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

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Abstract

Unlike audit reports in some countries, an audit report issued in the USA does not include the name of the engagement partner. In December 2015, a new rule was passed (pending approval from the SEC) which requires that the name of the engagement partner be disclosed for audit reports issued after January 2017. We study the incentives of auditors under the two regimes - with and without disclosure of partner names. We argue that if the level of monitoring within the audit firm remains the same under the two regimes, then audit quality will be higher under the disclosure regime. However, an unintended consequence of the new rule is that partners (an engagement quality reviewer or a successor partner) have lower incentives to monitor a fellow partner under the disclosure regime. As a result, under some parametric conditions, audit quality may be lower if partner names are disclosed. This problem can be addressed through a realignment of incentives inside the accounting firm, external monitoring from regulators or through increased audit fees.

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, PCAOB (Public Company Accounting Oversight Board) approved a new rule which mandates that the lead engagement partner's name be disclosed for audit reports issued after January 2017. In this paper, we analyse 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.

Before we describe our analyses and results, a bit of history and context is in order. An external auditor checks the financial statements of a legal entity or organization in accordance with specific laws or rules. It is independent of the entity being audited. Users of the entity's financial information, such as investors, government agencies, and the general public rely on the external 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 engage in client audits. 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. The Public Company Accounting Oversight Board's (PCAOB) 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 partner attributes affecting 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. Additionally, if an audit partner's name is revealed in the audit report, it could generate incentives for the partner to build his reputation via high quality audit reports. This may lead to an improvement in audit quality.

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 intial proposed rule was strongly opposed by the major accounting firms (Deloitte, Ernst & Young, KPMG, Pricewaterhouse-Coopers) 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). Upon approval by the Security and Exchange Commission (SEC), the new rule for engagement partner disclosure will apply to auditor's reports issued on or after Jan. 31, 2017, or three months after SEC approval of the final rules, whichever is later. This however has not put an end to the long debate on whether and how partner identification can actually lead to higher quality of audits.

Motivated by this debate we study partner incentives under the two regimes, one under which the name of the audit partner is disclosed and one under which it is not. We analyze the incentives of engagement partners to produce high quality audits as well as the incentives of partners to monitor fellow partners under the two regimes. We propose a simple model of the audit partnership structure designed to capture some of the relational aspects that play crucial roles in motivating auditors to produce high quality audits. The model leads us to a potential unintended consequence of disclosure of partner names, points to different levers that can be pulled to mitigate the negative impact of the unintended consequence, and shows how an existing auditing standard (Auditing Standard No. 7) may become extremely important should the partner identification rule be passed.

Setting aside liability concerns, we focus on reputation incentives of partners. The fundamental question we aim to answer is, how do reputation incentives change as a partnership moves from an environment of collective reputation to an environment of individual reputation. We show that when there are similar incentives to monitor in the two regimes, then an engagement partner has higher incentives to produce higher quality of audits under the disclosure regime. However, incentives to monitor a fellow partner may decline under the disclosure regime, which in turn can lead to lower audit quality. We argue that this potential unintended consequence can be mitigated through a realignment of incentives inside the accounting firm, external monitoring from regulators or through increased audit fees.

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. 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 (1996) does not discuss the issue of collective reputation versus individual reputation, which is the focus of our analysis. In a related study, Lee (2014) looks at individual partner's incentives and the partnership's choice of internal quality control. Her paper does not incorporate the effects of partner-client interaction in exploring partner incentives to produce high quality audits. Her analysis shows conditions under which the audit partnerships choice of internal quality control would be lower when clients imperfectly observe the individual partners performance. Lee's research also highlights the importance of external monitoring by regulators in the context of partner identification. Our research on the other hand focuses on internal realignment of incentives and audit fees as tools to achieve higher quality of audits under partner identification.

Our model includes three types of bilateral relationships unique to the audit market, that could affect audit quality. The first is the partner-issuer manager 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 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 issuer firm's financial statements. An audit report on the issuer firm's financial statement is the product of an interaction between the issuer-manager and the auditor. Investors' interests and the manager's interests 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 the audit opinion is disclosed to the investors. This helps mitigate information risk for the investors. While the investors value accurate information, the 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[1] 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 accounting firm and the expected sanctions.

Note that a partner's payoff depends on the existing profit sharing rule and the collective[2] reputation of the accounting 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. 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 very high), 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 by preventing an incorrect audit report from being issued in the current period. We address this problem in Section 5 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 in turn can keep the policy from achieving the benefits to its full potential.

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[1] 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.

[2] An accounting 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 accounting firm's reputation depends on the behavior of each of its partners.

In Section 7 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 judgments 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.

The remainder of the paper is organized as follows. Section 2 presents the model with partner rotation. Section 3 presents the analysis of equilibria in our benchmark model for the disclosure and non-disclosure regime. Section 4 analyzes the model with external transfer under the two regimes. Section 5 analyzes monitoring incentives of the engagement quality reviewer. Section 6 provides a brief discussion on an alternative model of multitasking, which yields results with similar policy implications as the earlier sections. Section 7 discusses potential solutions to the monitoring problem. In Section 8 we discuss the testable predictions generated by our theoretical exposition. Section 9 presents the summary and possible extensions of the model.

2 Model

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

2.1 Players

There is an audit firm with three partners: one managing partner (who acts as the leadership 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. This simplification allows us to concentrate our study on the reputation and monitoring incentives faced by the engagement partners in the face of pressure from the issuer to issue favorable reports. All players maximize discounted sum of payoffs

where the discount factor is denoted by δ.

2.2 Projects and State of the World

In each period the issuer's period cash flows 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's firm and the partner who does not work with the issuer is engaged in another project that we name Project 2. We assume that this project 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 lets us focus on the issuer's project. As is clear, we will primarily be interested in the issuer's project and 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.

2.3 Partner Assignment and Rotation

The issuer has to hire the audit firm in every period[3]. 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. The assumption of random assignment of partners captures the idea of collective reputation in a simple way. Under the no-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. 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.

2.4 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 the issuer. This is to be interpreted as a file documenting the partner's assessment of the issuer that the partner can show to the issuer. The audit partner has to announce a signal to all players, in particular 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 and then makes his investment decision.

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[3]This may be required by law as observed in the U.S.A.

2.5 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 B 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 cost[4] 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. If the cost is interpreted as a negative transfer (from issuer to partner), then this would be the value of the transfer. We assume that the cost of putting pressure $B \in \mathbb{R}^+$ is B[5]. The disutility of the partner from the pressure is assumed to be $-B$.

2.6 Partner Actions

We assume that the partner reports the signal g whenever he gets g. This is because there is no threat from the issuer to change this announcement as the signal g indicates a high probability of the state being G[6]. If the partner gets the signal b, he may be pressured into announcing g by the issuer who fears losing that periods investment by the investor. If there is a conflict at time t, then the partner has two action choices. He can either acquiesce (A) (by choosing to announce signal g instead of b and avoid the cost B) to the issuer or not acquiesce (NA) (announce true signal b). If there is no conflict at $t = 1$, then the partner's action set is simply $\{NA\}$, i.e., he reports his signal (g) truthfully.

