in and the investor can observe that. If he does not report the previous partner then he pays no cost and the investor believes that no firing must be because the previous partner had got the wrong signal and played NA (else he would have been reported since it is a reporting equilibrium). Since the probability of receiving the wrong signal is the same across partner types, the previous partner's reputation is unchanged at p_h and of course the monitor partner's reputation is also p_h since he was just rotated in and the investor can observe that. Thus, there are no payoff gains to reporting but there is a positive cost c. So the monitor will deviate and not report the previous partner.

Next, we show that for c above a certain threshold, there does exist a *no-reporting* equilibrium under the disclosure regime. Thereafter, we will argue that *when c is above this threshold but below another cutoff - under some conditions, there exists a reporting equilibrium under the non-disclosure regime but none under the disclosure regime.*

Consider the reporting decision in period 2 under the disclosure regime in a non-reporting equilibrium:

$$\begin{aligned} Payoff\ from\ reporting\ &=\ \alpha_1 W p_h + \alpha_2 X p_h - c \\ Payoff\ from\ not\ reporting\ &= \alpha_1 W p_h + \alpha_2 X p' \end{aligned}$$

where p' is reputation of other partner in history (g, B, nf) and no reporting is an optimal strategy in equilibrium. Therefore:

$$p' = \frac{p_h \epsilon}{p_h \epsilon + (1-p_h)(\epsilon + (1-\epsilon)x)}$$

where x is the probability with which the flexible partner plays A in period 1 when there is a conflict in equilibrium.

For an equilibrium where no reporting is optimal we must have:

$$\begin{aligned} \alpha_1 W p_h + \alpha_2 X p' &> \alpha_1 W p_h + \alpha_2 X p_h - c \\ \Leftrightarrow c &> \frac{\alpha_2 X p_h (1-\epsilon)(1-p_h)x}{p_h \epsilon + (1-p_h)(\epsilon + (1-\epsilon)x)} \end{aligned}$$

Thus for $c > \underline{c} = \frac{\alpha_2 X p_h (1-\epsilon)(1-p_h)}{p_h \epsilon + (1-p_h)}$ there is a no reporting equilibrium under the disclosure regime.
In period 1, Let the partner play A with positive probability x in equilibrium. If $x \in (0,1)$, we must

have :

$$
\begin{aligned}
&Payoff\ from\ A\ =\ Payoff\ from\ NA\\
&\Leftrightarrow \alpha_1 Wp_h + \alpha_2 Xp_h + \delta[\gamma(\alpha_1 Wp' + \alpha_2 Xp_h) + (1-\gamma)(\beta_1 Wp_h + \beta_2 Xp')] = \alpha_1 Wp_h + \alpha_2 Xp_h - B +\\
&\delta[\gamma(\alpha_1 W\frac{p_h}{p_h + (1-p_h)(1-x)} + \alpha_2 Xp_h) + (1-\gamma)(\beta_1 Wp_h + \beta_2 X\frac{p_h}{p_h + (1-p_h)(1-x)})]\\
&\Leftrightarrow B = \delta[\gamma\alpha_1 W + (1-\gamma)\beta_2 X][\frac{p_h}{p_h + (1-p_h)(1-x)} - p']\\
&\Leftrightarrow B = \delta[\gamma\alpha_1 W + (1-\gamma)\beta_2 X][\frac{p_h}{p_h + (1-p_h)(1-x)} - \frac{p_h\epsilon}{p_h\epsilon + (1-p_h)(\epsilon + (1-\epsilon)x)}] \qquad (49)
\end{aligned}
$$

Now we have the following expression for maximum pressure:

$$max_B = \frac{pI}{p + (1-p)(p_h\epsilon + (1-p_h)(\epsilon + (1-\epsilon)x))}$$

For any $x \in (0,1)$, we must have $B = max_B$, else the issuer manager can definitely get A behavior from the flexible partner by increasing the pressure by a very small amount. If $x = 1$, we must have $B < max_B$. We know $x \neq 0$ in equilibrium when $c > \underline{c}$, since we cannot have an NA equilibrium without reporting.

Let $\overline{I_{dnm}}$ stand for the cutoff I in the disclosure regime under no monitoring beyond which the payoff from playing A is higher than the payoff from playing NA since the max_B is too high (obtained by solving $B < max_B$ at $x = 1$). Then, $\overline{I_{dnm}} = \frac{p+(1-p)(p_h\epsilon+1-p_h)}{p}\delta(\gamma\alpha_1 W + (1-\gamma)\beta_2 X)\frac{1-p_h}{p_h\epsilon+(1-p_h)}$.

Like previous propositions, we can easily show that:

i) Let $c > \underline{c}$ and $I > \overline{I_{dnm}}$. Then, the unique equilibrium in the disclosure regime is that of an A-equilibrium without reporting.

ii) Let $c > \underline{c}$ but $I < \overline{I_{dnm}}$. Then, there exists a unique $x(I)$ such that the unique equilibrium in the disclosure regime is a mixed strategy equilibrium where there is no reporting and the flexible partner plays A with probability $x(I)$ in period 1 in case of a conflict.

