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Organizational Higher Purpose, Employee Effort and Firm Financial Performance

By *Anjan V. Thakor*

Abstract: I use an optimal contracting framework to address mixed empirical evidence on the impact of organizational higher purpose pursuit on the firm's financial performance. Some empirical papers show that the authentic pursuit of a purpose that transcends the usual profit maximization goal leads to higher profits, which is theoretically puzzling since the pursuit of purpose often involves financial sacrifice (or else all firms would do it). Other papers show that the pursuit of purpose-driven initiatives can diminish firm profits. I develop a theoretical model in which there are firms that are purpose driven and those that are not, but all firms are observationally indistinguishable a priori. All employees are purpose-driven. Employees provide labor, motivated by optimal wage contracts designed by firms that provide capital. The model generates the following results: (1) Both the utility that employees attach to the pursuit of organizational higher purpose and the utility some firms attach to it lead to higher employee effort, but when the identities of firms are shrouded and the equilibrium is pooling in employee wages, the pure profit maximizers always do better financially. I also identify conditions under which purpose-driven firms do better financially than pure profit maximizers in a separating equilibrium. (2) When the equilibrium is separating in wages, purpose-driven firms pay higher wages than what they pay in a pooling equilibrium, but purpose-driven firms may pay higher or lower wages than pure profit maximizers in a separating equilibrium. (3) A separating equilibrium generates higher expected pecuniary output as well as a higher sum of pecuniary payoffs and purpose-linked utilities than a pooling equilibrium, but a sufficiently high social stigma associated with not being purpose-driven can induce firms to invest in shrouding their identities, generating inefficiencies. (4) Strengthening corporate governance designed to serve shareholders can lead to higher productive effort by purpose-driven employees.

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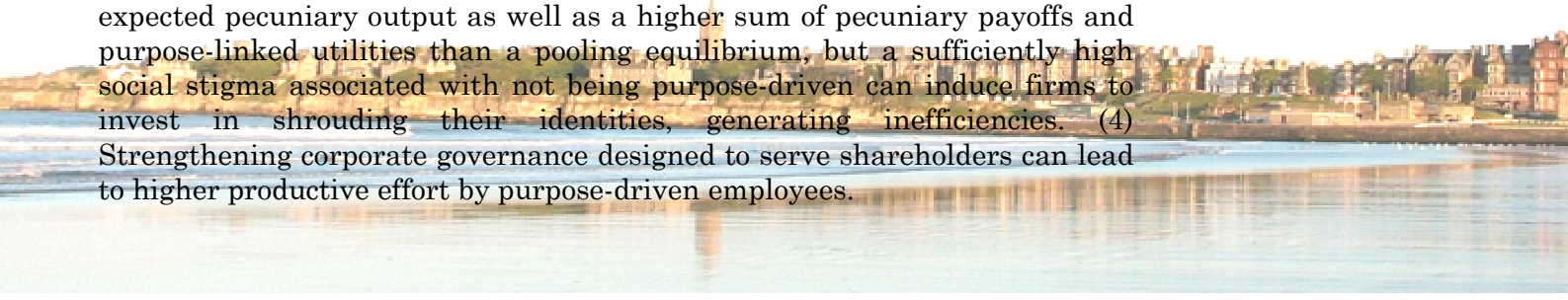

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ABSTRACT

I use an optimal contracting framework to address mixed empirical evidence on the impact of organizational higher purpose pursuit on the firm's financial performance. Some empirical papers show that the authentic pursuit of a purpose that transcends the usual profit maximization goal leads to higher profits, which is theoretically puzzling since the pursuit of purpose often involves financial sacrifice (or else all firms would do it). Other papers show that the pursuit of purpose-driven initiatives can diminish firm profits. I develop a theoretical model in which there are firms that are purpose driven and those that are not, but all firms are observationally indistinguishable *a priori.* All employees are purpose-driven. Employees provide labor, motivated by optimal wage contracts designed by firms that provide capital. The model generates the following results: (1) Both the utility that employees attach to the pursuit of organizational higher purpose and the utility some firms attach to it lead to higher employee effort, but when the identities of firms are shrouded and the equilibrium is pooling in employee wages, the pure profit maximizers always do better financially. I also identify conditions under which purpose-driven firms do better financially than pure profit maximizers in a separating equilibrium. (2) When the equilibrium is separating in wages, purpose-driven firms pay higher wages than what they pay in a pooling equilibrium, but purpose-driven firms may pay higher or lower wages than pure profit maximizers in a separating equilibrium. (3) A separating equilibrium generates higher expected pecuniary output as well as a higher sum of pecuniary payoffs and purpose-linked utilities than a pooling equilibrium, but a sufficiently high social stigma associated with not being purpose-driven can induce firms to invest in shrouding their identities, generating inefficiencies. (4) Strengthening corporate governance designed to serve shareholders can lead to higher productive effort by purpose-driven employees.

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ORGANIZATIONAL HIGHER PURPOSE, EMPLOYEE EFFORT AND FIRM FINANCIAL PERFORMANCE

I. INTRODUCTION

A. Motivation and Research Questions

The question of what the objective function of the firm should be is so basic that it cuts to the heart of why firms exist and what they do. Economics has analyzed this as part of the theory of the firm for quite some time (e.g. Milgrom and Roberts (1988)), but a new wrinkle that has been added recently in the form of "organizational higher purpose"[1]. In this paper, I develop a simple model of optimal contracting between firms and employees to address some puzzling issues related to this wrinkle and the implied broader view of the role of firms. This is motivated by the fact that organizational higher purpose (HP) — defined as a social contribution goal that transcends the usual business goals like profit maximization but is intrinsically a part of the business of the organization[2]—has been the subject of much recent research in a variety of fields from Economics and Finance (e.g. Henderson and Van den Steen (2015), List and Momeni (2017), Song et al (2023), and Thakor (2025)) to strategy and organizational behavior (e.g. Gartenberg , Prat and Serafeim (2019), Hollensbe et al (2014), and Zenger (2023)). It has also inspired policy debates on the role of corporations in society. The basic tenet of the proponents of corporate purpose is that corporations should be driven by more than just profit maximization and their purpose should also include a contribution to the greater social good.

To some, this sounds obvious. For example, echoes of it can be found in Boulding's (1969)

[1] In the classical view of firms and capital markets, one does not worry about these issues. For example, Aghion, Caroli and Garcia-Penalosa (1999) show that in perfect capital markets, capital is allocated efficiently to each investment until marginal return equals the equilibrium interest rate.