2.7 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. We assume that the issuer's manager gets to know of the partner's type when he meets him[7].

2.8 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 matches the audit

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[4] Alternatively, a transfer. This cost can be interpreted as anything from making life hard for the partner to getting him fired in the future.

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

[6] One might wonder if the partner can threaten the issuer with announcing the wrong signal if a transfer is not made to the partner. Suppose the issuer refuses to pay, then the partner would be unwilling to announce the wrong signal for fear of being found out which could lead to him getting fired. Moreover, the incentives of ensuring future transfers (in the second period) will not be active as any threat made in period two will not be credible as it is the last period. A similar assumption has been made by others including McLennan and Park (2003).

[7] This is a simplifying assumption. This can be justified by assuming that professionally interacting with an engagement partner and credibly threatening him with pressure makes his type apparent.

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). There is a fixed cost c in reporting a partner's action. 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 does not report (i.e. 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.

2.9 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 and the managing partner decides whether to fire (f) a partner or to not fire (nf). The managing partner is behavioral and fires 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.

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 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'_t 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 $I \times Pr(G|s, R_t)$[8] 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 and the investment by the investor in Period t is denoted by $i(t)$.

2.10 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

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

other signal with probability ν. We will present all results assuming $\nu \to 0$. Thus, our equilibrium concept will be trembling hand perfect equilibrium. We make this assumption as a refinement to deal with beliefs off the equilibrium path (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 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. Since these events will not occur in equilibrium, these assumptions are not a big concern.

2.11   Time line

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 true signal (g). After observing the signal, the investor makes 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 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[9]. 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 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.

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

2.12 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 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 the 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:

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\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}
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$\alpha_1, \alpha_2, \beta_1, \beta_2 \in (0, 1)$ 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[10].

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 $\pi_t : [0, 1] \times E_t \times \{g, b\} \rightarrow [0, 1]$ 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.

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[10]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 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.

3 Analysis

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 look at two particular pure strategy equilibria, namely an Acquiesce equilibrium (A-equilibrium) and a Not-Acquiesce equilibrium (NA-equilibrium) and a mixed strategy equilibrium. In an Acquiesce equilibrium, the F partner plays A in case of a conflict in period 1[11]. In a Not-Acquiesce equilibrium the F partner plays NA in case of a conflict in period 1. We then analyze the necessary conditions for the existence of these two equilibria.

We begin our analysis by characterizing equilibria for our benchmark case, where the cost of reporting c is zero and the issuer is myopic, i.e., the issuer cares only about current period payoffs. 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.

Since 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 and the issuer. 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 the assigned partner plays A irrespective of the 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. Therefore the issuer puts pressure $B_2 = 0$. 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. We assume that the partner plays A when he is indifferent. 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 end 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

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

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. The following Lemma shows that with cost of reporting being zero, it is a weakly dominant strategy for the successor partner to report against the predecessor in a reporting equilibrium.

Lemma 2: *Under both regimes, it is weakly dominant strategy for the new successor partner to report NC if the predecessor partner played A in the first period if the following conditions hold:*
  a) $c = 0$.
  b) The investor believes that the successor partners reports NC.
  Proof: See Appendix.

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 F-type partner plays A with a positive probability. Following a g signal and B outcome, if the investor does not observe that a partner has been fired, he believes that the first period partner has been reassigned with positive probability. In this event, the probability that the assigned partner is of type R is strictly less than the first period reputation p_h. The successor partner can restore 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, otherwise the successor partner would have reported against him. Thus reputation of the predecessor partner remains p_h if he is not fired. Since, cost of reporting is zero, it is a weakly dominant strategy for the successor partner to report under the disclosure regime.

3.1   Benchmark case without disclosure

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 the belief that the assigned partner is of type R. The investor forms his belief about the assigned partner's type given the history containing the first period audit report, the true cash-flow and whether a partner has been fired. 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, 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, reputation of the partner remains unchanged following all histories but (b, B, nf, g) and (g, B, nf, g), that is, histories containing f leaves reputation untarnished.

Let x be the probability of playing A in the first period. 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, g) 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, g). Also 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). 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

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

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

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

$$R_2h(x) = \gamma\phi(x) + (1 - \gamma)p_h \tag{2}$$

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

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 partner in the first period plays A with probability x.

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

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-flows do 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 $B_2 = 0$ 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 $-B_1$ 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 also 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:

$$max_B = \text{payoff for issuer if partner plays } A \ - \ \text{payoff for issuer if partner plays } NA \qquad (3)$$

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 in case of a conflict. 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 probability that the partner assigned to the issuer is of type R following the history (g, B, nf) and $R_2'(x)$ is the probability 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 $t = 2$, the successor partner reports NC 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 $B_1 = \gamma\alpha_1 W[R_2 h(1) - R_2(1)] + (1-\gamma)[\beta_1 W R_2 h(1) + \beta_2 X R_2 h'(1) - v_f]$, where, $R_2 h(1) = \gamma + (1-\gamma)p_h$, $R_2(1) = \hat{\gamma}\frac{p_h\epsilon}{p_h\epsilon+(1-p_h)} + (1-\hat{\gamma})p_h$, $\hat{\gamma} = \frac{\gamma}{\gamma+(1-\gamma)\epsilon}$, and $R_2 h'(1) = \gamma p_h + (1-\gamma)$. 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. Notice that, the NA-equilibrium does not exist if the cost of reporting c is positive, leading to no reporting. 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. First, $c = 0$ along with v_f being a large negative number, emphasizes that monitoring is necessary for the existence of the NA-equilibrium. That is, the fear of sanctions (internal exclusion) plays a crucial role in disciplining the partners. In the absence of monitoring, 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. Moreover, with monitoring, the higher the reputation of the audit firm, the lower are

the incentives of the partner to misreport. Second, 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. As it has been already mentioned, I can be generalized to any short-term incentive for the issuer-manager to obtain a favorable audit report.

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 reporting correctly and gain from it in period 2 via β_1 and β_2. As $\gamma \to 1$, the engagement partner has high incentives to misreport. 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.

3.2 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. The incentives of both the monitor partner and the engagement partner do not change under disclosure. Therefore, we know that the the only equilibria possible if $I < \underline{I}$ is NA-equilibrium with reporting. We will now describe equilibria for other levels of I.

We have assumed that when a partner is indifferent between reporting and not-reporting, he will report, which rules out any equilibria without reporting[12]. This is because a successor partner would have to receive strictly higher payoff from not reporting to do so. Since there is no cost

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[12]That is, an equilibrium in which a new successor partner does not report on the previous partner even he is aware that the previous partner had acquiesced. Obviously, there is no reporting if the same partner continues to be with the client.

of reporting, a new successor partner can get a higher payoff by not reporting only if reporting actually reduces the reputation of the other partner. However, since the other partner had played A in period 1, his reputation cannot be more than p_h and reporting will lead to a new partner with reputation p_h. Therefore, there are no equilibria without reporting. This leaves us with 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 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^* if the report is g and does not invest if the report is b.