The proof for the above results are similar to the proof of proposition 1,2.

Now let's look at the non-disclosure regime.

Fix $c \geq \underline{c}$.

We will find conditions under which the reporting equilibrium exists. Let the flexible partner play A with positive probability x in equilibrium. Consider the reporting decision in period 2 now:

$$
\begin{aligned}
&Payoff\ from\ reporting\ =\ \alpha_1 Wp_h + \alpha_2 Xp_h - c\\
&Payoff\ from\ not\ reporting\ = \alpha_1 WR(x) + \alpha_2 XR'(x)
\end{aligned}
$$

where $R(x)$ is reputation of partner with client in period 2 and $R'(x)$ is reputation of other partner in history (g, B, nf) and reporting is equilibrium strategy. Therefore:

$$\begin{aligned}
R(x) &= \frac{p_h\epsilon}{p_h\epsilon + (1-p_h)(\epsilon + (1-\epsilon)x\gamma)} \\
R'(x) &= p_h
\end{aligned}$$

Since we want an equilibrium where reporting is optimal we must have:

$$\begin{aligned}
&\alpha_1 W R(x) + \alpha_2 X R'(x) < \alpha_1 W p_h + \alpha_2 X p_h - c \\
&\Leftrightarrow c \leq \frac{\alpha_1 W p_h(1-p_h)(1-\epsilon)x\gamma}{\epsilon p_h + (1-p_h)(\epsilon + (1-\epsilon)x\gamma)}
\end{aligned}$$

RHS is increasing in x. Let $c(x) = \frac{\alpha_1 W p_h(1-p_h)(1-\epsilon)x\gamma}{\epsilon p_h + (1-p_h)(\epsilon+(1-\epsilon)x\gamma)}$. Also, let $\overline{c} = \frac{\alpha_1 W p_h(1-p_h)(1-\epsilon)\gamma}{\epsilon p_h + (1-p_h)(\epsilon+(1-\epsilon)\gamma)}$ i.e. the highest value of RHS (c(1)).

We know that $c \geq \underline{c}$. So we need the following condition to get a range of c for which we can have reporting under the non-disclosure regime but not under the disclosure regime:

$$\begin{aligned}
&\underline{c} < \frac{\alpha_1 W p_h(1-p_h)(1-\epsilon)x\gamma}{\epsilon p_h + (1-p_h)(\epsilon + (1-\epsilon)x\gamma)} \\
&\Leftrightarrow \frac{\alpha_2 X p_h(1-\epsilon)(1-p_h)}{p_h\epsilon + (1-p_h)} \leq \frac{\alpha_1 W p_h(1-p_h)(1-\epsilon)x\gamma}{\epsilon p_h + (1-p_h)(\epsilon + (1-\epsilon)x\gamma)} \qquad (50) \\
&\Leftrightarrow \frac{\alpha_2 X}{\epsilon p_h + (1-p_h)} \leq \frac{\alpha_1 W x\gamma}{\epsilon p_h + (1-p_h)(\epsilon + (1-\epsilon)x\gamma)} \qquad (51)
\end{aligned}$$

The above is not true for low x as RHS is monotonically increasing in x. Let's assume a condition which makes sure that it works at least for the highest x. That is, assume that the following holds :

$$\begin{aligned}
&\underline{c} < \overline{c} \\
&\Leftrightarrow \frac{\alpha_2 X}{\epsilon p_h + (1-p_h)} < \frac{\alpha_1 W\gamma}{\epsilon p_h + (1-p_h)(\epsilon + (1-\epsilon)\gamma)} \qquad (52)
\end{aligned}$$

Note that the above condition would hold for low α_2 i.e. low gains from the other project for the engagement partner. Fix α_2 so that $\underline{c} < \overline{c}$. Now, there exists a $\bar{x}$ such that if the flexible partner plays A with probability x in equilibrium and $x \in (\bar{x}, 1)$, then reporting will be optimal. $\bar{x}$ will satisfy:

$$\Leftrightarrow \frac{\alpha_2 X}{\epsilon p_h + (1-p_h)} = \frac{\alpha_1 W \bar{x}\gamma}{\epsilon p_h + (1-p_h)(\epsilon + (1-\epsilon)\bar{x}\gamma)}$$

Consider period 1 equilibrium behavior now, for all equilibria in which the flexible partner plays A with probability x in times of a conflict, we have that if $x \in (0,1)$, we must have :

$$\begin{aligned}
&Payoff\ from\ A\ =\ Payoff\ from\ NA\\
&\Leftrightarrow \alpha_1 W p_h + \alpha_2 X p_h + \delta[\gamma(\alpha_1 W R(x) + \alpha_2 X R'(x)) + (1-\gamma)(v_f)] = \alpha_1 W p_h + \alpha_2 X p_h - B +\\
&\delta[\gamma(\alpha_1 W(\gamma \frac{p_h}{p_h + (1-p_h)(1-x)} + (1-\gamma)p_h) + \alpha_2 X((1-\gamma)\frac{p_h}{p_h+(1-p_h)(1-x)} + \gamma p_h) +\\
&(1-\gamma)(\beta_1 W(\gamma \frac{p_h}{p_h+(1-p_h)(1-x)} + (1-\gamma)p_h) + \beta_2 X((1-\gamma)\frac{p_h}{p_h+(1-p_h)(1-x)} + \gamma p_h))]\\
&\Leftrightarrow B = \delta[\gamma\alpha_1 W(R_h(x) - R(x)) + \gamma\alpha_2 X(R'_h(x) - R'(x)) + (1-\gamma)(\beta_1 W R_h(x) + \beta_2 X R'_h(x) - v_f)], \qquad (53)
\end{aligned}$$