[2] For example, Quinn and Thakor (2018) describe the HP of DTE Energy to be "a force for good" in terms of contributing to the growth and prosperity of the communities that the company serves. This is a contribution goal, and it is different from its Mission statement, which is a level objective and stated as: "To be the best-operated energy company in North America". While over 90% of companies in the Fortune 500 have a Mission Statement, only about a third have a purpose statement. Quinn and Thakor (2019) report that most HP statements tend to be either employee-centric, customer-centric or explicitly prosocial.

address to the American Economic Association in which he called for Economics to be a "moral discipline" rather than being value-free. Bartlett and Ghoshal (1994) view organizational HP as "the statement of a company's moral response to its broadly defined responsibilities, not an amoral plan for exploiting commercial opportunity". Even the Business Roundtable issued the "Statement on the Purpose of a Corporation" in August 2019 in which it emphasized the role of corporate contributions beyond shareholder wealth maximization. Yet, others believe this is misguided capitalism—companies should be driven by a singular focus on profits, and in doing so they will serve the purpose for which they were created (e.g. Friedman (1970), Green and Roth (2020), Vermeulen (2019)[3], and Gulati (2022). To them, sacrificing profit to pursue some lofty social goal is not only a violation of the firm's fiduciary responsibility to its owners (shareholders) but also foolhardy since it weakens the firm financially and is eventually unsustainable. This puts purpose pursuit in direct conflict with the dominant view of corporate governance as a mechanism to better align corporate decision-making with the interests of the shareholders. The counterargument to this is that firms should embrace purpose without sacrificing profit, and the pursuit of purpose may actually enhance profits (e.g. Gartenberg, Prat and Serafeim (2019), and Quinn and Thakor (2018, 2019)). The channel through which such an effect presumably works is increased motivation and effort from employees who are positively influenced by the purpose. However, such arguments are theoretically puzzling for two reasons. One is that if the pursuit of purpose involves a tradeoff between purpose and profit, then how can a firm that focuses exclusively on profit do worse financially than one that is willing to sacrifice some profit to pursue purpose? The other is that if there is no tradeoff and purpose pursuit leads to higher profit, then why are all firms not doing it?

In such instances, it is natural to turn to the data and seek clarification on how purpose-driven firms do financially compared to pure profit maximizers. But the empirical evidence is also mixed. For example, Gartenberg, Prat and Serafeim (2019) used a sample of nearly 500,000 people across 429 firms involving 917 firm-year observations from 2006 to 2011 and found that an authentic HP communicated

[3] Vermeulen (2019) states: "In my view, organizations should not be shy about stating profit as its explicit and ultimate purpose. In fact, in addition to helping us earn a living, profit may be the best way to do good in the world".

with clarity positively impacts both operating financial performance and stock price. Quinn and Thakor (2018) provide interview-based evidence that authentic organizational HP causes employees to provide high effort.[4] Hedblom, Hickman and List (2019) provide evidence based on a field experiment that "…when a firm convinces its workers that their efforts make the world a better place (as opposed to purely making money)…", output increases and wage costs go down. Grant et al (2007) conducted a field experiment in which treatment-group call center employees, tasked with fund raising for a university, were treated by being connected to the HP of that activity.[5] They performed better in fund raising than (untreated) employees in a control group who had the same "fund-raising script" for calls. However, there is also empirical evidence indicating the negative financial consequences of pursuing a purpose-driven agenda. List and Momeni (2017) provide evidence based on a field experiment that firms' usage of corporate social responsibility increases shirking by their employees in their primary jobs. Gulati (2022) talks about the "do-gooders' dilemma" and points out the difficulty in running a business according to both profit and purpose motivations, giving the example of Danone, whose CEO, Emmanuel Faber, embraced a higher purpose and was ousted after the company's stock price and sales dropped sharply in 2020. Cassar and Meier (2018) document that while monetary incentives provided by firms elicit higher employee effort, instrumental charitable incentives backfire.

So, the research questions these findings raise are the following: First, under what circumstances do purpose-driven firms do better financially than firms that focus exclusively on profits, and when do they do worse? Second, how do the employee wage contracts of purpose-driven firms compare to those of pure profit maximizers, and how do employees respond with their effort choices? Third, what are the output efficiency implications of purpose pursuit by some firms and not by others? And finally, is

[4] The definition of authenticity is that the firm's leadership is not using purpose merely as a public relations tool but truthfully attaches positive utility to it. Therefore, the leader is willing to make decisions that may sacrifice economic output and personal wealth to pursue the purpose. When this happens, it is claimed that it generates positive emotions in employees. Fredrickson (2003) reviews the empirical literature on how positive emotions impact collective behavior. Lack of authenticity can actually backfire, especially when employees view the firm's intention as only to increase profits by using the advertised purpose solely as a motivational tool. See, for example, Cassar and Meier (2018).

[5] Specifically, they were given some time to interact with scholarship recipients, i.e., those who benefit from the fund-raising.

corporate governance that is focused exclusively on shareholder value inevitably in conflict with purpose pursuit?

B. Model and Main Results

I develop a model to address these questions. In this model, the firm's owner provides capital and hires an employee who provides private-costly effort to find a good project. The employee cares about the firm's stated purpose, but the owner may or may not care about it[6]. Owners' identities are shrouded, so the owners who care about purpose are observationally identical to those who only care about profits. Each firm designs an optimal incentive contract for its employee (manager) and makes a take-it-or-leave-it offer. The employee's job is to expend personally costly effort to find a good project, and the wage contract is designed to make the manager work hard, with employee effort being chosen after acceptance of the wage contract. The manager always finds a project, but it is not known to anyone whether it is good or bad, with the probability of the project being good increasing in the manager's effort. A bad project pays off nothing, whereas a good project has a positive payoff with a positive probability. However, after receiving the manager's funding request, the owner privately receives two signals. One is a perfect signal about the size of the good project's positive payoff, indicating whether the payoff will be high, medium or low. If it is high, the project has positive NPV, so the owner invests in it, regardless of the owner's type. If it is medium, the project has a negative NPV, so a profit-maximizing owner eschews investment, whereas an owner with a sufficiently high utility for the firm's higher purpose will invest in the project. If it is low, neither type invests in the project. It is assumed, consistent with the previous literature, that the employee and the owner experience their purpose-linked utilities only if the firm invests in the project and it succeeds.

This model produces the following main results. First, both the utility that employees attach to the

[6] The reason for introducing both types of owners is to enable a comparison of pure profit maximizer with firms whose owners care about purpose, with the latter group being modeled in many papers in which the firm is motivated by more than just profit (e.g. Besley and Ghatak (2005), and Oehmke and Opp (2020). The notion of having employees care about purpose follows Henderson and Van den Steen (2015) and builds on the idea that people care about having a positive identity and social reputation (which affects their social interactions outside the firm).

pursuit of organizational higher purpose and the utility some firms attach to it leads to higher employee effort than the case in which no agents attach utility to purpose-pursuit, but when owners' identities are shrouded and the equilibrium is pooling so employees cannot distinguish between purpose-driven firms and pure profit maximizers that both offer the same wage contracts, the pure profit maximizers always do better financially. However, when the equilibrium is separating, I identify conditions under which purpose-driven firms do better financially than pure profit maximizers. At a high level, purpose-driven firms do better financially when the owner's purpose-linked utility is not too high, because in this case the positive effect of the employee's higher effort choice more than offsets the negative effect of the owner investing in a negative NPV project. The result that the purpose-driven firm does worse financially than the pure profit maximizer when the equilibrium is pooling and may do better in some conditions when the equilibrium is separating provides a possible explanation for the mixed empirical evidence on this issue. Second, purpose-driven firms pay higher wages in a separating equilibrium than they would pay in a pooling equilibrium, although the wage they pay in this equilibrium may be lower or higher than the wage the pure profit maximizers pay. This result debunks two extreme notions---that purpose-driven firms will always pay more because they "care" more about their employees, or that they will usually pay less because they want to exploit their employees' purpose motivation (e.g. Bunderson and Thompson (2009)). I also identify conditions under which the pure profit maximizers prefer pooling over separation. Third, expected pecuniary output as well as the sum of expected pecuniary payoffs and purpose-linked utilities are higher in a separating equilibrium than in a pooling equilibrium in the same conditions in which the pure profit maximizers prefer to pool than to separate. However, because pure profit maximizers prefer pooling over separation, it creates a ''bandwagon effect'' wherein these firms may jump on the HP bandwagon by investing even more in shrouding their identities than the amount of social stigma cost avoided by doing so, which generates efficiency losses. Finally, I provide an example of a setting in which stronger corporate governance designed to better serve shareholders can *complement* the pursuit of purpose and induce purpose-driven employees in all firms to work harder in equilibrium. I view

this mainly as a finger exercise to highlight the forces that generate the possibility of no conflict between traditional shareholder value and purpose pursuit.