At t=1, in case of a conflict, $B_1 = \delta \left[\gamma \alpha_1 W(1 - R_2') + (1 - \gamma)(\beta_1 W p_h + \beta_2 X - v_f) \right]$ 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 have mixed strategy equilibria 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.

Proposition 4: *Given $p_h \in (0, 1)$ and $c = 0$, for $\alpha_2, \beta_1 \to 0$ $\overline{I_d} > \overline{I}$ and $x_d^* < x^*$.*
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. For a compensation function that depends heavily on one's own engagement, the partner has incentive to build reputation such that it reflects on the audit fees for the same engagement. 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. 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 equilibrium under both regimes.

4 External transfer

As we saw in the previous section, it may not be possible to have the F type partner disclose the correct signals when cost of reporting is positive. Therefore, it would be interesting to analyze environments in which this cost may be compensated by internal or external rewards for reporting. Additionally, reporting is important because it gives a higher payoff to the managing partner of the audit firm (by improving the reputation of the partner who is not with the issuer) and leads to a better quality of audit in project 2. In this section 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. Our analysis will reveal when an inside player (like the managing partner) will be willing to make this transfer. We look at conditions under which the A and NA-equilibrium hold in this set-up. Proposition 5 shows that the transfer needs to be at-least as much as the cost of reporting for the NA-equilibrium to hold in either regime (disclosure and non-disclosure).

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 regimes.*
    Proof: See Appendix.

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. Therefore, to ensure correct reporting of signals in period 1, a necessary condition is that the reward for reporting comes from outside. Proposition 6 points out that in the disclosure regime, the reward necessary to induce reporting in the A-equilibrium is at least c.

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.

The next proposition highlights a key difference between the disclosure and the non-disclosure environment. Since the reputation (and therefore the payoff) of the assigned partner depends upon the collective reputation of the audit firm, we require a lower transfer to induce reporting under the non-disclosure regime. If the predecessor partner had played A in the previous period in an A-equilibrium, then under the non-disclosure regime, the investor puts positive probability on the same partner being assigned to the issuer again in period 2 if he does not observe any firing. 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 in the second period can change the investor's belief by informing

the investor about his removal. This ensures that the relevant reputation in the second period is p_h, which gives the successor partner a higher payoff in that period.

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

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

then there exists $\overline{I} > 0$ such that for all $I \geq \overline{I}$ the A-equilibrium with monitoring exists under the no-disclosure-regime. Where $a = \alpha_1 W \gamma(1-\epsilon), b = \gamma c(1-\epsilon), d = c\epsilon$.

Proof: See Appendix.

Corollary 1: If the following is **not** satisfied by T, then there is no A-equilibrium with reporting under the non-disclosure regime.

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

Note that if the A-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 in the disclosure regime. Therefore, to ensure monitoring in an A-equilibrium, a necessary condition is that the reward for monitoring comes from some other source. On the other hand, if the A-equilibrium is expected to be played and it is the non-disclosure regime, then it may be incentive compatible for the managing partner to transfer a small positive amount to ensure reporting. Proposition 7 along with Proposition 6 states 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. The following proposition describes such an equilibrium. We compare the incentives of the engagement partner under such scenarios and show that, lower incentives to monitor may lead to lower quality of audits under the disclosure regime.

Proposition 8: There exists p_h, c and a range of I such that in equilibrium, there is monitoring under the nond-isclosure regime and no monitoring under disclosure. The probability of playing A under the non-disclosure regime is strictly lower than that under the disclosure regime.

Proof: See Appendix.

5 Engagement quality reviewer (EQR)

Our previous analysis explores the incentives of an engagement partner and the monitor partner who may be rotated in to an engagement at the end of the first period. We now shift our attention to a 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 judgments 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, the EQR can detect whether the audit evidence supports the audit opinion before the audit report is issued. In this section, we show that even if monitoring is done via an EQR (instead of partner rotation) we will still obtain the result that the EQR will be less inclined to report under the disclosure regime. To analyze the incentives of an EQR as a monitor partner, we incorporate the following changes in the time-line of the model presented in Section 2.

5.1 Time line

The sequence of events is as follows: At the beginning of the first period, two partners are drawn from the distribution Γ. The random assignment rule decides which partner is assigned to the issuer. The other partner serves on project 2 and as an EQR for the issuer's project. The audit firm receives the audit fee for the first period and partners get their payoffs. Next, the engagement partner receives a signal $s \in \{g, b\}$ depending on the true cash flow. The engagement partner communicates this private signal to the issuer truthfully. If there is a conflict, then the issuer can commit to a cost he would impose on the partner if the partner chose to announce b instead of g. The engagement partner chooses to acquiesce or not and produces the audit report. With probability $1 - \gamma$ the engagement quality reviewer learns about the signals and actions of 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. In case of a report, there is an investigation which always reveals the true signals and the managing partner fires the erring partner. If a partner is fired, he is replaced by a partner drawn from the distribution Γ. If the engagement partner is fired then the new partner becomes the engagement partner in period 2, whereas, if the EQR is fired, then the new partner takes charge of project 2 and the EQR position in period 2. In case of an investigation, the true signal of the engagement partner is reported to the investor, else the engagement partner's original report is announced. The investor makes investment decisions. True cash flow for the first period is observed by all players.

In period 2, 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 sequence of events is therefore as follows: The assigned partner receives signal $s \in \{g, b\}$ depending on the true cash flow. The engagement partner communicates the private realization of his signal to the issuer truthfully. The issuer decides how much pressure to put on the partner if there is a conflict and commits to it. The engagement partner chooses to acquiesce or not. The payoffs for the managing partner, engagement partners and the issuer are realized at this stage. The true cash flow for the second period is observed by all players. The game ends.

5.2 Analysis

We assume the same payoff-structure as described in Section 2. The partner assigned to project 2 does not get any additional payoffs for his role as an EQR. Notice that, 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 with reputation p_h, who is assigned to the issuer. In this section, we also assume that the investor does not observe if an engagement partner is fired under the non-disclosure regime. Moreover, the investor cannot distinguish between a report with the signal b which is issued when the engagement partner played NA and a report with the same signal which is issued when the EQR discovered that the engagement partner had played A and thereafter a corrected report was issued.

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

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

In case of a conflict, payoff from playing NA:

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

where $\phi = P(R|b, B)$ and $\phi' = P(R|g, B)$ i.e. the reputation of the engagement partner assigned to the issuer at period 2. For the rest of our analysis we set the discount factor $\delta = 1$.