where $R_h(x) = \gamma\frac{p_h}{p_h+(1-p_h)(1-x)} + (1-\gamma)p_h$ and $R'_h(x) = (1-\gamma)\frac{p_h}{p_h+(1-p_h)(1-x)} + \gamma p_h$

We have the following expression for maximum pressure:

$$max_B = \frac{pI}{p + (1-p)(p_h\epsilon + (1-p_h)(\epsilon + (1-\epsilon)x))}$$

For any $x \in (0,1)$, we must have $B = max_B$, else the issuer manager can definitely get A behavior from the flexible partner by increasing the pressure by a very small amount. If $x = 1$ (A equilibrium), we must have $B < max_B$.

As before (like proposition 7), we can easily show that the following holds:

iii) There exists an $\overline{I^R{}_{ND}}$, such that if $I > \overline{I^R{}_{ND}}$, then the unique equilibrium is an A-equilibrium with reporting in the non-disclosure regime. $\overline{I^R{}_{ND}}$ is given by:

$$\overline{I^R{}_{ND}} = \frac{p + (1-p)(p_h\epsilon + (1-p_h))}{p}\delta[\gamma\alpha_1 W(R_h(1) - R(1)) + \gamma\alpha_2 X(R'_h(1) - R'(1))$$

$$+(1-\gamma)(\beta_1 W R_h(1) + \beta_2 X R'_h(1) - v_f)]$$

iv) If $I > max\{\overline{I_{dnm}}, \overline{I^R{}_{ND}}\}$, then we have an an A-equilibrium with reporting in the non-disclosure regime but the only equilibrium in the disclosure regime is an A-equilibrium without reporting. In this case, in period 2, the flexible partner will not be removed in the disclosure regime and the audit firm will have lower payoffs from project 2.

The above only guarantees that the disclosure regime does not ensure the ouster of the first period partner who played A. While this may lead to improved audit quality if we had a more than 2 period game, in our model what matters is the behavior in period one of the flexible partner and this behavior is identical in both regimes (play A with probability 1). To argue that the disclosure regime performs better than the non disclosure regime we must show that there is a region of I under which the flexible partner plays NA with positive probability in period 1 in the non-disclosure regime but not in the disclosure regime.

Notice that, v_f being a large negative number, is a sufficient condition to get $\overline{I_{dnm}} < \overline{I^R_{ND}}$.

Let us now go back to condition (51). The condition is not true for low x and also, RHS is monotonically increasing in x. From uniqueness of equilibrium under monitoring, given any $x \in [\bar{x}, 1)$, we can find $I(x)$ such that under the non-disclosure regime and monitoring equilibrium, if $I = I(x)$ then the flexible partner plays A with probability x in equilibrium. Moreover, $\overline{I^R_{ND}} > I(x) > \underline{I}$, where $\underline{I}$ is threshold below which the NA- equilibrium holds under monitoring.

Let $I_1 = max\{I(\bar{x}), \overline{I_{dnm}}\}$. Now $I_1 < I^R_{ND}$. Let x_1 be such that if $I = I_1$ then the flexible partner plays A with probability x_1 in the reporting equilibrium in the non disclosure regime.

Now if $c \in (max\{\underline{c}, c(x_1)\}, \bar{c})$, $I \in [I_1, \overline{I^R_{ND}})$ and sufficiently large v_f, we have that the flexible partner will always acquiesce to the issuer's pressure in the disclosure regime but will play NA with positive probability in the non-disclosure regime. Thus, the audit quality is strictly better under these conditions in the non-disclosure regime. □

A.3 Engagement Quality Reviewer

A.3.1 Non-disclosure regime:

In this section we look for the equilibrium behavior of the engagement partner and the EQR when the name of the engagement partner is not disclosed to the investor. Suppose that, in equilibrium, the probability that the F partner announces g when he actually got the signal b is $x \in [0, 1]$. Then,

$$Pr(R|b, B) = \phi(x) = \frac{p_h[1 + (1 - p_h)x(1 - \gamma)]}{p_h + (1 - p_h)(x(1 - \gamma) + (1 - x))} \tag{54}$$

and

$$Pr(R|g, B) = \phi'(x) = \frac{\epsilon p_h}{\epsilon p_h + (1 - p_h)(\epsilon + (1 - \epsilon)x\gamma)} \tag{55}$$

$\phi(x)$ captures the probability that the partner assigned to the issuer at the second period is of type R, given the history (b, B). Since the identity of the engagement partner is not observed by the investor, $\phi(x) \in (p_h, 1)$ for all $x \in (0, 1]$. Similarly, $\phi'(x)$ gives the probability that the partner assigned to the issuer is of type R, given the history (g, B). Notice that, the history (g, B) implies that the engagement partner assigned to the issuer in the first period is also assigned to the issuer in the second period[28]. The history can be observed if the assigned partner is of type R and gets the wrong signal in the first period, or the assigned partner is of type F and gets the wrong signal, or the assigned partner is of type F who plays A and the EQR does not detect the unsupported opinion. Thus, $\phi'(x) < p_h$ for all $x \in (0, 1]$.

