



Hiring family or non-family managers when non-economic (sustainability) goals matter? A multitask agency model

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Abstract Nepotism, altruism, lower managerial abilities, and a small pool of qualified family candidates may speak against family management. However, a large share of family-owned firms is run by family managers. Our study develops a theoretical model that provides an explanation for this paradox, linked to the multitasking problem of managing economic

and non-economic tasks in family firms. Comparing the performance of family and non-family managers under moral hazard and imperfect performance measurement, we find that incentive pay leads to an effort distortion towards economic outcomes for both manager types, however less so for family managers. This effort distortion is less pronounced when economic and non-economic management tasks are complements. We show that family managers with excellent skills regarding non-economic goals of the owner family often outperform non-family managers even if they have poor skills in economic tasks or, what is more, if they have lower average abilities altogether. We further show that the interdependence between economic and non-economic goals in the manager's job tends to have a moderating effect on the family manager's relative performance. Our study contributes to the literature about family management and agency costs in family firms and has practical implications for family firms' hiring decisions. By highlighting the importance of non-economic goals, it moreover adds to the current discussion about the compliance with firms' sustainability goals.

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Plain English Summary Family firms are the most common firm type around the world. Many of them, also those in later family generations, are run by members of the business-owning family. This is surprising since prior research has identified strong reasons that speak against family management such as nepotism, altruism, lower managerial skills, and a small pool

of qualified family candidates. Our study contributes to solving this puzzle by developing a theoretical economic model. We show in this model that hiring a family manager is oftentimes the optimal decision when managers have to perform multiple tasks and, more specifically, need to take care of both economic and non-economic goals of the business-owning family. Non-economic goals comprise family goals (e.g., maintaining family harmony, reputation, tradition, and dynastic control) but also stakeholder-oriented sustainability goals (e.g., maintaining good relations with employees and avoiding environmental pollution). Achieving such non-economic goals, however, is often interrelated with economic tasks or goals. For example, to become a stable and highly reputable employer implies that you may have to forgo shutting down an unprofitable business unit, which saves jobs but has negative consequences for the firm's competitive position and financial performance. This interrelationship between the two tasks or goals, together with the fact that the achievement of non-economic goals is often more difficult to measure than the achievement of economic goals, makes it difficult to provide effective managerial incentives for them. We find that, under incentive contracts, non-family managers direct more attention towards economic goals while family managers, as such, are more reluctant to neglect non-economic goals. That is why family managers may be the optimal hiring choice despite them often having lower abilities across the two tasks.

With the results from our theoretical model, our study contributes to the literature on family managers and agency costs in family firms by providing a new explanation for the high prevalence of family managers in family firms, namely the agency costs resulting from the managers' multitask problem in family firms. By highlighting the importance of non-economic goals, our study moreover adds to the current discussion about how to select and incentivize managers to pursue (social and environmental) sustainability goals. Our study has practical implications for family firms and their hiring practices regarding family members. In fact, we show that, in many cases, it is perfectly reasonable and meaningful to select and hire a family manager to run the family business even if he or she exhibits relatively weak skills in economic tasks. The relative benefit of family over non-family managers increases with a higher importance attached to non-economic (sustainability) goals

by the owner family, with a better measurement of a manager's achievement regarding these goals, and with a stronger reinforcing interdependence between economic and non-economic goals.

Keywords Family firms · Family management · Manager selection · Multitask model · Incentives · Non-economic goals · Sustainability · Expertise

JEL Classification D82 · D86 · M12 · M21 · M52 · M54

"[...] our clients, as shareholders in your company, will benefit if you can create enduring, sustainable value for all of your stakeholders."

Larry Fink, CEO of the world's largest investment firm BlackRock Inc.¹

"...if [non-economic] goals benefit family managers but not non-family managers, the latter will resist the adoption of these goals, especially if it lowers the firm's profitability and, thus, the managers' performance pay (...). Incentives can serve to align the interests of owners and managers but are costly remedies and some of the benefits from adopting [non-economic] goals (...) are not transferable to non-family managers."