5.2.1 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,

$$Pr(R|b, B) = \phi(x) = \frac{p_h[1 + (1-p_h)x(1-\gamma)]}{p_h + (1-p_h)(x(1-\gamma) + (1-x))} \tag{4}$$

and

$$Pr(R|g, B) = \phi'(x) = \frac{\epsilon p_h}{\epsilon p_h + (1-p_h)(\epsilon + (1-\epsilon)x\gamma)} \tag{5}$$

$\phi(x)$ 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. The history can be observed if the assigned partner is of type R and makes a mistake in the first period, or the assigned partner is of type F and makes a mistake, or the assigned partner is of type F who plays A and the EQR fails to report. $\phi'(x) < p_h$ for all $x \in (0, 1)$. Given the belief update functions, the engagement partner's incentives to play NA is given by

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

Now let us look at the EQR's incentives to report. The EQR's payoff depends on the reputation of the engagement partner in the following way.

$$EQR\ payoff = \beta_1(WR_t) + \beta_2(Xp_h),$$

where R_t is the reputation of the engagement partner. 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

$$\beta_1 W(\phi(x) - \phi'(x)) \geq c \tag{6}$$

For all possible histories, the investor's optimal investment rule (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	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[\phi(x)\epsilon+(1-\phi(x))]}$	$\frac{pI}{p+(1-p)[\phi(1)\epsilon+(1-\phi(1))]}$

Notice that the investor invests more if a b signal is followed by a B outcome, compared to the amount of investment when a g signal is followed by a B outcome. The following proposition characterizes equilibrium behavior of the engagement partner under monitoring for a given reputation p_h.

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 $I \leq \underline{I}$, 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 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 $B_1 = \delta[\gamma(\alpha_1 WR'_2 h + \alpha_2 XR''_2 h) + (1 - \gamma)(\beta_1 WR'_2 h + \beta_2 XR''_2 h) - \gamma(\alpha_1 WR'_2 + \alpha_2 XR''_2) - (1 - \gamma)v_f]$ 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. $R'_2 = \frac{\epsilon p_h}{\epsilon p_h+(1-p_h)(\gamma+(1-\gamma)\epsilon)}$, $R''_2 = p_h$, $R'_2 h = \gamma.1 + (1-\gamma)p_h$, and $R''_2 h = \gamma p_h + (1-\gamma).1$.

Proof: See Appendix.

Proposition 9 states that the engagement partner plays NA for $I \leq \underline{I}$, plays NA with positive probability when for a middle range of $I \in (\underline{I}, \overline{I})$ and plays A whenever $I \geq \overline{I}$. Using similar arguments as in Proposition 2, we can show that the equilibrium described in Proposition 9 is unique.

5.2.2 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. The history can occur with probability $p_h\epsilon + (1-p_h)\gamma$. 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,

$$Pr(R|b, B) = \phi_d(x) = \frac{p_h}{p_h + (1-p_h)(1-x)} \tag{7}$$

and

$$Pr(R|g, B) = \phi'_d(x) = \frac{\epsilon p_h}{\epsilon p_h + (1-p_h)(\epsilon + (1-\epsilon)x\gamma)} \tag{8}$$

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

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

Looking at the EQR's incentives to report, his payoff depends on the reputation of the engagement partner in the following way:

$$EQR\,payoff = \beta_1(WR_t) + \beta_2(Xp_h)$$

where R_t is the reputation of the engagement partner. 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 $R_t = \phi'$. Thus the EQR will report if and only if

$$\beta_1 W(p_h - \phi') \geq c \tag{9}$$

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	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$	$\frac{pI}{p+(1-p)[p_h\epsilon+(1-p_h)]}$

The following proposition characterizes equilibrium behavior of the engagement partner under monitoring for a given reputation 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 $B_1 = \frac{Ip}{p+(1-p)[p_h\epsilon+(1-p_h)\{\epsilon+(1-\epsilon)x_d^*\}]}$. 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 $\frac{Ip}{p+(1-p)[p_h\epsilon+(1-p_h)\{\epsilon+(1-\epsilon)x_d^*\}]}$ 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 $B_1 = \gamma\alpha_1 W(1 - \phi'(1)) + (1 - \gamma)[\alpha_1 W + \alpha_2 X p_h - v_f]$. 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: See Appendix.

Proposition 10 states that, under the disclosure regime, the NA-equilibrium holds for low values of I while the A- equilibrium holds for high values of I. The partner plays A with positive probability x_d^* in the middle range.

The next proposition helps us compare the equilibria under the disclosure and the no-disclosure regimes. We show that the lower threshold of I below which the $NA-$equilibrium holds under the two regimes are the same. The argument is the same as in the earlier section. The incentives for the

engagement partners do not depend on the disclosure regime, if the engagement partner is already playing NA in the conflict situation. We show that the upper threshold of I above which the $A-$equilibrium must hold is higher under the disclosure regime, that is, the $A-$equilibrium holds for a larger range of parameter values under the no-disclosure regime. Moreover, for the middle range of parameter values the partner plays A with a higher probability under the non-disclosure regime.

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:

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. $\square$

Proposition 11 reinstates our first result that the engagement partner has lower incentives to acquiesce under the disclosure regime when the cost of monitoring is zero.

In order to compare the incentives of the EQR under the two regimes, let's look at equation (6) and equation (9). Equation (6) summarizes the EQR's incentives to report under the non-disclosure regime while equation (9) summarizes the incentives of the EQR under the disclosure regime. Note that the EQR's incentives to report depend on his share of revenue from the issuer and how reputation is revised following a report. A report against the engagement partner is followed by a corrected audit report and removal of the engagement partner under both regimes. However, the removal of the partner is not observed by the investor under the non-disclosure regime and the correct audit report leads to a reputation revision in favor of the audit firm. On the other hand, the removal of the partner is observed by the investor under the disclosure regime, as the investor observes that a new partner has replaced the earlier partner. Thus the investor correctly assigns reputation p_h to the partner and reputation is not revised upwards under the disclosure

regime. Hence, the gains from restored reputation are smaller under the disclosure regime, which leads to lower incentives for the EQR to report on the engagement partner.

6 Multitasking and collective reputation

In this section we present a discussion on an alternative mechanism or modeling choice that gives rise to similar implications as discussed in the earlier sections. This discussion on the alternative mechanism serves the purpose of a robustness check for the results and policy implications borne by the earlier model.

Consider an environment where there are two engagement partners and a managing partner in an audit firm. Each engagement partner is assigned 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. Each partner is endowed with a fixed amount of time to be allocated between his own engagement and the EQR job. Audit quality of an engagement depends on how much time an engagement partner spends on the engagement and how much time the EQR spends to look for errors committed by the engagement partner. Suppose the quality of an audit is increasing in the time a partner spends on the 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, collective reputation of the firm in the second period depends on audit quality of the two engagements as observed in period 1. In period 2, the partners are randomly assigned to the two issuers and revenue from each engagement depends on the collective reputation of the firm. Under the disclosure regime, revenue from an engagement depends on the reputation of the individual engagement partner. Notice that under both regimes, the optimal time allocation for a partner depends on the 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 own engagement and the EQR job such that $x + y \leq T$. Given the other partner's time allocation (x, y), a partner allocates his own time such that the marginal gain from spending time in his own engagement equals the marginal gains from spending additional time in the EQR job.