C. Related Literature and Organization of Paper

This paper is broadly related to the literature on how prosocial goals affect organizational outcomes, e.g., Delautre and Abriata (2018). The research on organizational HP is the most closely related; see, for example, Bartlett and Ghoshal (1994), Besley and Ghatak (2005), Bunderson and Thakor (2022), Chapman et al (2017), Gartenberg, Prat and Serafeim (2019), Gartenberg and Serafeim (2019), Grant et al (2007), Hedblom, Hickman and List (2019), Henderson and Van den Steen (2015), Hollensbe et al (2014), Quinn and Thakor (2018), Song et al (2023), and Thakor (2025). In contrast to these papers, I formally model organizational HP in an optimal contracting framework with purpose heterogeneity among firm owners and extract its implications for wages and the differential financial performances of pure profit maximizers and purpose-driven firms. This sheds light on some mixed empirical evidence and also generates new testable predictions.

The rest of the paper is organized as follows. Section II develops the model. Section III has the analysis. Section IV considers a model extension to examine the possible harmony between corporate governance and purpose pursuit. Section V concludes. All formal proofs are in the Appendix.

II THE MODEL

This section describes the model and then discusses its various features.

A. Projects and Risk Preferences:

All agents are risk neutral and the riskless rate is zero. There are three dates: t = 0,1, and 2. The "firm" consists of a principal (owner henceforth) who owns capital at t =0 to invest in a project that will become available at t=1. Each firm can invest $I > 0$ in its project. To find a project, the firm must hire an agent (a "manager" henceforth) at t = 0 by making a take-it-or-leave-it offer of a wage contract (Φ). There is a large supply of managers (more than the number of hiring firms), so each manager is willing to accept a wage offer that guarantees a reservation utility of zero. If the manager accepts the wage contract

at t=0, he then searches for a good project by expending privately costly search effort *e*, which is chosen from a compact set $[\underline{e}, \overline{e}\,]$ which is a subset of (0.1). The manager's effort choice is privately observed by the manager and has a cost of $K[e^2 - \underline{e}^2]/2$, where $K > 0$ is a constant.

There are two types of projects: good (G) and bad (B). The probability of a manager finding a project is independent of his effort—he always finds a project. But the probability he will find G is increasing in his effort. For simplicity, I assume that:

$$\Pr(\text{project found by manager is } G) = e \tag{1}$$

The B project pays off zero with probability (w.p.) one. G has a random payoff *x* that is distributed as follows:

$$\Pr(\tilde{x} > 0) = p \tag{2}$$

$$\Pr(\tilde{x} = 0) = 1 - p \tag{3}$$

$$\Pr(\tilde{x} = X_h | \tilde{x} > 0) = r_1 \in (0,1) \tag{4}$$

$$\Pr(\tilde{x} = X_m | \tilde{x} > 0) = r_2 \in (0,1) \tag{5}$$

$$\Pr(\tilde{x} = X_l | \tilde{x} > 0) = 1 - r_1 - r_2 \tag{6}$$

At t=1, the manager requests funding *I* from the firm to invest in the project. The approval/rejection decision is made by the firm's owner on the basis of two privately-received, non-contractible signals about project value received at t=1: θ_1 and θ_2. The distributions of these signals are as follows. For θ_1:

$$\Pr\left(\theta_1 = X_i \middle| \text{ project is G and } \tilde{x} > 0, \tilde{x} = X_i\right) = 1 \; \forall i \in \{h, m, l\} \tag{7}$$

That is, θ_1 tells the owner what the magnitude of the positive cash flow will be *conditional* on the project being G and having $\tilde{x} > 0$. Thus, θ_1 one completely resolves uncertainty about the magnitude of $x > 0$ for the owner, but not about whether the project is G or B, or whether G will succeed ($x > 0$) or fail ($x = 0$).

The signal θ_2 conveys noisy information to the owner about project quality and has the following distribution:

$$\Pr(\theta_2 = G|G) = 1 \quad (8)$$

$$\Pr(\theta_2 = B|B) = \gamma \in (0,1) \quad (9)$$

$$\Pr(\theta_2 = G|B) = 1 - \gamma \quad (10)$$

Recall that the prior belief is Pr (G) = *e*.[7] The project cash flow is publicly observed at t=2 and the manager is paid in accordance with the wage contract. The signals θ_1 and θ_2 are conditionally uncorrelated. These distributions imply that, conditional on the project being G with $\tilde{x} > 0$, θ_1 is infallible in predicting the magnitude of $\tilde{x}$, whereas θ_2 reveals project quality noisily in the sense that it identifies G infallibly but sometimes indicates a B project also as G. This means the owner can make type-2 errors when deciding to invest based on θ_2.

B. The Preference for an Organizational Higher Purpose

It is common knowledge at t=0 that the agent (manager) derives a utility of $H_A > 0$ from the firm's pursuit of a stated HP if the firm invests in G and the project succeeds (pays off $\tilde{x} > 0$). One way to interpret this is that it is an activity that the manager personally values so highly that he would pursue it on his own anyway. The firm's decision to invest in the purpose allows the manager to fulfill his desire to pursue that activity while doing his job, freeing up time for leisure that yields him utility H_A.

The firm's owner can be one of two types: "caring" (*C*) and uncaring (*U*). The prior probability is $f \in (0,1)$ that the owner is type *C*. The owner knows her own type privately, but others only share the common prior *f*. The type *C* owner gets a purpose-linked utility if $H_0 > 0$ if the firm invests in *G* and it pays off $\tilde{x} > 0$, and nothing otherwise. The type *U* owner derives no utility from the firm's HP.

So for both the owner and the manager, utility from the firm's HP pursuit is associated with project success. This is consistent with the notion that the pursuit of HP is intricately tied to the conduct of the firm's business and lack of business success can impede the effective pursuit of HP (e.g.

[7] Even though the owner cannot observe *e*, she can make a rational conjecture about *e* that will be validated in equilibrium by the manager's effort choice.

Gartenberg, Prat and Serafeim (2018), and Quinn and Thakor (2018, 2019)).

I also allow for the possibility that there may be a social stigma associated with being identified as an owner of a firm who does not care about the specific HP. We have seen numerous examples of this when organizational HP is linked to powerful social issues like climate change, racism, etc. Let $\Omega > 0$ represent this non-pecuniary "social stigma" cost. If this cost is large enough, it will generate a "bandwagon effect" wherein all owners will wish to jump on the HP bandwagon This allows me to compare shrouding of types to transparency (when firm types are known or there is separation via signaling and the stigma cost is absent) in terms of equilibrium consequences.

C. Timeline and Information Structure Recap: Who Knows What and When

At t=0, the manager receives a wage offer from the firm. If the manager accepts the offer, he chooses effort *e* which determines the probability *e* that the project he finds at t=1 is G; with probability 1- *e*, the project is B. The manager then requests funding *I* for the project at t=1. At that time, the owner receives two private signals, θ_1 and θ_2. The θ_1 signal perfectly reveals the magnitude of the G project's cash flow if the project were to succeed ($\tilde{x} > 0$). The signal θ_2 noisily reveals whether the project is G or B. Based on these signals, the owner either invests *I* in the project or not. The project cash flow is publicly observed at t = 2, and the manager is paid off in accordance with the wage contract.