Chrisman et al. (2012), p. 272

1 Introduction

Many firms in the world are owned by families. In fact, it is the dominant form of ownership in many countries and industries (Aminadav and Papaioannou, 2020; Claessens et al., 2000; Villalonga & Amit, 2010). Family firms can be large or small as well as public or private. A large share of these firms is run by family managers, that is, the CEO is a member of the business-owning family. Villalonga and Amit (2006) report that 26% of all firms in the Fortune 500 have at least one family officer and one family director in their boards; Miller et al. (2013) even find that 69% of all CEOs in Italian family-owned firms with a turnover of over 50

¹<https://hbr.org/2020/01/larry-fink-isnt-going-to-read-your-sustainability-report>

million euros are run by family CEOs. This is surprising since prior research has identified strong reasons that speak against family management such as nepotism (Morck and Yeung, 2003; Pérez-González, 2006), altruism (Schulze et al., 2001), lower managerial abilities (Bloom & Van Reenen, 2007), and a small pool of qualified family candidates (Burkart et al., 2003).

Our study contributes to solving this puzzle by developing a theoretical model showing that hiring a family manager is oftentimes the optimal decision when managers have to take care of both economic and non-economic goals of the business-owning family (Chrisman et al., 2012; Gómez-Mejía et al., 2007). While managerial tasks related to economic goals are mainly concerned with the firm's profitability and market valuation, the tasks associated with non-economic goals are comprised of, amongst other things, maintaining family harmony, reputation, tradition, and dynastic control (Deephouse & Jaskiewicz, 2013; Gómez-Mejía et al., 2007) as well as stakeholder-oriented sustainability goals. Typically, the achievement of these two types of goals differs in verifiability and, moreover, the corresponding managerial tasks will interrelate with each other. It is exactly these two features that, in the context of providing managerial incentives, explain why family managers may be the optimal hiring choice.

We build on the literature regarding optimal incentive contracts in multitasking settings (Baker, 1992; 2002; Holmström & Milgrom, 1991) and extend it to the specific context of family firms. In our model, the business-owning family (principal) chooses as a manager (agent) either a family or a non-family member entrusted with all strategic decisions to run the firm. The owner family values both economic and non-economic goals, and the manager has to work on tasks related to both types of goals. In the sense of Baker (2002), the owner family's objective is not contractible, but there is a distorted contractible performance measure on which the manager's contract is based. This measure is jointly affected by the manager's efforts in both types of tasks. While it fully accounts for the impact of the manager's effort in the economic task on the owner's objective, the impact of his/her effort in the non-economic task is typically captured only imperfectly. This assumption reflects that the family's non-economic goals are often characterized by intangible aspects and are thus generally more difficult to measure. Moreover, in line with

Holmström and Milgrom (1991), from the manager's perspective, the tasks are interdependent; they may be complements or substitutes, i.e., working on one type of task may facilitate or impede performing also the other task. As an example for task substitutes, consider the task of shutting down an unprofitable business unit in the family's home region and consequently laying off its employees. By performing that task, the manager will have succeeded in achieving economic goals but will have thereby sacrificed the attainment of the family's non-economic goals, e.g., maintaining the family's reputation of being a good employer. By contrast, complementarity exists if economic and non-economic tasks facilitate each other. For instance, a family firm may set up a philanthropic foundation alongside its core business (Campopiano et al., 2014). This foundation increases family and firm reputation but it can also help the manager in achieving the firm's economic goals by attracting more customers and competent employees (Vishwanathan et al., 2020). Another example concerns the implementation of specific sustainability goals which, in the short run, may decrease economic performance yet, in the long run, will raise the firm's competitive position by means of complying with societal requirements and customers' respective demands.

We model three important characteristics in which the two types of managers differ. First, in contrast to family managers, non-family managers are selected from a relatively larger pool of suitable candidates in a competitive labor market (Burkart et al., 2003; Pérez-González, 2006). In a dynamic job market, they use their former employer's financial performance as a signal of their management ability (Block, 2011). Accordingly, those with a strong track record in this direction are considered to be more capable of managing the firm professionally regarding financial performance. Second, when it comes to non-economic goals of family firms, family managers are bestowed with the advantage that, as part of the family, they better understand the family's norms and values and are more familiar with its goals. In addition, they will typically know better how to communicate with the family and will be credible towards outsiders regarding the family's non-financial sustainability and further non-economic goals. Our model captures the foregoing arguments and observations by assuming that non-family managers are typically relatively more skilled at achieving the firm's economic goals while family

managers usually have a relatively higher ability with regard to the family's non-economic goals.² Third, we posit that, in contrast to non-family managers, family managers may derive personal utility from the wellbeing of the family and hence the pursuit of its (economic and non-economic) goals.