When a partner's name is disclosed and investors do not learn about the reviewer from the quality of audits, then individual reputation of an auditor becomes more sensitive to his actions on his own engagement. Therefore, for a given sharing rule and time allocation (x, y) by the other partner, the marginal gains from spending additional time on one's own engagement is higher under the disclosure regime. Under the disclosure regime, consider the following kind of equilibrium. The engagement partner puts in a lot of time on the engagement and very little time on the EQR job. This is 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, an engagement partner's reputation is strongly linked to the outcome of the engagement. Since it is the disclosure regime, this has a big effect on his own payoffs. 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. Moreover, by spending more time as EQR one only improves the quality of the audits for the other partner's engagement, which has a direct impact on the other partner's reputation. On the other hand, spending more time on own engagement can directly impact one's own reputation under the partner identification regime. Finally, the probability that a mistake in one's own engagement is detected and fixed before an audit report is issued is lowered under partner identification. This drives down the benefits a partner obtains from a "second pair of eyes" reviewing the engagement. Therefore, in order to maintain high quality of audits a partner must spend more time on his own engagement.

A similar equilibrium exists in the non-disclosure regime. However, the incentives to monitor are stronger there since the payoff of engagement partners is dependent on the collective reputation. This effect is captured in our model by the monitoring behavior of the other partner.

Notice that the above model works in an environment where the EQR acts as a "second pair of eyes" having the same expertise as the engagement partner. In this model we assume away the role of an EQR as a whistle-blower. The model also assumes that audit quality solely depends on the amount of time spent in an engagement and does not consider issues like aggressive or conservative reporting, which has been the focus of the earlier model.

7   Potential solutions to the monitoring problem

It is clear from our analysis that disclosure of the engagement partner's identity may reduce 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 three other solutions. These can be implemented through increased audit fees or through a realignment of incentives within the audit firm.

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 client'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.

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 a setup the risk neutral principal acts as a sink. However, in our model, the managing partner can not act as the sink. 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. In this event, the minimum penalty that needs to imposed on the engagement partner must be higher under the disclosure regime. This type of incentive realignment has the following properties. First, it balances budget. Second, the managing partner or the principal of the audit firm has no incentive not to implement the sharing rule. Third, when monitoring comes from the engagement quality reviewer, the penalty imposed on the engagement partner is also a function of his own reputation, which further improves reputation incentives for engagement partners under disclosure.

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. In 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 are 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. With the disclosure of the partners name, by moving towards a modified eat-what-you-kill compensation can generate additional monitoring incentives as well as can reduce incentives to acquiesce for the partners.

8   Empirical Implications

The main results of our theoretical exposition lead to the following testable predictions. First, higher reputation building incentives will make the engagement partners produce higher quality audits under the disclosure regime. Second, the incentive of partners to monitor fellow partners will decline under the disclosure regime. Third, an increase in audit fees under the disclosure regime will lead to higher quality of audits.

Our model dictates that the incentives of the engagement partner to acquiesce to the client declines under partner identification, everything else remaining constant. However, our model also predicts that monitoring incentives for partners will decline, which in turn will affect incentives of the engagement partner in an adverse way. Thus, we may observe lower quality of audits after the implementation of a partner identification policy. In the data, we should also observe lower monitoring by partners after this policy is implemented. However, this prediction only holds under the assumption that there is no realignment of incentives within the audit firm and unchanged audit fees. In fact, if we observe an increase in audit fees post implementation, we expect to see an increase in audit quality as the fee-hike generates additional incentives for partners which offsets the monitoring problem.

In order to test for whether higher reputation building incentives makes the engagement partners strive for higher quality audits under the disclosure regime, we can analyze the ratio of engagement partner hours to total audit hours. After controlling for partner level characteristics (such as partner's experience and industry specialization) and engagement level characteristics (such as size, complexity, issuer level risk factors) one can estimate the impact of the new regime with a post implementation analysis. In a post implementation analysis, if a significant difference in the ratio is observed before and after implementation of the policy, then that will provide supportive evidence for the impact of reputation building incentives when there is disclosure of partner names. In a recent study, Carcello and Li (2013) document improvement in audit quality after the partners were

mandated to sign the audit report in the UK. They also document a significant increase in audit fees after the signature requirement was mandated. The authors argue that the quality improvement can be due to increased audit effort or due to more conservative reporting. They observed improvement in audit quality in their tests of abnormal accruals, meeting an earnings benchmark, and issuing a qualified audit opinion, which is consistent with the conservative reporting argument. The rise in audit fees may be due to a number of factors including increased exposure to risk and higher audit effort by the engagement team. This observation along with the serving higher audit quality provides supportive evidence for the third hypothesis generated by our theory. As we have discussed before, an increase in audit fees after partner identification is implemented can improve audit quality by improving incentives for both the engagement partner and the engagement quality reviewer.

However, to what extent monitoring by fellow partners affects or can affect audit quality is an empirical question. The Auditing Standard No. 7 requires an engagement quality reviewer "to perform an evaluation of the significant judgments 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." The standard clearly relies on the assumption that monitoring is important in ensuring quality of audits. Also the accounting firms rely on EQR as their primary quality control mechanism outside of the audit team to detect and correct any errors or biases in judgments and decisions made by the engagement team (Asare and McDaniel 1996). To evaluate the impact of an EQR on audit quality we need a panel of both engagement level data and data at the partner level. Standard measures of audit quality can be used as the dependent variable. As proxy for EQR effort, or EQR accountability, the ratio of EQR hours and engagement partner hours can be used. Other variables on partner characteristics and issuer level characteristics should be used as control variables. This exercise however has its own limitations. The exercise can enlighten us about the current impact of EQR hours/ Engagement partner hours on audit quality, but does not inform us about the maximum potential impact of an EQR on audit quality. To test the second hypothesis, the EQR hour to engagement partner hour ratio can be used as a proxy for monitoring incentives of engagement quality reviewers. After controlling for engagement level characteristics and partner level characteristics one should look for significant difference in the ratio before and after the implementation of partner identification.

9   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 proposal made by PCAOB 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 are high, 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 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 denounce a partner who misreports to improve the collective (and therefore his own) reputation.

Our analysis bears some important policy implications for both regulators and audit firms. In order to ensure higher quality of audits and for the desired benefits of partner identification to realize, either there should be realignment of incentives within the audit firms in the form of transfers to the monitor partner, or there should be additional external threat of punishment through regulation or litigation. An interesting extension of the model would be to 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.

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Appendix

Proof of Lemma 2: 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.

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 observed by the investor is (g, B, f). Thus payoff from reporting is:

$$\alpha_1 W p_h + \alpha_2 X p_h - c \tag{10}$$

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, the history observed by the investor is (g, B, nf). Payoff from not reporting:

$$\alpha_1 W R_2 + \alpha_2 X R_2' \tag{11}$$

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. 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

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

Thus 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 $p_h - \frac{\epsilon p_h}{(1 - p_h)[\epsilon + (1 - \epsilon)x]} \geq 0$ holds with strict equality for $x = 0$. Therefore with $c = 0$,

the successor partner has strictly positive incentive to report if $x > 0$ and it is weakly dominant for the successor partner to report NC when $x = 0$.