Investment under the non-disclosure regime:

For all possible histories, the investor's optimal investment i^* (following report g) in the second period is given by the following table.

History	i^* in NA-Equilibrium	i^* in Mixed Strategy Equilibrium	i^* in A-Equilibrium
g, G	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$
b, G	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$
g, B	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[\phi'(x)\epsilon+(1-\phi'(x))]}$	$\frac{pI}{p+(1-p)[\phi'(1)\epsilon+(1-\phi'(1))]}$
b, B	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[\phi(x)\epsilon+(1-\phi(x))]}$	$\frac{pI}{p+(1-p)[\phi(1)\epsilon+(1-\phi(1))]}$

Given the belief update functions, the engagement partner's incentives to play NA is given by the function $\mathit{\Pi}(x)$.

$$\mathit{\Pi}(x) = \delta\left[\gamma\alpha_1 W(\phi(x) - \phi'(x)) + (1-\gamma)\delta[\alpha_1 W\phi(x) + \alpha_2 X p_h - v_f]\right]$$

Proposition 9: *Given $p_h \in (0, 1)$ and $c = 0$, there exist $\underline{I} > 0$ and $\overline{I} > \underline{I}$ such that the following strategy profile constitutes an equilibrium.*

At $t = 2$, the EQR always reports C. In case of a conflict, $B_2 = 0$ and the assigned partner plays A if his type is F. The investor invests i^* if the audit report is g and does not invest otherwise.

At $t = 1$, in case of a conflict,

a) If $I \le \underline{I}$, the issuer puts pressure $B_1 = 0$. The engagement partner plays NA. The EQR reports NC if and only if the engagement partner plays A. The investor invests $\frac{Ip}{p+(1-p)\epsilon}$ if the audit report is g and does not invest if the report is b.

b) For each $I \in (\underline{I}, \overline{I})$, there exists $x^* \in (0, 1)$ such that the issuer puts pressure $B_1 = \frac{Ip}{p+(1-p)[p_h\epsilon+(1-p_h)\{\epsilon+(1-\epsilon)x^*\}]}$. The engagement partner plays A with probability x^*. The EQR reports NC if and only if the engagement

[28]Had the partner been fired, it would have to be the case that the partner had played A and was going to report g. However, in this case the final report would have been changed to be b.

partner plays A. The investor invests $\frac{Ip}{p+(1-p)[p_h\epsilon+(1-p_h)\{\epsilon+(1-\epsilon)x^*\}]}$ if the audit report is g and does not invest if the report is b.

c) If $I \geq \overline{I}$, the issuer puts pressure $B_1 = \delta[\gamma(\alpha_1 W R'_2h + \alpha_2 X R''_2h) + (1-\gamma)(\beta_1 W R'_2h + \beta_2 X R''_2h) - \gamma(\alpha_1 W R'_2 + \alpha_2 X R''_2) - (1-\gamma)v_f]$ and the assigned partner plays A if his type is F. The investor invests $I * \frac{p}{p+(1-p)[p_h\epsilon+(1-p_h)]}$ if the report is g and does not invest if the report is b. $R'_2 = \frac{\epsilon p_h}{\epsilon p_h+(1-p_h)(\gamma+(1-\gamma)\epsilon)}$, $R''_2 = p_h$, $R'_2h = \gamma.1 + (1-\gamma)p_h$, and $R''_2h = \gamma p_h + (1-\gamma).1$.

Proof of Proposition 9: Let's prove by backward induction. It is trivial that an F type partner is indifferent between playing A and NA in period 2 in case there is conflict and $B_2 = 0$. If $B_2 > 0$, the partner strictly prefers the action A. Thus, the issuer has to impose any positive cost on the partner to make him play A. Thus, in equilibrium the flexible partner will always choose A and the issuer will choose $B_2 = 0$.

Now let's consider the behavior at $t = 1$.

The NA-equilibrium: First, consider the reporting decision of the EQR. The EQR reports against the engagement partner if and only if

$$\beta_1 W(\phi(x) - \phi'(x)) \geq 0$$

In equilibrium, if the engagement partners plays NA with probability 1, $\phi = \phi' = p_h$. That is, the EQR is indifferent between reporting and not reporting against the engagement partner. Thus, reporting against the engagement partner is optimal for the EQR.