With the help of our model, we derive several results highlighting the rationale as to why it may be optimal to hire a family manager rather than a non-family manager to run the family firm, thereby helping to explain the high proportion of family managers in practice. First, incentive conflicts are often less pronounced for family managers since the latter typically exhibit personal interest in the wellbeing of the family (firm). Second, the relative attention that managers devote to the different management tasks depends on their type and the interplay between economic and non-economic tasks. We find that a family manager can outperform a non-family manager even if s/he has no personal interest in the family's wellbeing and moreover exhibits lower average skills. Intuitively, as a response to the incentive pay, both managers' attention is distorted towards the economic task, but less so for the family manager. If the latter moreover excels in non-economic matters of the family business, s/he may outperform a non-family manager with higher economic and even average skills. This is particularly likely when the tasks are complements because then extraordinary achievements in the non-economic task enhance the family manager's performance in economic matters too. Finally, a family manager is more likely to be hired if the performance measure used in the manager's incentive contract is more aligned with the owner family's valuation of the managerial activities. In such a case, the managers' effort distortion towards the economic task caused by the incentive contract is less pronounced for both types, but, due to

his/her ability advantage in the non-economic task, it is more strongly mitigated for the family manager.

With the aforementioned results of our theoretical model, we contribute to the literature on family firms in several ways. First, our study adds to the literature about the benefits and selection of (non)family managers (Burkart et al., 2003; Lemos & Scur, 2018; Miller et al., 2013). Whereas previous studies ascribe a preference for non-family managers mainly to their higher managerial abilities positively impacting firm performance (Bennedsen et al., 2007; Bloom & Van Reenen, 2007; Burkart et al., 2003), we show that the interplay between economic and non-economic tasks can increase the relative attractiveness of family managers. In contrast to most prior research, our model suggests that a family manager is the better choice if s/he has a personal interest in *both* economic and non-economic goals.³ This way, we formally verify the desirable impact of a family manager's personal interest in the goals of the owner family on the magnitude of the moral-hazard conflict, which reinforces the agency cost argument of Jensen and Meckling (1976) about the separation of ownership and management. Second, our study contributes to the literature about agency costs in family firms and the role of family ties in agency contracts (Bandiera et al., 2015; Cai et al., 2013; Gómez-Mejía et al., 2001; Morck & Yeung, 2003; Schulze et al., 2001). This literature has, so far, not considered agency costs resulting from the managers' multitask problem in family firms. Unlike prior work, our model shows that it can be perfectly rational and utility-maximizing to employ a family manager whose skills regarding the economic dimensions of the job fall below those of a non-family manager. In particular, we highlight that the agency costs for contracting a non-family manager can be higher than those of contracting a family manager even if the former has

²Notice that there are cases where this assumption might not hold and which our model might thus not capture well. For example, in case of a severe within-family conflict, a non-family manager could potentially act as a neutral mediator able to solve such conflicts better than a family insider and hence enhance both types of goals. Similarly, first-generation family managers successfully founding a family business may exhibit higher abilities regarding both economic and non-economic goals.

³See Delfgaauw and Dur (2007) for a principal-agent model where workers are also heterogeneous in their intrinsic motivation to work at the firm. In this model, the optimal wage scheme entails a trade-off between the probability of filling the job vacancy, the rents left to the worker, and the expected worker's motivation. However, the study does neither consider moral hazard nor investigate the impact of task interdependence on worker performance.

lower average skills. Third, our study extends the literature on how economic and non-economic goals of business-owning families influence the organizational structure and governance of family firms (Bandiera et al., 2015; Chrisman et al., 2012; Gómez-Mejía et al., 2007; Randolph et al., 2019; Williams Jr et al., 2018). Our study shows that it is not only the goals as such but also the measurement of their achievement and their interrelationships that influence optimal hiring decisions, particularly the decision of whether to hire a family or a non-family manager. Finally, our study contributes to the broader literature on whom to hire in a world where long-term and non-economic (sustainability) tasks and goals increasingly matter (Cronqvist & Yu, 2017; Hegde & Mishra, 2019).

Our findings have practical implications for family businesses and their hiring practices regarding family members. In fact, we show that, in many cases, it is perfectly reasonable and meaningful to select and hire a family manager to run the family business even if s/he exhibits relatively weak skills in economic tasks. The reason is that this manager type is less likely to neglect important non-economic goals set by the owner family. This is the case even under incentive pay that is effective mostly in fostering economic goals. The foregoing is of particular relevance in light of the increasing importance of non-economic sustainability goals. For most owner families, the moral-hazard conflict between the management and the family is less pronounced when the manager is from the family, thereby making the case for hiring a family manager.