D. The Wage Contract

The wage contract can be based only on what is observed and contractible at t = 2, which is the Project cash flow. Moreover, there is a lower bound of zero on what can be paid to the manager[8]. Thus,

$$\Phi = \begin{cases} w & \text{if } \tilde{x} > 0 \\ 0 & \text{otherwise} \end{cases} \tag{11}$$

Note that conditioning Φ on the actual magnitude of $\tilde{x}$ when $\tilde{x} > 0$ is meaningless because the design of Φ is to address the moral hazard problem of the manager underinvesting in *e* to find G, and the manager's effort affects only the likelihood of $\tilde{x} > 0$, not the actual size of $\tilde{x}$, conditional on $\tilde{x} > 0$.

[8] This precludes fines or other types of punishment on the manager.

Since the firm has no resources other than the project cash flow, the size of *x* constrains *w*.

E. Parametric Restrictions

$$\underline{e}pX_h > I \tag{12}$$

$$\underline{e}p[X_m + H_0] \geq I \tag{13}$$

$$pX_m < I \tag{14}$$

$$p[X_h + H_A] > 2I \tag{15}$$

$$p[X_l + H_0] < I \tag{16}$$

These are restrictions on the deep parameters of the model. (12) is a condition which ensures that both the type *U* and type *C* owners will invest in the project when $\theta_1 = X_h$, regardless of θ_2; note that $\underline{e}$ is the lowest possible value of the owner's posterior belief that the project is G. (13) is sufficient for the type *C* owner to invest in the project when $\theta_1 = X_m$, regardless of θ_2. (14) says that the type *U* owner will never invest when $\theta_1 = X_m$. As subsequent analysis will show, (15) is sufficient to ensure that both types of owners will wish to invest when $\theta_1 = X_h$ and the manager's wage has been paid out of the project cash flow. Finally, (16) just says that neither type of owner will invest in the project when $\theta_1 = X_l$.

These restrictions are meant to capture the idea that the type *C* owner may be willing to invest in the project when the typer *U* owner is not. This is a circumstance in which the investment is a bad idea from a purely financial standpoint, but the type *C* owner's purpose-linked utility impels her to invest.

III. ANALYSIS OF MODEL

In the first part of the analysis, I assume that the identities of the two types of firms are shrouded, so they appear observationally identical to agents applying for jobs at firms. Later I examine what the equilibrium looks like if these two types of firms are *a priori* distinguishable to all.

A. ***The Pooling Equilibrium***

Suppose the identities of the two types of firms are shrouded and the equilibrium is pooling in the wages offered by these firms[9]. The simplest way to justify such pooling is to assume that there is a large (non-pecuniary) "social stigma" cost $\Omega > 0$ associated with being identified as a type *U* owner. This generates the "bandwagon" effect mentioned earlier. In the pooling equilibrium: (i) the type *U* owner chooses the same wage contract chosen by the type *C* owner; and (ii) the type *C* owner chooses the optimal wage contract, knowing that the type *U* owner will mimic. Formally, this is a game in which the informed firm owner moves first with a wage contract and the uninformed agent (manager) responds by accepting or rejecting the wage contract and then choosing *e* if he accepts the contract.

For later use, I introduce some notation below.

$$\hat{X} \equiv r_1 X_h + r_2 X_m \tag{17}$$

$$\overline{r} \equiv r_1 + r_2 \tag{18}$$

$$R \equiv r_1 + f r_2 \tag{19}$$

I now establish a simple result.

Lemma 1: *Conditional on $\theta_2 = G$: (i) both the type U and type C owners invest in the project if $\theta_1 = X_h$ (ii) only the type C owner invests if $\theta_1 = X_m$; and (iii) neither type of owner invests if $\theta_1 = X_l$. Moreover, neither type of owner invests if $\theta_2 = B$.*

Next, I examine the setting of the optimal wage contract Φ and the manager's choice of *e* in response. Taking Φ as given, the manager chooses *e* to solve:

$$e \in \text{argmax}\left\{e[p\{r_1[w + H_A] + r_2 f[w + H_A]\}] - \frac{K\left[e^2 - \underline{e}^2\right]}{2}\right\} \tag{20}$$

[9] Later in this section, I show that such a pooling outcome can emerge as a Bayesian Perfect Nash Equilibrium (BPNE).

Note that $\Pr(\theta_2 = G|G) = 1$ pre-multiplies *e* in the first term in the objective function above. Also note that this expression recognizes that investment occurs by both types of owners when $\theta_2 = G$ (which has probability $\Pr(\theta_2 = G|G)\Pr(\mathrm{G}) = e$) and $\theta_1 = X_h$ (which has probability r_1, conditional on G), whereas investment occurs when $\theta_1 = X_m$ only if $\theta_2 = G$ and the owner is type *C* (probability *f*). We now have:

Lemma 2: *In a pooling equilibrium, the manager's uniquely optimal choice of effort is;*

$$e^* = \frac{\{p[w + H_A]R\}}{K} \tag{21}$$

Note from (21) that the manager works harder for the same wage contract when he attaches higher utility to the firm's HP ($\partial e^*/\partial H_A > 0$), and also when the wage is higher ($\partial e^*/\partial w > 0$). Thus, both the appeal of pecuniary compensation (*w*) and non-pecuniary job satisfaction (H_A) motivate the manager.

Now the type *C* owner takes (21) as given and solves for the optimal wage contract.

$$w \in \mathrm{argmax}\{e[p\{r_1[X_h + H_0 - w] + r_2[X_m + H_0 - w]\} - \overline{r}I] - [1 - \gamma][1 - e]\overline{r}I\} \tag{22}$$

where $\Pr(\theta_2 = G|B) = 1 - \gamma$ and $\Pr(B) = 1 - e$. The pooling equilibrium can now be stated.

Proposition 1: *In a pooling equilibrium, both types of owners choose the following wage contracts;*

$$w^* = \frac{\overline{X} + H_0 - H_A - \gamma I(p)^{-1}}{2} \tag{23}$$

where

$$\overline{X} = \alpha X_h + [1 - \alpha]X_m \tag{24}$$

$$\alpha \equiv r_1[r_1 + r_2]^{-1} \tag{25}$$

Given Ω sufficiently large, this is a BPNE, with the out-of-equilibrium (ooe) belief that any firm offering a contract other than w is a type U owner w.p. 1.*

This proposition tells us that the optimal wage contract pays the manager more if the expected (gross) payoff for the type *C* owner ($\overline{X}$) is higher and the "purpose preference wedge", defined as $\Delta = (H_0 - H_A)$, is higher. The last result has the important implication that the optimal wage depends on how much the type *C* owner cares about purpose relative to how much the manager cares. This is intuitive. As H_A increases, the owner recognizes that she can get the manager to work harder without paying more, so this effect exerts downward pressure on the wage. However, as H_0 increases, the type *C* owner attaches higher marginal value to the manager's effort since higher effort leads to a higher probability of the owner experiencing H_0. This exerts upward pressure on the wage. The net effect depends on the wedge Δ. The wedge is decreasing in the investment *I* in the project as a higher *I* means a lower project NPV.

I now add a parametric restriction to ensure that the medium project cash flow, X_m, is large enough to cover the manager's wage.

$$[1 + \alpha]X_m - \alpha X_h > \Delta - \gamma I(p)^{-1} \tag{26}$$

Next, I compare the financial performances of firms run by type *U* and type *C* owners.