Next, consider the incentives of the engagement partner to play NA. The engagement partner's incentives to play NA is given by

$$\Pi(x) = \gamma\alpha_1 W(\phi(x) - \phi'(x)) + (1-\gamma)[\alpha_1 W\phi(x) + \alpha_2 X p_h - v_f]$$

Under the $NA-$equilibrium we have,

$$\Pi(0) = \gamma\alpha_1 W(p_h - p_h) + (1-\gamma)[\alpha_1 W p_h + \alpha_2 X p_h - v_f]$$

$$= (1-\gamma)[\alpha_1 W p_h + \alpha_2 X p_h - v_f]$$

Now let's consider the issuer's incentives to pressure the engagement partner. If the engagement partner plays A and reports g in a conflict situation, the payoff of the issuer is $\frac{pI}{p+(1-p)\epsilon}$. On the other hand, if the partner plays NA and reports b, the investor does not invest in the project, in which event the payoff of the issuer is 0. So the maximum B the manager puts on the partner is:

$$max_B = \frac{pI}{p + (1-p)\epsilon}$$

For the NA-equilibrium to hold we need:

$$\begin{aligned} & max_B < (1-\gamma)(\beta_1 W p_h + \beta_2 X p_h - v_f) \\ \Leftrightarrow & \\ & \frac{pI}{p+(1-p)\epsilon} < (1-\gamma)(\beta_1 W p_h + \beta_2 X p_h - v_f) \end{aligned} \tag{56}$$

Now max_B is a linear monotonically increasing function of I and $v_f \leq 0$. Therefore, there exists $\underline{I}$ such that $max_B < (1-\gamma)(\beta_1 W p_h + \beta_2 X p_h - v_f)$ for all $p_h \in (0,1)$. Specifically, $\underline{I} = \frac{p+(1-p)\epsilon}{p} \mathit{\Pi}(0)$.

The A-Equilibrium: Under the A-equilibrium, the EQR reports against the engagement partner if and only if

$$\beta_1 W(\phi(1) - \phi'(1)) \geq 0$$

, where $\phi(1) = \frac{p_h[1+(1-p_h)(1-\gamma)]}{p_h+(1-p_h)(1-\gamma)} > p_h$ and $\phi'(1) = \frac{\epsilon p_h}{\epsilon p_h + (1-p_h)(\epsilon+(1-\epsilon)\gamma)} < p_h$. Therefore, it is a strictly dominant strategy for the EQR to report against the engagement partner.

The engagement partner's incentives to play NA is given by

$$\mathit{\Pi}(x) = \gamma\alpha_1 W(\phi(x) - \phi'(x)) + (1-\gamma)[\alpha_1 W\phi(x) + \alpha_2 X p_h - v_f]$$

Under the $A-$equilibrium we have,

$$\mathit{\Pi}(1) = \gamma\alpha_1 W(\phi(1) - \phi'(1)) + (1-\gamma)[\alpha_1 W\phi(1) + \alpha_2 X p_h - v_f]$$

Now, if the engagement partner plays A and reports g in a conflict situation, the payoff of the issuer is $\frac{pI}{p+(1-p)(p_h\epsilon+(1-p_h))}$. On the other hand, if the partner plays NA and reports b, the investor does not invest in the project, in which event the payoff of the issuer is 0.

So the maximum B the issuer puts on the partner is:

$$max_B = \frac{pI}{p+(1-p)(p_h\epsilon+(1-p_h))}$$

Now max_B is a linear monotonically increasing function of I. Therefore, there exists $\overline{I}$ such that if $I > \overline{I}$ then $max_B > \gamma\alpha_1 W(\phi(1) - \phi'(1)) + (1-\gamma)[\alpha_1 W\phi(1) + \alpha_2 X p_h - v_f]$ for all $p_h \in (0,1)$. Specifically, $\overline{I} = \frac{p+(1-p)(p_h\epsilon+(1-p_h))}{p}\mathit{\Pi}(1)$.

Mixed Strategy Equilibrium: We first show that $\overline{I} > \underline{I}$.

Notice that for a given I,

$$max_B(x=0) > max_B(x=1) \tag{57}$$

Also, note that,

$$\mathit{\Pi}(x=0) < \mathit{\Pi}(x=1). \tag{58}$$

For the NA- equilibrium to hold we must have,

$$\mathit{\Pi}(x=0) \geq max_B(x=0) \tag{59}$$

On the other hand, for the A- equilibrium to hold we must have,

$$\mathit{\Pi}(x=1) \leq maxB(x=1) \tag{60}$$

Therefore, $\overline{I} > \underline{I}$ follows from (57), (58), (59), and (60).

Let's consider $I \in (\underline{I}, \overline{I})$. Suppose the engagement partner plays A with probability $x \in (0,1)$.

The EQR reports against the engagement partner if and only if

$$\beta_1 W(\phi(x) - \phi'(x)) \geq 0$$

, where $\phi(x)$ and $\phi'(x)$ is given by (54) and (55) respectively.