Under 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, assigns p_h to be the probability that the partner with the issuer is of the rigid type. 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, the assignment of the same partner to Project 2 is associated with the belief that the wrong signal resulted from a mistake and not from action A. Thus, $R_2'(x) = p_h$. This implies that it is always a weakly dominant strategy for the successor partner to report under the disclosure regime. $\square$

Bechmark case with no disclosure

Proof of Proposition 1: 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 $t = 1$.

The engagement partner's payoff from playing A is

$$Payoff\ A\ =\ \alpha_1 W p_h + \alpha_2 X p_h$$

$$+\delta[\gamma\left[\alpha_1 W\{\hat{\gamma}\phi'(x) + (1-\hat{\gamma})p_h\} + \alpha_2 X\{\hat{\gamma}p_h + (1-\hat{\gamma})\phi'(x)\right] + (1-\gamma)v_f] \tag{12}$$

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

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

$$+\delta(1-\gamma)\left[\beta_1 W\{\gamma\phi(x) + (1-\gamma)p_h\} + \beta_2 X\{\gamma p_h + (1-\gamma)\phi(x)\}\right] \tag{13}$$

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

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

$$+\delta(1-\gamma)\left[\beta_1 W\{\gamma\phi(x) + (1-\gamma)p_h\} + \beta_2 X\{\hat{\gamma}\phi(x) + (1-\hat{\gamma})p_h\} - v_f\right] \tag{14}$$

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

The NA-Equilibrium: Notice that under the NA-equilibrium, $\phi(0) = \phi'(0) = p_h$

Thus the partner plays NA if

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

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.

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

(15)

$$Payoff\ NA\ = 0$$

(16)

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:

$$max_B < \delta(1 - \gamma)(\beta_1 W p_h + \beta_2 X p_h - v_f)$$

$$\Leftrightarrow$$

$$\frac{pI}{p + (1 - p)\epsilon} < \delta(1 - \gamma)(\beta_1 W p_h + \beta_2 X p_h - v_f)$$

(17)

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

The A-Equilibrium: Now consider period 1 incentives for the engagement partner now. In case of a conflict if the assigned partner chooses to play A, his payoff is given by equation (12). If the partner plays NA, his payoff is given by equation (13).

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

(18)

$$Payoff\ NA\ =\ \alpha_1 W p_h + \alpha_2 X p_h - B_1 + \delta[\gamma(\alpha_1 W R_2' h + \alpha_2 X R_2'' h) + (1 - \gamma)(\beta_1 W R_2' h + \beta_2 X R_2'' h)]$$

(19)

$where\ R_2'h = \gamma.1 + (1 - \gamma)p_h$
$R_2''h = \gamma p_h + (1 - \gamma).1$

For the A-equilibrium to hold, we need

$Payoff\ A\ > Payoff\ NA$

$\Leftrightarrow$

$B_1 > \delta[\gamma(\alpha_1 WR'_2h + \alpha_2 XR''_2h) + (1-\gamma)(\beta_1 WR'_2h + \beta_2 XR''_2h) - \gamma(\alpha_1 WR'_2 + \alpha_2 XR''_2) - (1-\gamma)v_f]$

$\Leftrightarrow B_1 > \delta[\gamma(\alpha_1 W(\gamma.1 + (1-\gamma)p_h) + \alpha_2 X(\gamma p_h + (1-\gamma).1)) + (1-\gamma)(\beta_1 W(\gamma.1 + (1-\gamma)p_h) + \beta_2 X(\gamma p_h + (1-\gamma).1))$

$- \gamma(\alpha_1 W(\dfrac{\epsilon p_h}{\epsilon p_h + (1-p_h)(\gamma + (1-\gamma)\epsilon)}) + \alpha_2 X p_h) - (1-\gamma)v_f]$

$\hspace{12cm}(20)$

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.

$$Payoff\ A\ = \frac{pI}{p + (1-p)(p_h\epsilon + (1-p_h))} \hspace{4cm}(21)$$

$$Payoff\ NA\ = 0$$

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 if $I > \overline{I}$ then $max_B > \delta[\gamma(\alpha_1 WR'_2h + \alpha_2 XR''_2h) + (1-\gamma)(\beta_1 WR'_2h + \beta_2 XR''_2h) - \gamma(\alpha_1 WR'_2 + \alpha_2 XR''_2) - (1-\gamma)v_f]$ for all $p_h \in (0,1)$.

Mixed Strategy Equilibrium: Let x be the probability that the F partner plays A in case of a conflict. Notice that the maximum pressure the issuer is willing to put on the partner is given by $maxB = I \times Pr(G|g,x)$. From the A-equilibrium and the NA- equilibrium we know that,

$$maxB\ |_{NA-eq,I\in[0,\underline{I}]} = I \times Pr(G|g,x=0),$$

and

$$maxB\ |_{A-eq,I\in[\overline{I},\infty)} = I \times Pr(G|g,x=1)$$

Claim: $\underline{I} < \overline{I}$.

To be written.

Now fix $I_0 \in (\underline{I}, \overline{I})$. 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. We look for mixed strategy equilibrium with reporting.

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

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

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

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, $\Pi(x)$ 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 $\Pi(x)$ should be equal to $maxB(x)$.

Now $maxB(x)$is given by

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

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

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

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

and

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

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

$$\Pi(x=0) < maxB(x=0)$$

and

$$\Pi(x=1) > maxB(x=1)$$

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

Hence the existence of mixed strategy equilibrium under collective reputation and monitoring. $\square$

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

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

For $x \in (0,1)$ to be an equilibrium we must have $\Pi(x) = maxB(x)$ and for $x = 1$ to be an equilibrium we must have $\Pi(x) \le maxB(x)$. Combining the two we have,

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

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

$$\leq \frac{Ip}{p + (1-p)\left[p_h\epsilon + (1-p_h)\{\epsilon + (1-\epsilon)x\}\right]} \tag{22}$$

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

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

From the NA- equilibrium we know that, for all $I \leq \underline{I}$, $\Pi(x = 0) \geq maxB(x = 0)$. Thus (22) can never hold.

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

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

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

$$\geq \frac{Ip}{p + (1-p)\left[p_h\epsilon + (1-p_h)\{\epsilon + (1-\epsilon)x\}\right]} \tag{23}$$

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

From the $NA-$equilibrium we know that, for all $I \geq \overline{I}$, $\Pi(x = 1) \leq maxB(x = 1)$. Since, $\Pi(x)$ is an increasing function and $maxB(x)$ is decreasing (23) can never hold.

Moreover, uniqueness of the mixed strategy equilibrium follows from strict monotonicity of the functions $\Pi(x)$ and $maxB(x)$.

Hence the proof. $\square$

Benchmark case with disclosure

This is the benchmark case, $c = 0$ and issuer is myopic.