Corollary 1: *In a pooling equilibrium, the firm owned by a type U owner is always expected to do better financially than a firm run by a type C owner.*

The intuition is straightforward. Since both types of firms offer the same wage contract, they elicit the same effort from the manager. From a purely financial standpoint, the type *U* owner's firm does better because the owner avoids investing in the G project when $\tilde{x} = X_m$, which is when its NPV is negative.

B. Pooling Versus Separation

Consider now the case in which $\Omega = 0$, so there is no social stigma attached to not pursuing the specific HP in question, and owner types are not shrouded, i.e., each owner's type is common knowledge. Clearly, we now get a separating equilibrium.

Proposition 2: *When owner types are observable, there is a separating equilibrium in which the type U owner offers a wage contract with:*

$$w_U^S = \frac{X_h - H_A - \gamma I(p)^{-1}}{2} \tag{27}$$

This elicits managerial effort

$$e_U^S = \frac{pr_1\left[w_U^S + H_A\right]}{K}$$

$$= \frac{pr_1[X_h + H_A - \gamma I(p)^{-1}]}{2K} \tag{28}$$

The type C owner offers a wage contract with

$$w_C^S = \frac{\overline{X} + H_0 - H_A - \gamma I(p)^{-1}}{2} \tag{29}$$

which elicits managerial effort

$$e_C^S = \frac{[w_C^S + H_A]p\overline{r}}{K}$$

$$= \frac{p\overline{r}[\overline{X} + H_0 + H_A - \gamma I(p)^{-1}]}{2K} \tag{30}$$

Our usual intuition would be that separation would lead to an equilibrium in which employees who work for type *C* owners would work harder than those who work for firms owned by type *U* owners. This is clearly reflected in the arguments put forth by Vermeulen (2019) and Quinn and Thakor (2018, 2019), and also suggested by Hedblom, Hickman and List (2019)[10] and others. However, this proposition shows that this intuition is *not* valid in all circumstances. It is not always true that $w_C^S < w_U^S$ – indeed, w_C^S could be bigger or smaller than w_U^S. Moreover, it is also not true that employees at firms run by type *C* owners always work harder.

[10] Hedblom, Hickman and List (2019) state that output increases and wage costs go down when the firm convinces its workers that their efforts made the world a better place.

The reason why this appealing intuition does not always hold is that it ignores the downward pressure on effort elicitation desirability and hence on wages that is exerted by the financial loss incurred by the type *C* owner relative to the type *U* owner; recall that the type *C* owner makes a negative NPV investment that the type *U* owner avoids. Whether the type *C* owner pays more or less in wages depends on the extent to which that owner's purpose-linked utility, H_0, overcomes the direct negative financial consequence of purpose pursuit.

In establishing Proposition 2, it was assumed that there was no shrouding of owners' types and $\Omega = 0$. Continuing with the assumption that $\Omega = 0$, I now examine the preferences of the type *U* and type *C* owners with respect to pooling versus separation. For later use, I define

$$H_0^* \equiv [1 - \alpha][X_h - X_m] \tag{31}$$

This value is such that $\overline{X} + H_0^* = X_h$.

Proposition 3: *The type C owner strictly prefers to have transparency that permits a separating equilibrium, whereas the type U owner prefers shrouding that leads to a pooling equilibrium for all values of* H_0 *in some interval* $(H_0^* - h_0, H_0^* + h_1)$*, where* h_0 *and* h_1 *are positive numbers less than* H_0^*.

The intuition is as follows. The type *C* owner offers the same wage contract to the manger in the pooling and separating equilibria. However, this owner's firm has its manager expending higher effort in response to the contract in the separating equilibrium than in the pooling equilibrium. The reason is that the manager is sure in the separating equilibrium that the type *C* firm will invest when $\tilde{x} = X_m$. In contrast, the type *U* owner must pay more in the separating equilibrium to elicit the same effort that was elicited in the pooling equilibrium. When $H_0 = H_0^*$, the type *U* owner pays the same wage with pooling as she does with separation, but gets higher managerial effort with pooling, so she prefers pooling. But interestingly, the preference to pool does not always exist for the type *U* owner. The reason is that the pooling wage is inefficient for the type *U* owner, and the only benefit of pooling with that inefficient

wage is that it permits the owner's firm to hide in the crowd with the type *C* owner's firm and get the benefit of higher employee effort. But the tradeoff between the cost of an inefficient wage and the benefit of higher effort at *that* wage tilts in favor of avoiding the wage inefficiency the further the wage moves from what the type *U* owner would like to offer in a separating equilibrium with no shrouding. Recall that the type *C* owner values employee effort more than the type *U* owner—and is thus willing to pay more to elicit that effort—since, unlike the type *U* owner, she enjoys a purpose-linked utility from a G project that succeeds.

C. Financial Performance and Aggregate Output

Corollary 1 told us that the type *C* owner always does worse than the type *U* owner in a pooling equilibrium. I now ask whether there are conditions under which the type *C* owner can do better than the type *U* owner in a separating equilibrium. It turns out that if $H_0 = H_0^*$, then $w_C^S = w_U^S$, i.e. both types of owners pay the same wages. This eases comparison and suffices for our purposes since the goal is to simply determine if superior financial performance by firms run by type *C* owners is ever possible.

Proposition 4: *Suppose* $H_0 = H_0^*$, and

$$I > p[X_m - w^*] > \gamma I \tag{32}$$

where w is given in (23). Then there exists* H_A *large enough to guarantee better expected financial performance by the firm owned by the type C owner than that owned by the type U owner in a separating equilibrium.*

The intuition is that an increase in H_A allows the type *C* owner to elicit higher effort from a purpose-driven manager without increasing the wage in a separating equilibrium, or alternatively to offer a lower wage while getting the same effort. This improvement in the productivity-versus-cost tradeoff improves the financial performance of the type *C* owner's firm. In a separating equilibrium, this benefit is not available to the type *U* owner. This proposition provides a theoretical foundation for the empirical finding that purpose-driven firms sometimes do better financially than other firms.

The next result establishes that the conditions in Proposition 4 also ensure that aggregate output is higher with separation.

Proposition 5: *Suppose* $H_0 = H_0^*$ *. Then aggregate expected pecuniary output as well as aggregate expected pecuniary output plus purpose-linked utility are higher in a separating equilibrium than in a pooling equilibrium.*

This proposition points out that shrouding of the true purpose preferences of firm owners generates a productivity loss because the pooling equilibrium has lower productivity than what is observed in a separating equilibrium. This provides a new perspective on the importance of authenticity and clarity of purpose (e.g. Gartenberg, Prat and Serafeim (2019)).

3.4. The Temptation to Shroud

Suppose $\Omega > 0$ and the type *U* owner can expend $\xi > 0$ in shrouding her identity to make it appear to others that her firm is run by a type *C* owner. Let β be the benefit to the type *U* owner from being in a pooling equilibrium than in a separating equilibrium. Then we have:

Proposition 6: *The type U owner will be willing to spend a higher amount* ξ *on shrouding than the social stigma cost* Ω *associated with being identified as a type U owner.*

The intuition follows readily from the fact that β is positive, so the benefit of shrouding is the sum of β and the stigma cost Ω, and the type *U* owner is willing to invest more than Ω in shrouding. This indicates two types of inefficiencies that arise from shrouding. One is the investment ξ, which is a pure deadweight loss. The other is the loss in productive output from pooling (Proposition 5).