The remainder of the paper is organized as follows. In the next section, we present the model. In the third section, we solve for the optimal incentive contracts for each manager type under a perfect and an imperfect performance measure, respectively. Specifically, we discuss how the managers' relative attention to the different tasks is affected by the interaction of these tasks and by the quality of the performance measure. The fourth section analyzes the owner's optimal hiring decision and derives our main results. Section 5 offers a discussion of our main results, contributions, practical implications, and avenues for further research. All proofs and additional technical findings are relegated to the Appendix.

2 The model

We model a principal-agent relationship in which the owner family (principal; she) selects one out of two candidate types (agents; he) $i \in \{F, N\}$ to manage the firm.⁴ The former has two options: hiring a family manager ($i = F$), that is, a person that belongs to the owner family, or a non-family manager ($i = N$), that is, somebody who is not part of this family. All parties are risk neutral. Managing the firm requires fulfilling two strategic tasks: enhancing the firm's economic performance (henceforth denoted by task 1) and realizing the family's non-economic goals such as preserving and fostering the family harmony and reputation (henceforth denoted by task 2). We assume that these tasks cannot be split between managers; that is, just one CEO takes all associated strategic decisions.⁵ By effort $e_{i,1}$, we refer to all the activities that manager i undertakes to raise the firm's economic performance, e.g., the firm's overall financial value or, more specifically, its sales, market share, or profitability. Effort $e_{i,2}$ summarizes the manager's efforts related to achieving the family's non-economic goals. The exerted effort levels are not observable by the owner family, implying a moral-hazard problem.

The owner family derives a non-verifiable utility value $V_i \in \{0, 1\}$ from the efforts undertaken by the manager. For short, we will refer to V_i as the owner

⁴For clarity, in line with the principal-agent literature, we will use the male pronoun for the agent (manager) and the female pronoun for the principal (owner family) throughout Sections 2, 3, 4, and the Appendix.

⁵We discuss candidate selection on the highest management level regarding the chief executive officer (CEO), who runs the firm and takes all major strategic decisions. Separating economic from non-economic tasks appears mostly implausible in such a context, particularly in small- to mid-sized firms (Wiengarten et al., 2017). Notice that, even if dividing these tasks between separate managers were possible, their interrelation manifested in the effort-cost function (3) is likely to persist in the given environment also across agents. Moreover, hiring two managers would entail rent payments to both of them if, as in our setting, a lower bound on wages is binding, thereby considerably raising the firm's wage cost of inducing effort (see (Kragl & Schöttner, 2014)).

family's (utility) value in the remainder of the paper. The probability for $V_i = 1$ is given by

$$\Pr[V_i = 1|e_{i,1}, e_{i,2}] = \min\{(e_{i,1} + e_{i,2}), 1\}. \quad (1)$$

That is, both tasks equally contribute to the realization of the owner family's value, i.e., both goals are equally important to the family.⁶

We assume that productive achievement cannot be measured individually for either task. However, similar to Baker (2002), there is a contractible joint performance measure $P_i \in \{0, 1\}$ with

$$\Pr[P_i = 1|e_{i,1}, e_{i,2}] = \min\{(e_{i,1} + \alpha e_{i,2}), 1\}, \quad (2)$$

where $\alpha \in (0, 1]$ denotes the marginal impact of effort in the non-economic task on the expected value of the performance measure. Accordingly, increasing effort in either task, ceteris paribus, raises the expected realization of both V_i and P_i . If $\alpha = 1$, the manager's efforts have the same impact on both the owner family's value V_i and the performance measure P_i . In this case, we speak of a *perfect* performance measure. However, if $\alpha < 1$, the impact of task 2 on the performance measure falls below its true value for the owner family, and the performance measure is *imperfect*. The latter case reflects the more realistic scenario in which the performance measure does not fully account for the non-economic task.⁷ In the sense of Baker (2002), the performance measure is hence distorted towards task 1 and becomes more misaligned with the owner family's value as α decreases.⁸

⁶ We impose this assumption to focus on the distortion caused by an imperfect performance measure. Our results however also hold when the owner family values the tasks differently as long as the performance measure reflects the economic task's value better than that of the non-economic task (see also footnote 7).