A-equilibrium with reporting   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^* 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:

$$\alpha_1 W p_h + \alpha_2 X p_h - c \tag{24}$$

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

$$\alpha_1 W p_h + \alpha_2 X R_2'' \tag{25}$$

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, by our assumption, he will report. Consider period 1 incentives: in case of a conflict if the assigned partner chooses to play A, his payoff is given by,

$$Payoff\ A\ =\ \alpha_1 W p_h + \alpha_2 X p_h + \delta[\gamma(\alpha_1 W R_2' + \alpha_2 X p_h) + (1-\gamma)v_f] \tag{26}$$

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,

$$Payoff\ NA\ =\ \alpha_1 W p_h + \alpha_2 X p_h - B_1 + \delta[\gamma(\alpha_1 W + \alpha_2 X p_h) + (1-\gamma)(\beta_1 W p_h + \beta_2 X)] \tag{27}$$

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

This holds if:

$$B_1 > \delta \left[\gamma \alpha_1 W(1 - R_2') + (1 - \gamma)\left(\beta_1 W p_h + \beta_2 X - v_f\right) \right] \tag{28}$$

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. $\square$

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

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

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

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

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

Put $\alpha_2 \approx 0$ and $\beta_1 \approx 0$.

Therefore re writing 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 $x \in (0,1]$.

Hence the proof. $\square$

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:

$$\alpha_1 W p_h + \alpha_2 X p_h - c + T \tag{29}$$

If he does not report the payoff is:

$$\alpha_1 W p_h + \alpha_2 X p_h \tag{30}$$

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:

$$\alpha_1 W p_h + \alpha_2 X p_h - c \tag{31}$$

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

$$\alpha_1 W p_h + \alpha_2 X R_2'' \tag{32}$$

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 follows from the proof of Proposition 3. $\square$

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:

$$\alpha_1 W p_h + \alpha_2 X p_h - c + T \tag{33}$$

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

$$\alpha_1 W R_2 + \alpha_2 X R_2' \tag{34}$$

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:

$$
\begin{aligned}
&\alpha_1 W \left(p_h - \frac{\epsilon p_h}{\epsilon p_h + (1 - p_h)(\gamma + (1-\gamma)\epsilon)} \right) + \alpha_2 X (p_h - p_h) > c \\
&\Leftrightarrow \alpha_1 W \left(p_h - \frac{\epsilon p_h}{\epsilon p_h + (1 - p_h)(\gamma + (1-\gamma)\epsilon)} \right) > c - T \\
&\Leftrightarrow \alpha_1 W p_h [(1 - p_h)(1 - \epsilon)\gamma] > c(\epsilon + [(1 - p_h)(1 - \epsilon)\gamma]) \\
&\Leftrightarrow -\alpha_1 W \gamma (1 - \epsilon) {p_h}^2 + (\alpha_1 W \gamma (1 - \epsilon) + \gamma c(1 - \epsilon)) p_h - \gamma c(1 - \epsilon) - c\epsilon > 0 \tag{35}
\end{aligned}
$$

Note that the above is a quadratic inequation which does not hold when p_h is too small or too large. Also note that $p_h - \frac{\epsilon p_h}{\epsilon p_h + (1-p_h)(\gamma + (1-\gamma)\epsilon)} > 0$.

We can write (35) as :

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

The discriminant for the above is positive if:

$$
\begin{aligned}
&D > 0 \\
&\Leftrightarrow (a + b)^2 - 4a(b + d) \\
&\Leftrightarrow a - b - 2\sqrt{ad} > 0 \\
&\alpha_1 W \gamma (1 - \epsilon) - \gamma c(1 - \epsilon) - 2\sqrt{\alpha_1 W \gamma (1 - \epsilon) c \epsilon} > 0 \tag{36}
\end{aligned}
$$

We can solve (12) 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 proposition 1. $\square$

Proof of Proposition 8: We first show that for c above a certain threshold, the successor partner has no incentives to monitor under the disclosure regime.

Consider the reporting decision in period 2 now:

$$Payoff\ from\ reporting\ =\ \alpha_1 W p_h + \alpha_2 X p_h - c$$
$$Payoff\ from\ not\ reporting\ =\ \alpha_1 W p_h + \alpha_2 X p'$$

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

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

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

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

Thus for $c > \underline{c} = \frac{\alpha_2 X p_h (1-\epsilon)(1-p_h)}{p_h \epsilon + (1-p_h)}$ the successor partner has no incentives to monitor under the disclosure regime.

In period 1, for all $x > 0$, we must have :

$Payoff\ from\ A\ =\ Payoff\ from\ NA$
$\Leftrightarrow \alpha_1 W p_h + \alpha_2 X p_h + \delta[\gamma(\alpha_1 W p' + \alpha_2 X p_h) + (1-\gamma)(\beta_1 W p_h + \beta_2 X p')] = \alpha_1 W p_h + \alpha_2 X p_h - B+$
$\delta[\gamma(\alpha_1 W \frac{p_h}{p_h + (1-p_h)(1-x)} + \alpha_2 X p_h) + (1-\gamma)(\beta_1 W p_h + \beta_2 X \frac{p_h}{p_h + (1-p_h)(1-x)})]$
$\Leftrightarrow B = \delta[\gamma\alpha_1 W + (1-\gamma)\beta_2 X][\frac{p_h}{p_h + (1-p_h)(1-x)} - p']$
$\Leftrightarrow B = \delta[\gamma\alpha_1 W + (1-\gamma)\beta_2 X][\frac{p_h}{p_h + (1-p_h)(1-x)} - \frac{p_h \epsilon}{p_h \epsilon + (1-p_h)(\epsilon + (1-\epsilon)x)}]$ (37)

Now we have the following expression for maximum pressure:

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

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For any $x > 0$, 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.

Thus, we have the following results:

i) Let $c > \underline{c}$ and $I > \overline{I_{dnm}} = \frac{p+(1-p)(p_h\epsilon+1-p_h)}{p}\delta(\gamma\alpha_1 W + (1-\gamma)\beta_2 X)\frac{1-p_h}{p_h\epsilon+(1-p_h)}$. Then the equilibrium in the disclosure regime is that of an A-equilibrium without reporting.

ii) Let $c > \underline{c}$ but $I < \overline{I_d}$. There exists a unique $x(I)$ such that $max_B = \delta[\gamma\alpha_1 W + (1-\gamma)\beta_2 X][\frac{p_h}{p_h+(1-p_h)(1-x)} - \frac{p_h\epsilon}{p_h\epsilon+(1-p_h)(\epsilon+(1-\epsilon)x)}]$.

iii) Let $c > \frac{\alpha_2 X p_h(1-\epsilon)(1-p_h)}{p_h\epsilon+(1-p_h)}$ but $I < \overline{I_{dnm}}$. Then the unique equilibrium in the disclosure regime is a mixed strategy equilibrium where the flexible partner plays the following strategy in a conflict situation in period 1: $P(g/b) = x(I)$.