For the mixed strategy equilibrium to hold, the engagement partner must be indifferent between playing A and NA. The issuer should also be indifferent between putting pressure B_2 and not putting pressure. That is, we must have

$$B_2 = max_B(x)$$

Thus, in equilibrium the following condition has to hold

$$\Pi(x) = maxB(x)$$

$$\Rightarrow \gamma\alpha_1 W(\phi(x) - \phi'(x)) + (1-\gamma)[\alpha_1 W\phi(x) + \alpha_2 X p_h - v_f] = \frac{Ip}{p + (1-p)\left[p_h\epsilon + (1-p_h)\{\epsilon + (1-\epsilon)x\}\right]} \tag{61}$$

Notice that, $\phi(.)$ is continuous and monotonically increasing in x. Also, $\phi'(.)$ is continuous and monotonically decreasing in x. Therefore, the left hand side of equation (61) is monotonically increasing in x and right hand side of equation (61) is decreasing in x with the following conditions being satisfied. First, $\Pi(0) < maxB(0)$ and $\Pi(1) > maxB(1)$.

Therefore, for a given $I \in (\underline{I}, \overline{I})$, there exists a unique $x^* \in (0,1)$ such that equation (61) is satisfied.

Hence, the proof. $\square$

Using similar arguments as in Proposition 2, we can show that the equilibrium described in Proposition 9 is unique.

A.3.2 Disclosure regime:

Under the disclosure regime, along with the history of outcomes, the investor also observes if the engagement partner is reassigned to the issuer. In case of a conflict, if the partner plays A and the EQR fails to detect it, then the relevant history to the investor is (g, B, nf) under the disclosure regime. Suppose that, in equilibrium, the probability that the F partner announces g when he actually got the signal b is $x \in [0,1]$.

Then,

$$Pr(R|b,B) = \phi_d(x) = \frac{p_h}{p_h + (1-p_h)(1-x)} \tag{62}$$

and

$$Pr(R|g,B) = \phi'_d(x) = \frac{\epsilon p_h}{\epsilon p_h + (1-p_h)(\epsilon + (1-\epsilon)x\gamma)} \tag{63}$$

Under the NA- equilibrium, $\phi_d = 1$ and for all $x \in [0,1]$, $\phi'(x) = \phi'_d(x)$. Given the belief update functions, the engagement partner's incentives to play NA is given by the function $\Pi_d(x)$.

$$\Pi_d(x) = \delta\left[\gamma\alpha_1 W(\phi_d(x) - \phi'_d(x)) + (1-\gamma)[\alpha_1 W\phi_d(x) + \alpha_2 X p_h - v_f]\right]$$

Optimal investment under the disclosure regime:

For all possible histories, the investor's optimal investment rule (following report g) in the second period is given by the following table. In the table S stands for the same partner assigned to the issuer in the second period, while D stands for a different partner being assigned to the issuer.

History	i^*_d in NA-Equilibrium	i^*_d in Mixed Strategy Equilibrium	i^*_d in A-Equilibrium
g,G,S	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$
b,G,S	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	0	0
g,B,S	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[\phi'_d(x)\epsilon+(1-\phi'_d(x))]}$	$\frac{pI}{p+(1-p)[\phi'_d(1)\epsilon+(1-\phi'_d(1))]}$
b,B,S	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[\phi_d(x)\epsilon+(1-\phi_d(x))]}$	$\frac{pI}{p+(1-p)\epsilon}$
g,G,D	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$
b,G,D	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$
g,B,D	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$
b,B,D	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$

Proposition 10: *Given $p_h \in (0,1)$ and $c = 0$, there exist $\underline{I}_d > 0$ and $\overline{I}_d > \underline{I}_d$ such that the following strategy profile constitutes an equilibrium.*

At $t = 2$, the EQR always reports C. In case of a conflict, $B_2 = 0$ and the assigned partner plays A if his type is F. The investor invests i^*_d if the audit report is g and does not invest otherwise.

At $t = 1$, in case of a conflict,

a) If $I \leq \underline{I}_d$, the issuer puts pressure $B_1 = 0$. The engagement partner plays NA. The EQR reports NC if and only if the engagement partner plays A. The investor invests $\frac{Ip}{p+(1-p)\epsilon}$ if the audit report is g and does not invest if the report is b.

b) For each $I \in (\underline{I}_d, \overline{I}_d)$, there exists $x_d^* \in (0,1)$ such that the issuer puts pressure $B_1 = \frac{Ip}{p+(1-p)\left[p_h\epsilon+(1-p_h)\{\epsilon+(1-\epsilon)x_d^*\}\right.}$ The engagement partner plays A with probability x_d^*. The EQR reports NC if and only if the engagement partner plays A. The investor invests $\frac{Ip}{p+(1-p)\left[p_h\epsilon+(1-p_h)\{\epsilon+(1-\epsilon)x_d^*\}\right]}$ if the audit report is g and does not invest if the report is b.

c) If $I \geq \overline{I}_d$, the issuer puts pressure $B_1 = \delta\left[\gamma\alpha_1 W(1-\phi'(1)) + (1-\gamma)[\alpha_1 W + \alpha_2 X p_h - v_f]\right]$. The engagement partner plays A if his type is F. The EQR reports NC if and only if the engagement partner plays A. The investor invests $\frac{Ip}{p+(1-p)[p_h\epsilon+(1-p_h)(\epsilon+(1-\epsilon)\gamma]}$ if the audit report is g and does not invest if the report is b.