⁷ For simplicity, we assume that task 1 is perfectly captured by the performance measure. However, our results continue to hold when both tasks' value is imperfectly reflected; $\Pr[P_i = 1|e_{i,1}, e_{i,2}] = \min\{(\beta e_{i,1} + \alpha e_{i,2}), 1\}$ where $\beta \geq \alpha$, i.e., when the performance measure captures task 1 better than task 2.

⁸ In Baker (2002)'s model, the non-contractible firm value with two tasks is given by $V = f_1 a_1 + f_2 a_2 + \varepsilon$, where a_1 and a_2 are the effort levels in the two tasks, $f = (f_1, f_2)$ is the vector of the marginal products, and ε is a random term. The contractible performance measure is given by $P = g_1 a_1 + g_2 a_2 + \phi$, where $g = (g_1, g_2)$ is the vector of the tasks' marginal products in the performance measure, and ϕ is the random term. The misalignment between V and P is reflected by the angle between f and g . Applying this framework to the expected values of V_i and P_i in our model, we have $f = (1, 1)$ and $g = (1, \alpha)$. Accordingly,

The owner family pays manager i a fixed wage w_i and, in addition, a bonus $\gamma_i \in [0, 1]$ if $P_i = 1$. Moreover, we assume that a manager's wage cannot be negative in any state, i.e., we impose limited liability on the manager. The foregoing assumption rules out selling the firm to the manager.⁹

In the spirit of Holmström and Milgrom (1991), manager i 's private cost of exerting effort is described by

$$C(e_{i,1}, e_{i,2}; a_{i,1}, a_{i,2}, s) = \frac{a_{i,1}}{2} e_{i,1}^2 + \frac{a_{i,2}}{2} e_{i,2}^2 + s e_{i,1} e_{i,2}, \quad (3)$$

where $a_{i,1} \geq 1$ and $a_{i,2} \geq 1$ are inverse measures of manager i 's ability in tasks 1 and 2, respectively, and the parameter $s \in (-\sqrt{a_{i,1} a_{i,2}}, \sqrt{a_{i,1} a_{i,2}})$ characterizes the (type and degree of) task interdependence.¹⁰ Specifically, if $s > 0$, the tasks are *substitutes*, i.e., the tasks compete for the manager's attention so that he finds it harder to engage in one task when he is already working on the other. Formally, other things being equal, exerting effort in one task increases the

the lower α , the larger will be the angle between f and g and the higher will thus be the misalignment.

⁹ Under risk neutrality and unlimited liability, the owner family could in principle sell the company to the manager who would then become the residual claimant. In classical moral-hazard settings, this fully aligns incentives and resolves the moral-hazard problem because both parties then share the same objective. This is however not true for our setting since the objective (utility) functions of the owner family (principal) and the manager (agent) do not coincide and also differ across agent types. Moreover, Schulze et al. (2001) and Schulze et al. (2003) highlight an additional type of agency costs peculiar to family firms and persisting also under owner management. These so-called *agency costs of altruism* point to an additional reason inducing family firms to offer employed family members performance-based incentive pay.

¹⁰ To avoid complexity, we represent the interdependence of productive tasks in the cost function only. Including productive synergies between economic and non-economic performance also in the family's expected value would add complexity to the model but lead to very similar results. In the cost-function, the restrictions $a_{i,1} \geq 1$ and $a_{i,2} \geq 1$ have only a rescaling effect and are without loss of generality. The restriction on s ensures that the first-order conditions of the optimization problems are sufficient for interior solutions.

manager’s marginal effort costs for the other task. By contrast, if $s < 0$, the tasks are *complements*. In that case, performing one task facilitates the manager’s efforts in the other task, i.e., *ceteris paribus* reduces his marginal effort costs for the other task. Obviously, tasks are independent if $s = 0$. We assume that the cost parameters in Eq. (3) are such that the probabilities in Eqs. (1) and (2) remain strictly smaller than 1 for all efforts exerted.¹¹

In line with the observations and explanation regarding the managers’ relative abilities across tasks and manager types presented in the introduction, we make the following assumptions:

Assumption 1 (i) $a_{N,1} < a_{N,2}$, (ii) $a_{F,2} < a_{F,1}$, (iii) $a_{F,2} < a_{N,2}$, and (iv) $a_{N,1} < a_{F,1}$.