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

Consider the reporting decision in period 2 now:

$$Payoff\ from\ reporting\ =\ \alpha_1 W p_h + \alpha_2 X p_h - c$$
$$Payoff\ from\ not\ reporting\ = \alpha_1 W R(x) + \alpha_2 X R'(x)$$

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:

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

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

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

Fix $c = \underline{c}$. So we need the following condition:

$$\frac{\alpha_2 X p_h(1-\epsilon)(1-p_h)}{p_h\epsilon + (1-p_h)} \leq \frac{\alpha_1 W p_h(1-p_h)(1-\epsilon)x\gamma}{\epsilon p_h + (1-p_h)(\epsilon + (1-\epsilon)x\gamma)} \tag{38}$$

$$\Leftrightarrow \frac{\alpha_2 X}{\epsilon p_h + (1-p_h)} \leq \frac{\alpha_1 W x\gamma}{\epsilon p_h + (1-p_h)(\epsilon + (1-\epsilon)x\gamma)} \tag{39}$$

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

$$\frac{\alpha_2 X}{\epsilon p_h + (1-p_h)} \leq \frac{\alpha_1 W\gamma}{\epsilon p_h + (1-p_h)(\epsilon + (1-\epsilon)\gamma)} \tag{40}$$

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In period 1, for all $x > 0$, we must have :

$$Payoff \ from \ A \ = \ Payoff \ from \ NA$$

$$\Leftrightarrow \alpha_1 W p_h + \alpha_2 X p_h + \delta[\gamma(\alpha_1 W R(x) + \alpha_2 X R'(x)) + (1-\gamma)(v_f)] = \alpha_1 W p_h + \alpha_2 X p_h - B +$$

$$\delta[\gamma(\alpha_1 W(\gamma \frac{p_h}{p_h + (1-p_h)(1-x)} + (1-\gamma)p_h) + \alpha_2 X((1-\gamma)\frac{p_h}{p_h + (1-p_h)(1-x)} + \gamma p_h) +$$

$$(1-\gamma)(\beta_1 W(\gamma \frac{p_h}{p_h + (1-p_h)(1-x)} + (1-\gamma)p_h) + \beta_2 X((1-\gamma)\frac{p_h}{p_h + (1-p_h)(1-x)} + \gamma p_h))]$$

$$\Leftrightarrow B = \delta[\gamma\alpha_1 W(R_h(x) - R(x)) + \gamma\alpha_2 X(R'_h(x) - R'(x)) + (1-\gamma)(\beta_1 W R_h(x) + \beta_2 X R'_h(x) - v_f)], \quad (41)$$

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 $x > 0$, 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.

Now B is increasing in x (because $R_h(x), R'_h(x)$ is increasing in x and $R(x), R'(x)$ are non-increasing in x). Also max_B is decreasing in x. Thus we have the following:

iv) If $I > \overline{I^R_{ND}}$, then there is an A-equilibrium with reporting in the non-disclosure regime. $\overline{I^R_{ND}}$ is given by:

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

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

v) If $I > max\{\overline{I_d}, \overline{I^R_{ND}}\}$, then there exists an A-equilibrium with reporting in the non-disclosure regime but the only equilibrium in the disclosure regime is 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.

Notice that, v_f being a large negative number, is a sufficient condition for RHS (41)>RHS (37).

Let us now go back to condition (39). The condition is not true for low x and also, RHS is monotonically increasing in x. If α_2 is small, we will find $\hat{x} \in (0,1)$ such that (39) holds with equality. From uniqueness of equilibrium under monitoring, we can find $\hat{I}$ such that under the non-disclosure regime and monitoring equilibrium, $x(\hat{I}) = \hat{x}$. Moreover, $\hat{I} > \underline{I}$, where $\underline{I}$ is threshold below which the NA- equilibrium holds under monitoring.

Hence, for $I \in [\hat{I}, \overline{I_{dnm}})$ incentive to play A is higher under disclosure if v_f is not small. $\square$

Engagement quality reviewer

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. We assume that the partner plays A when he is indifferent. This implies that 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

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

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 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

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

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:

$$max_B < (1 - \gamma)(\beta_1 W p_h + \beta_2 X p_h - v_f)$$

$$\Leftrightarrow$$

$$\frac{pI}{p + (1-p)\epsilon} < (1 - \gamma)(\beta_1 W p_h + \beta_2 X p_h - v_f) \tag{42}$$

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, $\underline{I} = \frac{p+(1-p)\epsilon}{p}\Pi(0)$.

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

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

Under the $A-$equilibrium we have,

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

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, $\overline{I} = \frac{p+(1-p)(p_h\epsilon+(1-p_h))}{p}\Pi(1)$.

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

Notice that for a given I,

$$maxB(x=0) > maxB(x=1) \tag{43}$$

Also note that,

$$\Pi(x=0) < \Pi(x=1). \tag{44}$$

For the NA- equilibrium to hold we must have,

$$\Pi(x=0) \geq maxB(x=0) \tag{45}$$

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

$$\Pi(x=1) \leq maxB(x=1) \tag{46}$$

Therefore, $\overline{I} > \underline{I}$ follows from (43), (44), (45), and (46).

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 (4) and (5) 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

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

$$\Rightarrow \gamma\alpha_1 W(\phi(x) - \phi'(x)) + (1-\gamma)[\alpha_1 W\phi(x) + \alpha_2 X p_h - v_f] = \frac{Ip}{p + (1-p)\left[p_h\epsilon + (1-p_h)\{\epsilon + (1-\epsilon)x\}\right]} \tag{47}$$

Notice that, $\phi(\textbf{.})$ is continuous and monotonically increasing in x. Also, $\phi'(\textbf{.})$ is continuous and monotonically decreasing in x. Therefore the left hand side of equation (47) is monotonically increasing in x and right hand side of equation (47) 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 (47) is satisfied.

Hence the proof. □

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:

$$max_B < (1 - \gamma)(\beta_1 W p_h + \beta_2 X p_h - v_f)$$

$$\Leftrightarrow$$

$$\frac{pI}{p + (1 - p)\epsilon} < (1 - \gamma)(\beta_1 W p_h + \beta_2 X p_h - v_f) \tag{48}$$

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, $\underline{I}_d = \frac{p+(1-p)\epsilon}{p} \Pi_d(0)$.

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

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

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,
$$maxB(x = 0) > maxB(x = 1) \tag{49}$$

Also note that,
$$\Pi_d(x = 0) < \Pi_d(x = 1). \tag{50}$$

For the NA- equilibrium to hold we must have,

$$\Pi_d(x = 0) \geq maxB(x = 0) \tag{51}$$

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

$$\Pi_d(x = 1) \leq maxB(x = 1) \tag{52}$$

Therefore, $\overline{I} > \underline{I}$ follows from (49), (50), (51), and (52).

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 (7)and (8) 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

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

$$\Rightarrow \gamma\alpha_1 W(\phi_d(x) - \phi_d'(x)) + (1-\gamma)[\alpha_1 W\phi_d(x) + \alpha_2 X p_h - v_f] = \frac{Ip}{p + (1-p)\left[p_h\epsilon + (1-p_h)\{\epsilon + (1-\epsilon)x\}\right]}$$
(53)

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 (53) is monotonically increasing in x and right hand side of equation (53) 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 (53) is satisfied.

Hence the proof. $\square$