IV. AN EXTENSION: CORPORATE GOVERNANCE AND PURPOSE

I now consider an extension of the model to introduce a role for corporate governance. The sole function assigned to corporate governance is to improve transparency to achieve better outcomes for shareholders, in this case by reducing the likelihood of decisions that can destroy shareholder value. This extension has three major changes of the base model. First, firms are now raising I from outside investors in exchange for a share g of ownership. These investors care only about their financial returns and not about the firm's HP[11]. They are risk neutral and competitively price the equity sold to raise capital, so as to earn an expected return equal to the riskless rate of zero. The firm raises I before it sets the managerial wage contract and hires the manager. This means g will be based on investors' beliefs about w, but not on the actual wage contract. Second, there are now three types of firms: those owned by type U and type C owners (as before) and those owned by type D owners who would be denied funding if the market could identify them as type D owners. Like the type U owners, the type D owners do not care about the firm's HP, but they think they are the same as type U, i.e. they are unaware of their own incompetence, although they share common priors about the distribution of various types of owners in the economy. Third, investors can get a signal (prior to providing funding) that enables them to update their prior beliefs about the firm's type. I will refer to this precision of this signal as representing the quality of corporate governance.

Let the prior belief be that

$$Pr(\text{firm is type } D) = j \in (0,1), \qquad Pr(\text{firm is not type } D) = 1 - j \tag{33}$$

We will retain the previous priors over types U and C, i.e.,

$Pr(\text{firm is type } C \mid \text{firm is not type } D) = f$ and $Pr(\text{firm is typing } U \mid \text{firm is not type } D) = 1 - f$.

The signal investors receive is $\psi \in \{D, \text{not } D\}$ and it is binary, with the distribution:

[11] The assumption that investors care only about their financial returns and not about the firm's HP is plausible in many circumstances but may not always hold. For example, Quinn and Thakor (2019) discuss the case of *Tree Teepee*, a firm that was able to raise funding on *Shark Tank* in part because the financier was enthusiastic about the firm's HP. Similarly, there are also instances in which financiers are also customers of the firm, in which case they would endorse a customer-centric HP. Merton and Thakor (2019) develop a theory in which a bank's depositors are both customers and financiers.

$$Pr(\psi = \text{not } D|\text{firm is } U \text{ or } C) = 1 \tag{34}$$

$$Pr(\psi = \text{not } D|D) = \lambda \in (0,1) \tag{35}$$

Thus, ψ noiselessly identifies types *U* and *C* as not being *D*, but sometimes mistakenly identifies *D* as "not" D. Note that ψ provides no information about whether the firm is type *U* or type *C* when it identifies a firm as not being type *D*. Investors' posterior beliefs after observing ψ will be:

$$Pr\big(U \text{ or } C \big|\, \psi = \text{not } D\big) = \frac{1-j}{1-j[1-\lambda]} \equiv 1 - \hat{\jmath} > 1 - j \tag{36}$$

and

$$Pr(D|\, \psi = \text{not } D) = \frac{\lambda j}{1-j[1-\lambda]} \equiv \hat{\jmath} < j \tag{37}$$

Now I describe how firms run by type *D* owners are different. In addition to the manager's effort, the owner's type also affects the success probability, so the success probability is now δe, where $\delta = 1$ for the types *U* and *C* and $\delta \in (0,1)$ for type *D*. The idea is that the type *D* owners are just incompetent, so they make decisions that diminish the marginal effectiveness of the manager's effort (e.g. Jensen's (1986) free cash flow problem). I assume that type *D*'s δ is such that

$$\{[1-j]\overline{e} + j\delta\overline{e}\}\, pX_h < I \tag{38}$$

which means that, at the prior belief about the firm's type, the project should not be funded even if the manager chooses the maximum effort and the project cash flow in the success state takes its highest value.

Let us focus on a partially pooling equilibrium in which all firms look identical *a priori* to investors but then fall into two groups depending on whether investors received the signal $\psi = D$ or $\psi = \text{not } D$. I will then examine how the strength of corporate governance affects the equilibrium. This strength is parameterized by λ. The lower the λ, the better the corporate governance.

Note that as $\lambda \to 0$, $Pr(D|\psi = \text{not } D) \to 0$ and $Pr(U \text{ or } C|\psi = \text{not } D) \to 1$. Further, $Pr(D|\psi = D) = 1$.

This means investors will never fund a firm for which they draw $\psi = D$. Further, I assume that λ is such that:

$$\big\{\hat{\jmath}\delta\underline{e} + [1-\hat{\jmath}]\underline{e}[1-f]\big\}\{r_1[pX_h - I]\} + \big\{[1-\hat{\jmath}]\underline{e}f\big\}\{p[r_1X_h + r_2X_m] - [r_1+r_2]I\} > I \tag{39}$$

This means that, conditional on the signal $\psi = \text{not } D$, the expected payoff on the project, even with the

lowest effort, exceeds the initial investment. Clearly, this inequality will not hold for all λ, and λ needs to be small enough for it to hold. As $\lambda \to 0, 1-\hat{\jmath} \to 1$, in which case the model reduces to our previous (base) model and this inequality above holds.

I begin by stating the problem of a manager who accepts a wage offer for a firm. The firm raises *I* before it sets the actual wage contract. As a prelude, I introduce some notation for convenience.

$$a_1 \equiv \hat{\jmath}\delta + 1 - \hat{\jmath} \tag{40}$$

$$a_2 \equiv f[1-\hat{\jmath}] \tag{41}$$

Note that ea_1 is the posterior probability (as viewed by outside investors and the manager) that there will be investment in *G* when $\tilde{x} = X_h$, and ea_2 is the posterior probability that there will be investment, in *G* when $\tilde{x} = X_m$.

Now, given a wage contract, the manager chooses *e* to solve:

$$e \in argmax\left\{e[\{a_1 r_1 + a_2 r_2\}p\{w + H_A\}] - \frac{\left[e^2 - \underline{e}^2\right]K}{2}\right\} \tag{42}$$

Following steps used in earlier proofs, we see that the optimal solution is:

$$e^* = \frac{[a_1 r_1 + a_2 r_2]p[w + H_A]}{K} \tag{43}$$

The probability that a type *C* owner will not invest — in which case the *I* raised from investors remains idle until final distribution at $t = 2$ based on ownership fractions —

is $er_3 + [1-e][\gamma + (1-\gamma)r_3]$.

Thus, in setting the wage contract, the type *C* owner solves:

$$w \in \text{argmax}\left[[1-g]\{e[p\{r_1 X_h + r_2 X_m + \bar{r}H_0 - \bar{r}w\} - I\gamma\{1-r_3\}] + I\left[r_3 + \gamma[1-r_3]\right]\}\right] \tag{44}$$

This leads to the final result:

Proposition 7: *The optimal wage contract is*

$$w^* = \frac{\alpha X_h + [1-\alpha]X_m + H_0 - H_A - \gamma I(p)^{-1}}{2} \tag{45}$$

Moreover, managers in all firms exert higher effort(e) when corporate governance is better.*

When corporate governance—designed primarily to better serve shareholders—improves, productivity of all firms is higher. Thus, expected aggregate output is higher when corporate governance is stronger, and expected purpose-linked utility is also higher with stronger corporate governance. The intuition is that better corporate governance means a lower likelihood of investors funding the type *D* firm which invests in negative-NPV projects that destroy shareholder value. Since the marginal impact of the manager's effort in these firms is also lower than in other firms, the manager works harder when shareholder-based corporate governance is better.