Assumption 1 ensures that, within each manager type, (i) the non-family manager is more skilled in task 1 than in task 2 whereas (ii) the family manager is more skilled in task 2 than in task 1. Across manager types, (iii) the family manager is more skilled in task 2 than the non-family manager whereas (iv) the non-family manager is more skilled in task 1 than the family manager.

The owner family’s expected utility when hiring manager i is given by

$$\pi_i = (e_{i,1} + e_{i,2}) - \gamma_i(e_{i,1} + \alpha e_{i,2}) - w_i, \tag{4}$$

where the first term represents the expected non-verifiable utility value V_i derived from the manager’s efforts. The second term shows the expected incentive wage which the owner family pays in case of a successful realization of the contractible performance measure P_i . Finally, the last term is the fixed wage paid by the in any circumstance.

¹¹In the proof of Proposition 2, we show that the owner family’s expected utility Eq. (4) is equal to one half of the sum of efforts exerted at the optimum (see Eq. (A.27)). Accordingly, in our numerical examples in Section 4, we plot expected utilities only for a range where the probabilities are strictly smaller than 1.

Manager i ’s expected utility is given by

$$U_i = w_i + \gamma_i (e_{i,1} + \alpha e_{i,2}) - \frac{a_{i,1}}{2} e_{i,1}^2 - \frac{a_{i,2}}{2} e_{i,2}^2 - s e_{i,1} e_{i,2} + \theta_i \pi_i,$$

with $\theta_N = 0$, $\theta_F \in \left[0, \frac{1}{2}\right]$. (5)

The manager obtains the expected wage payment and faces private cost of exerting efforts according to the cost function in Eq. (3). The last term in Eq. (5) represents a (potential) private utility benefit which the manager may derive from the net utility generated for the owner family. Accordingly, the non-family manager has purely self-regarding preferences ($\theta_N = 0$) whereas the family manager is (potentially) other-regarding towards his family with θ_F measuring the extent to which he personally cares about the family’s goals. Alternatively, the last utility term may be interpreted as the present value of the family manager’s future heritage with respect to the family firm.¹²

The timing is as follows. First, the owner family decides whether to hire the family or the non-family manager. Then, she offers the manager an employment (incentive) contract $\langle w_i, \gamma_i \rangle$. Third, the manager decides whether to accept the contract or reject it. If the manager rejects the offer, both parties receive their outside option which we, for simplicity, set to zero. Conversely, if the manager accepts the contract, he allocates efforts to tasks 1 and 2. Finally, the owner family’s value V_i and the performance measure P_i are realized, and the manager is paid according to the contract.

3 Optimal incentive contracts

Because the manager’s effort levels are his private information and the owner family’s value V_i is non-verifiable, the family uses an incentive contract based

¹²In the Appendix, we show that, for $\theta_F = \frac{1}{2}$, the family manager’s optimal incentive pay shrinks to zero. That is, he cares for the family firm so strongly that he needs no extrinsic incentivization. By restricting $\theta_F \in [0, \frac{1}{2}]$, we exclude the case $\theta_F > \frac{1}{2}$ in which the manager would be inclined to even put proportionate funds in the firm.

on the performance measure P_i to mitigate the moral-hazard problem. In this section, we derive the optimal incentive contract for manager $i = \{F, N\}$.

The owner family's expected-utility maximization problem when hiring manager i is given by:

$$\max_{\{w_i, \gamma_i, e_{i,1}, e_{i,2}\}} \pi_i = (e_{i,1} + e_{i,2}) - \gamma_i(e_{i,1} + \alpha e_{i,2}) - w_i \quad (\text{I})$$

$$\text{s.t. } U_i = w_i + \gamma_i(e_{i,1} + \alpha e_{i,2}) - C(\cdot) + \theta_i \pi_i \geq 0, \quad (\text{PC})$$

$$e_{i,1}, e_{i,2} \in \arg \max_{\hat{e}_{i,1}, \hat{e}_{i,2}} U_i = w_i + \gamma_i(\hat{e}_{i,1} + \alpha \hat{e}_{i,2}) - C(\cdot) + \theta_i \pi_i, \quad (\text{IC})$$

$$w_i, w_i + \gamma_i \geq 0 \quad (\text{NNC})$$

The participation constraint (PC) guarantees that the manager is not worse off if he accepts the contract rather than rejecting it in favor of his outside option. Condition (IC) yields the incentive-compatibility constraints according to which the manager chooses his effort levels so as to maximize his own expected utility for any given incentive contract. The last constraints stated in (NNC) ensure that manager i 's wage payment is non-negative for any pair of efforts $(e_{i,1}, e_{i,2})$ in any possible state. Throughout the paper, we focus on cases with both effort levels strictly positive, i.e., we assume that s is not too large.