Proof of Proposition 10: Let's prove by backward induction. Following the same argument as in Proposition 1, the issuer will choose $B_2 = 0$ and the partner will acquiesce.

Now let's consider the behavior at $t = 1$.

The NA-Equilibrium: First, consider the reporting decision of the EQR. The EQR reports against the engagement partner if and only if

$$\beta_1 W(\phi_d(x) - \phi_d'(x)) \geq 0$$

In equilibrium, if the engagement partners plays NA with probability 1, $\phi_d = \phi_d' = p_h$. That is, the EQR is indifferent between reporting and not reporting against the engagement partner. Thus reporting against the engagement partner is weakly optimal for the EQR.

Next, consider the incentives of the engagement partner to play NA. The engagement partner's incentives to play NA is given by

$$\Pi_d(x) = \gamma\alpha_1 W(\phi_d(x) - \phi_d'(x)) + (1-\gamma)[\alpha_1 W\phi_d(x) + \alpha_2 X p_h - v_f]$$

Under the $NA-$equilibrium we have,

$$\Pi_d(0) = \gamma\alpha_1 W(p_h - p_h) + (1-\gamma)[\alpha_1 W p_h + \alpha_2 X p_h - v_f]$$

$$= (1-\gamma)[\alpha_1 W p_h + \alpha_2 X p_h - v_f]$$

Now let's consider the issuer's incentives to pressure the engagement partner. If the engagement partner plays A and reports g in a conflict situation, the payoff of the issuer is $\frac{pI}{p+(1-p)\epsilon}$. On the other hand, if the partner plays NA and reports b, the investor does not invest in the project, in which event the payoff of the issuer is 0. So the maximum B the manager puts on the partner is:

$$max_B = \frac{pI}{p+(1-p)\epsilon}$$

For the NA-equilibrium to hold we need:

$$\begin{aligned} & max_B < (1-\gamma)(\beta_1 W p_h + \beta_2 X p_h - v_f) \\ \Leftrightarrow & \\ & \frac{pI}{p+(1-p)\epsilon} < (1-\gamma)(\beta_1 W p_h + \beta_2 X p_h - v_f) \end{aligned} \tag{64}$$

Now max_B is a linear monotonically increasing function of I and $v_f \leq 0$. Therefore, there exists $\underline{I}_d$ such that $max_B < (1-\gamma)(\beta_1 W p_h + \beta_2 X p_h - v_f)$ for all $p_h \in (0,1)$. Specifically, $\underline{I}_d = \frac{p+(1-p)\epsilon}{p} \mathit{\Pi}_d(0)$.

The A-Equilibrium: Under the A-equilibrium, the EQR reports against the engagement partner if and only if

$$\beta_1 W(\phi_d(1) - \phi_d'(1)) \geq 0$$

, where $\phi_d(1) = 1 > p_h$ and $\phi_d'(1) = \frac{\epsilon p_h}{\epsilon p_h + (1-p_h)(\epsilon + (1-\epsilon)\gamma)} < p_h$. Therefore, it is a strictly dominant strategy for the EQR to report against the engagement partner.

The engagement partner's incentives to play NA is given by

$$\mathit{\Pi}_d(x) = \gamma \alpha_1 W(\phi_d(x) - \phi_d'(x)) + (1-\gamma)[\alpha_1 W \phi_d(x) + \alpha_2 X p_h - v_f]$$

Under the $A-$equilibrium we have,

$$\Pi_d(1) = \gamma\alpha_1 W(1-\phi'(1)) + (1-\gamma)[\alpha_1 W + \alpha_2 X p_h - v_f]$$

Now, if the engagement partner plays A and reports g in a conflict situation, the payoff of the issuer is $\frac{pI}{p+(1-p)(p_h\epsilon+(1-p_h))}$. On the other hand, if the partner plays NA and reports b, the investor does not invest in the project, in which event the payoff of the issuer is 0.

So the maximum B the issuer puts on the partner is:

$$max_B = \frac{pI}{p+(1-p)(p_h\epsilon+(1-p_h))}$$

Now max_B is a linear monotonically increasing function of I. Therefore, there exists $\overline{I}_d$ such that if $I > \overline{I}_d$ then $max_B > \gamma\alpha_1 W(\phi(1)-\phi'(1)) + (1-\gamma)[\alpha_1 W\phi(1) + \alpha_2 X p_h - v_f]$ for all $p_h \in (0,1)$. Specifically, $\overline{I}_d = \frac{p+(1-p)(p_h\epsilon+(1-p_h))}{p}\Pi_d(1)$.

Mixed Strategy Equilibrium: We first show that $\overline{I} > \underline{I}$.

Notice that for a given I,

$$maxB(x=0) > maxB(x=1) \tag{65}$$

Also, note that,

$$\Pi_d(x=0) < \Pi_d(x=1). \tag{66}$$

For the NA- equilibrium to hold we must have,

$$\Pi_d(x=0) \geq maxB(x=0) \tag{67}$$

On the other hand, for the A- equilibrium to hold we must have,

$$\Pi_d(x=1) \leq maxB(x=1) \tag{68}$$

Therefore, $\overline{I} > \underline{I}$ follows from (65), (66), (67), and (68).