V. CONCLUSION

This paper has developed a simple model of optimal contracting in which purpose-driven employees are hired by firms whose owners may or may not care about purpose. The model explains why employees of purpose-driven firms work harder for the same wages and also shows the conditions under which purpose-driven firms do better financially and when they do not. An empirical prediction of the model is that for purpose-driven firms to do better financially than firms not similarly motivated, there must be sufficient transparency about which firms are authentically purpose-driven. Absent this, pure profit maximizers always do better financially than purpose-driven firms. Firms that are not purpose-driven have incentives to invest in shrouding their identities and masquerading as purpose-driven firms. This leads to efficiency distortions.

In a simple extension of the model, chosen more for its simplicity than its realism, I examine if shareholder-valuer driven corporate governance could be consonant with purpose pursuit. While it may surprise some that the answer is yes, the intuition is perhaps more general than the specifics of the example. In particular, poor corporate governance not only diminishes shareholder wealth, but it can also make employee effort less productive in enhancing firm output. For instance, if firm output depends both on the strategy chosen by the owner-CEO and the effort of its employees, then employee hard work will be less impactful in producing high output if the CEO is incompetent and chooses a poor strategy or is innately slothful and provides little effort. In this case, strengthening corporate governance solely to improve shareholder value would lead to firms run by such owners being more easily identified and thus

denied external funding with a higher probability. Moreover, it could also result in ownership being transferred to more efficient stewards of shareholder wealth (e.g. Gompers, Isahi and Metrick (2003), Levine (1997), and Morck, Wolfensohn and Yeung (2005)) or the firm being asked to rely more on the discipline of hard claims like debt (e.g. Hart and Moore (1985)). When any of these things happens, the marginal productivity of effort for all managers improves, and this amplifies the effect of purpose on the manager's effort choice. This way, stronger corporate governance can be in harmony with purpose pursuit. In addition, the effect of corporate governance on welfare would be stronger since the elimination of type *D* firms would entail no purpose-related welfare loss.

Some issues that I have not analyzed but could be fruitful areas for future research are the intertemporal dynamics of firm investment behavior and wages. Given the nature of the static model presented here, over time firms will develop reputations for being purpose-driven (or not), so greater separation will occur over time, and this can lead to interesting labor market sorting implications. Moreover, firms that develop a reputation for being purpose-driven may gain an advantage over others in terms of how much their employees "trust" them, so it would be interesting to examine the implications of this in terms of wage contracts as well as contracts between the firm and external stakeholders[12].

[12] Thakor and Merton (forthcoming) develop a theory of trust in lending, which explains how trust mediates the relationship between a lender's default experience and its cost of renewal financing.

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APPENDIX

Proof of Lemma 1
First, note that

$$\Pr(B|\theta_2 = B) = \frac{\gamma(1-e)}{\gamma(1-e) + 0 \cdot e} = 1 \qquad (A-1)$$

Thus, neither type of owner invests when $\theta_2 = B$.

Next, suppose $\theta_2 = G$. Then

$$\Pr(G|\theta_2 = G) = \frac{1 \cdot e}{1 \cdot e + (1-\gamma)(1-e)} > e \qquad (A-2)$$

The type *C* owner will invest if $\theta_1 = X_m$, given (13), since $e \geq \underline{e}$, so it follows that she will also invest $\theta_1 = X_h$. The type *U* owner will not invest if $\theta_1 = X_m$, given (14). Moreover, given (12) the type *U* owner will invest if $\theta_1 = X_h$. ■

Proof of Lemma 2
The first-order condition (FOC) for the agent's effort choice is:

$$[w + H_A][pr_1 + pfr_2] - Ke = 0. \qquad (A-3)$$

The second-order condition (SOC) for a unique maximum is satisfied since:

$$-K < 0 \qquad (A-4)$$

Rearranging (A-3) yields (21). ■

Proof of Proposition 1
Substituting for e^* from (21) into (22). The FOC corresponding to the maximization in (22) is:

$$\left[\frac{\partial e}{\partial w}\right]\{p[\bar{r}H_0 + \hat{X}] - p\bar{r}w - \gamma I\bar{r}\} - [ep\bar{r}] = 0 \qquad (A-5)$$

where

$$\partial e/\partial w = pR/K \qquad (A-6)$$

.
The SOC is satisfied since:

$$-\left[\frac{\partial e}{\partial w}\right]p\bar{r} - \left[\frac{\partial e}{\partial w}\right]p\bar{r} < 0 \qquad (A-7)$$

Rewriting (A-5) yields:

$$\left[\frac{pR}{K}\right]\{p[\bar{r}H_0 + \hat{X}] - \gamma I\bar{r} - p\bar{r}w\} - \left[\frac{pR}{K}\right][w + H_A][p\bar{r}] = 0 \qquad (A-8)$$

Solving (A-8) yields

$$w^* = \frac{p\left[\overline{r}[H_0 - H_A] + \hat{X}\right] - \gamma I\overline{r}}{2p\overline{r}} \qquad (A-9)$$

Using the definitions of $\overline{X}$ and α in (24) and (25), we see that the w^* in (A-9) is the one in (23).

Now, the above proof clearly shows that this is a Nash equilibrium. That this is a BPNE follows immediately from the specification of the ooe belief, given Ω large enough. Choosing any wage contract other than (23) would identify the firm as being owned by type U, which would bring with it the social stigma cost Ω. ■

Proof of Corollary 1

Obvious from the discussion in the text. ■

Proof of Proposition 2

When types are observationally distinct, *C* solves the same maximization problem for *w* as that in (22), so w_C^S is exactly the same as the w^* in (23). However, the manager now solves

$$e \in \text{argmax}\left\{ep\overline{r}\left[w_C^S + H_A\right] - \frac{K\left[e^2 - \underline{e}^2\right]}{2}\right\} \qquad (A-10)$$

The FOC for the manager's optimal choice of effort is:

$$p\overline{r}\left[w_C^S + H_A\right] - Ke_C^S = 0 \qquad (A-11)$$

Clearly, the SOC is satisfied. Rearranging (A-11) and using (29) yields (30).

The manager in the firm run by the type U owner solves

$$e \in \text{argmax}\left\{epr_1\left[w_U^S + H_A\right] - \frac{K\left[e^2 - \underline{e}^2\right]}{2}\right\} \qquad (A-12)$$

The FOC for the manager's optimal effort choice is:

$$pr_1\left[w_U^S + H_A\right] - e_U^S K = 0 \qquad (A-13)$$

The SOC is clearly satisfied. Rearranging (A-13) yields (28). Now, U solves for w_U^S by solving

$$w_U^S \in \text{argmax}\left\{e_U^S\left[pr_1\left[X_h - w_U^S\right] - r_1 I\right] - \left[1 - e_U^S\right][1-\gamma]r_1 I\right\} \qquad (A-14)$$

Substituting for e_U^S from (28) and then computing the FOC, we can obtain (27). Verifying that the SOC holds is straightforward. ■

Proof of Proposition 3

If the type *C* owner separates, then her utility is:

$$\Psi_C^S\left(w_C^S\right) = e_C^S\left[p\left\{\hat{X} + \overline{r}H_0 - \overline{r}w_C^S\right\} - \gamma\overline{r}I\right] - \overline{r}I(1-\gamma) \qquad (A-15)$$

If the type *C* owner is in a pooling equilibrium, then her utility is:

$$\Psi_C(w^*) = e\left[p\{\hat{X} + \overline{r}H_0 - \overline{r}w^*\} - \gamma\overline{r}I\right] - \overline{r}I(1-\gamma) \qquad (A-16)$$

Note that w_C^S (see (29)) = w^* (see (23)).