Let's consider $I \in (\underline{I}, \overline{I})$. Suppose the engagement partner plays A with probability $x \in (0, 1)$.

The EQR reports against the engagement partner if and only if

$$\beta_1 W(\phi_d(x) - \phi'_d(x)) \geq 0$$

, where $\phi_d(x)$ and $\phi'_d(x)$ is given by (62)and (63) respectively.

For the mixed strategy equilibrium to hold, the engagement partner must be indifferent between playing A and NA. The issuer should also be indifferent between putting pressure B_2 and not putting pressure. That is, we must have

$$B_2 = maxB(x)$$

Thus, in equilibrium the following condition has to hold

$$\Pi_d(x) = maxB(x)$$

$$\Rightarrow \gamma\alpha_1 W(\phi_d(x) - \phi'_d(x)) + (1-\gamma)[\alpha_1 W\phi_d(x) + \alpha_2 X p_h - v_f] = \frac{Ip}{p + (1-p)\left[p_h\epsilon + (1-p_h)\{\epsilon + (1-\epsilon)x\}\right]} \tag{69}$$

Notice that, $\phi_d(.)$ is continuous and monotonically increasing in x. Also, $\phi'_d(.)$ is continuous and monotonically decreasing in x. Therefore, the left hand side of equation (69) is monotonically increasing in x and right hand side of equation (69) is decreasing in x with the following conditions being satisfied. First, $\Pi_d(0) < maxB(0)$ and $\Pi_d(1) > maxB(1)$.

Therefore, for a given $I \in (\underline{I}, \overline{I})$, there exists a unique $x_d^* \in (0, 1)$ such that equation (69) is satisfied.

Hence, the proof. □

Proposition 11: Given $p_h \in (0, 1)$ and $c = 0$, a)$\underline{I} = \underline{I}_d$ b)$\overline{I}_d > \overline{I}$ c)$x^* < x_d^*$

Proof of Proposition 11: a) From the proof of Proposition 1 and Proposition 3 we know that, $\underline{I} = \frac{p+(1-p)\epsilon}{p}\Pi(0)$ and $\underline{I}_d = \frac{p+(1-p)\epsilon}{p}\Pi_d(0)$.

Notice that, $\Pi(0) = (1-\gamma)[\alpha_1 W p_h + \alpha_2 X p_h - v_f] = \Pi_d(0)$.

b) From the proof of Proposition 1 and Proposition 3 we know that, $\overline{I} = \frac{p+(1-p)(p_h\epsilon+(1-p_h))}{p}\Pi(1)$ and $\overline{I}_d = \frac{p+(1-p)(p_h\epsilon+(1-p_h))}{p}\Pi_d(1)$.

Now,

$$\Pi_d(1) = \gamma\alpha_1 W(1-\phi'(1)) + (1-\gamma)[\alpha_1 W + \alpha_2 X p_h - v_f]$$

$$> \alpha_1 W(\phi(1)-\phi'(1)) + (1-\gamma)[\alpha_1 W\phi(1) + \alpha_2 X p_h - v_f] = \Pi(1)$$

c) We know that

$$\Pi(x) = \gamma\alpha_1 W(\phi(x)-\phi'(x)) + (1-\gamma)[\alpha_1 W\phi(x) + \alpha_2 X p_h - v_f]$$

and

$$\Pi_d(x) = \gamma\alpha_1 W(\phi_d(x)-\phi'(x)) + (1-\gamma)[\alpha_1 W\phi_d(x) + \alpha_2 X p_h - v_f]$$

Now, $\phi_d(x) = \frac{p_h}{p_h+(1-p_h)(1-x)} > \phi(x) = \frac{(1-\epsilon)p_h+p_h(1-\epsilon)x(1-\gamma)(1-p_h)}{(1-\epsilon)p_h+(1-p_h)[(1-\epsilon)(1-x)+(1-\epsilon)x(1-\gamma)]}$. Hence the proof.

Now consider an environment where the cost of reporting c is positive, and an amount $T \geq 0$ can be transferred to the monitor partner when he reports correctly against the engagement partner.

Proposition 12: Let, $T = max\{0,\, c - \beta_1\delta W(\phi(x)-\phi'(x))\}$ and $T_d = max\{0,\, c - \beta_1\delta W(p_h - \phi'(x))\}$. Then $T_d \geq T$ for all x, and $T_d > T$ for some x.

Proof of Proposition 12:

Follows directly from comparing (18) and (19).

Following the same argument as in Section 3, the above proposition implies that, if the cost of reporting is positive and transfers $T = 0$, then in equilibrium, monitoring may be optimal under the non-disclosure regime but not optimal under the disclosure regime. That is, there exist parameter values p_h, c and a range of I such that in equilibrium, there is monitoring under the non-disclosure and no monitoring under disclosure. This in turn leads to the probability of playing A under the non-disclosure regime being strictly lower than that under the disclosure regime.