Moreover, using (21) and (30), we see that

$$e_C^S = \frac{[w^* + H_A]p\overline{r}}{K} > e^* = \frac{[w^* + H_A]pR}{K}$$

since $\overline{r} > R$.

Thus, it follows that $\Psi_C^S(w_C^S) > \Psi_C(w^*)$.

Now consider the type *U* owner. Her utility in a separating equilibrium is

$$\Psi_U^S(w_U^S) = e_U^S\left[pr_1\left[X_h - w_U^S\right] - \gamma r_1 I\right] - r_1 I(1-\gamma) \qquad (A-17)$$

And her utility in a pooling equilibrium is:

$$\Psi_U(w^*) = e^*[pr_1[X_h - w^*] - \gamma r_1 I] - r_1\mathrm{I}(1-\gamma) \qquad (A-18)$$

First compare $\Psi_U^S(w_U^S)$ and $\Psi_U(w^*)$ at $H_0 = H_0^* = [1-\alpha][X_h - X_m]$. We know that at $H_0 = H_0^*$, we have $w_U^S = w^*$.

It is now obvious from (A-17) and (A-18) that $\Psi_U^S(w_U^S|H_0^*) < \Psi_U(w^*|H_0^*)$ since

$e(w_U^S = w^*) > e_U^S(w_U^S = w^*)$.

Now we know that $\Psi_U^S(.)$ attains its maximum value at $w = w_U^S$. Thus, as w^* increases or decreases from $w^* = w_U^S$, $\Psi_U(w^*)$ decreases from its value when $w^* = w_U^S$. Thus, there exists an interval

$[H_0^* - h_1, H_0^* + h_2]$ such that the type *U* owner strictly prefers pooling to separation for all

$H_0 \in (H_0^* - h_1, H_0^* + h_2)$. ■

Proof of Proposition 4

With separation, the financial performance of the firm owned by the type *C* owner is

$$\frac{\left[w_C^S + H_A\right]p\overline{r}}{K}\left[p\{\hat{X} - \overline{r}w_C^S\} - \gamma\overline{r}I\right] - \overline{r}I(1-\gamma) \qquad (A-19)$$

The financial performance of the firm owned by the type *U* owner in a separating equilibrium is:

$$\frac{\left[w_U^S + H_A\right]pr_1}{K}\left[pr_1\left[X_h - w_U^S\right] - \gamma r_1 I\right] - r_1 I(1-\gamma) \qquad (A-20)$$

Now at $H_0 = H_0^*$, we know $w_C^S = w_U^S = w^*$.

For (A-19) to exceed (A-20) at $H_0 = H_0^*$, we need:

$$\frac{p\overline{r}[w^* + H_A]}{K}\{p[\hat{X} - \overline{r}w^*] - \gamma\overline{r}I\} - \overline{r}I(1-\gamma) > \frac{pr_1[w^* + H_A]}{K}\{pr_1[X_h - w^*] - \gamma r_1 I\} - (1-\gamma)r_1 I \quad (A-21)$$

Making some substitutions and using some algebra, we see that (A-21) simplifies to:

$$\frac{p[w^* + H_A]}{K}\{p[r_1 r_2[X_m - w^*] + r_2 r_1[X_h - w^*] + r_2^2[X_m - w^*]] - \gamma r_2 I[2r_1 + r_2]\} > I[1-\gamma]r_2 \quad (A-22)$$

Now, since

$$r_1 r_2[X_h - w^*] > r_1 r_2[X_m - w^*] > r_1 r_2 \gamma I \quad (A-23)$$

and

$$r_2^2[X_m - w^*] > r_2^2 \gamma I \quad (A-24)$$

we know that the quantity multiplying $\frac{p[w^*+H_A]}{K}$ on the LHS of (A-22) is strictly positive. Moreover,

$$\frac{p[w^* + H_A]}{K} = \frac{p[\overline{X} + H_0 + H_A - \gamma I(p)^{-1}]}{2K} \quad (A-25)$$

which is strictly increasing in H_A. Thus, there exists H_A large enough to guarantee that (A-22) holds. ■

Proof of Proposition 5

The expected sum of the expected pecuniary payoffs and purpose-linked utilities in a separating equilibrium is:

$$D_S \equiv f e_C^S p\{\hat{X} + \overline{r}\{H_0 + H_A\}\} + (1-f)e_U^S p r_1\{X_h + H_A\} \quad (A-26)$$

and in a pooling equilibrium it is:

$$D_P \equiv fpe\left[\hat{X} + \overline{r}\{H_0 + H_A\}\right] + (1-f)per_1\{X_h + H_A\} \quad (A-27)$$

We want to show that $D_S > D_P$.

At $H_0 = H_0^*$, we know that $e_C^S = p\overline{r}J$, $e_U^S = pr_1 J$ and $e^* = pRJ$, where

$$J \equiv \frac{\overline{X} + H_0 + H_A - \gamma I p^{-1}}{2K} \quad (A-28)$$

Thus, we want to show that

$D_S \equiv fp^2\overline{r}^2 J[\hat{X} + \overline{r}\{H_0 + H_A\}] + (1-f)p^2 r_1^2 J\{X_h\}$
$> D_P \equiv fp^2 R\overline{r}J[\hat{X} + \overline{r}\{H_0 + H_A\}] + (1-f)p^2 R r_1 J\{X_h\}$

We will show that $D_S - D_P > 0$. Now,

$$D_S - D_P = fp^2 J[\overline{r} - R]\overline{r}[\hat{X} + \overline{r}\{H_0 + H_A\}] - [1-f]p^2 J X_h[Rr_1 - r_1^2]$$

$$= f(1-f)r_2[\hat{X} + \overline{r}[H_0 + H_A]]p^2J$$

$$-f(1-f)p^2JX_h r_1 r_2$$

$$= f(1-f)p^2Jr_2\{\hat{X} + \overline{r}[H_0 + H_A] - r_1[X_h + H_A]\}$$

$$= f(1-f)p^2Jr_2\{r_2X_m + r_2H_A + \overline{r}H_0\} \ > 0 \qquad (A-29)$$

Note that if we just focus on pecuniary payoffs and set $H_A = H_0 = 0$, the expression is strictly positive. ■

Proof of Proposition 6

Using (A-17) and (A-18), we see that at $H_0 = H_0^*$:

$$\beta = \Psi_U(w^*) - \Psi_U^S(w_U^S) = [e - e_U^S]\{pr_1[X_h - w^*] - \gamma r_1 I\}$$

$$= \frac{p^2Jfr_1r_2[X_h + H_A - \ \gamma I p^{-1}]}{2} > 0$$

The rest of the proof is obvious from the discussion in the text. ■

Proof of Proposition 7

The manager's effort choice solves

$$e \in \text{argmax}\left\{e[\{a_1r_1 + a_2r_2\}p\{w + H_A\}] - \frac{\{e^2 - \underline{e}^2\}K}{2}\right\} \qquad (A-30)$$

Following familiar steps, the optimal solution is:

$$e^* = \frac{[a_1r_1 + a_2r_2]p[w + H_A]}{K} \qquad (A-31)$$

Also following familiar steps, we see that the optimal solution to (44) is (45). Now, from the definitions of a_1 and a_2, it follows that $\partial a_1/\partial \hat{\jmath} = -[1-\delta] < 0$, $\partial a_2/\partial \hat{\jmath} = -f < 0$, and $\partial \hat{\jmath}/\partial \lambda = j[1-j] > 0$. So, $\partial a_1/\partial \lambda < 0$, $\partial a_2/\partial \lambda < 0$. Thus, $\partial e^*/\partial \lambda < 0$. ■

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