We solve the problem (I), subject to the constraints, for both manager types and $\alpha \in (0, 1]$ in Appendix A.1. There, we derive the optimal effort levels $e_{i,1}^*(\cdot)$, $e_{i,2}^*(\cdot)$ in the two tasks, the optimal incentive contract, and the owner family's expected utility under the optimal contract, respectively. The following lemma characterizes the optimal contract.

Lemma 1 *The optimal incentive contract (γ_i^*, w_i^*) for manager $i \in \{F, N\}$ is given by:*

$$w_i^* = 0, \quad (6)$$

$$\gamma_i^* = \frac{1 - 2\theta_i}{1 - \theta_i} \times \frac{(a_{i,2} - \alpha s) + (a_{i,1}\alpha - s)}{2[(a_{i,2} - \alpha s) + \alpha(a_{i,1}\alpha - s)]}. \quad (7)$$

As verified in Appendix A.1, the manager always obtains an informational rent, and the owner family thus will set the fixed wage as low as possible to minimize wage costs. Given the lower bound on the manager's payment in (NNC), the optimal fixed wage becomes zero. Accordingly, due to the manager's limited liability, the well-known trade-off between informational rent and efficiency arises.

In the following two subsections, we discuss the optimal incentive contracts and the associated results regarding the manager's multitasking problem and the owner family's expected utility for the two manager types in greater detail. As a benchmark, we first consider contracts based on a perfect performance measure with $\alpha = 1$. Then, we turn to the case of an imperfect performance measure with $\alpha < 1$.

3.1 Incentive contracts based on a perfect performance measure: benchmark model

Under a perfect performance measure (i.e., $\alpha = 1$), the manager's achievement in the economic task 1 and the non-economic task 2 are both perfectly captured by P_i . That is, the owner family's expected value and the expected performance measure used in the incentive contract coincide. The following corollary shows that, in this case, either manager exerts more effort in the

respective task in which he is more skilled (compare Eqs. (A.5) and (A.6) in Appendix A.2).

Corollary 1 *Under a perfect performance measure, for any given s , the non-family manager focuses more on task 1 while the family manager focuses more on task 2. A manager's effort difference across tasks is smallest when tasks are independent; otherwise, the difference in effort is increasing in the absolute value of s .*

Intuitively, provided that a manager's marginal reward is the same for both tasks, each manager will pay more attention to the respective task for which his marginal effort cost is lower. Managerial attention becomes even more uneven as tasks get more interdependent. For complementary tasks, focusing on the task in which the manager is more skilled facilitates his performance also in the other task. When tasks are substitutes, this is no more the case. Exerting effort is worthwhile mainly in the "easier" task.

This imbalance in managerial attention triggered by relative abilities and task interdependence clearly affects the value generated by the managers. The following proposition summarizes the consequences of task interdependence as well as the parameter θ_F for the owner's expected utility.

Proposition 1 *Under a perfect performance measure, the owner family's expected utility is decreasing in s and strictly increasing in θ_F .*

The first finding follows because, as s increases, effort costs increase ceteris paribus and as a consequence total exerted effort goes down, thereby reducing the owner family's overall expected utility. The second result of Proposition 1 verifies that the parameter θ_F serves as an inverse measure of the magnitude of the moral-hazard conflict between the owner family and the manager. Intuitively, the more the family manager personally cares about the family firm, the harder he works for a given bonus ceteris paribus and the higher becomes the owner family's expected utility.¹³ This positive impact on managerial performance does not exist for the non-family manager.

¹³As noted in the introduction, this finding is in line with the well-known reasoning regarding the agency costs arising from the separation of ownership and management (Jensen & Meckling, 1976).

3.2 Incentive contracts based on an imperfect performance measure

As discussed above, more generally, the manager's achievement in the non-economic task 2 can certainly not be measured as well as achievement in the economic task 1. In this section, we thus analyze the case where the owner family uses an incentive contract based on an imperfect performance measure P_i with $\alpha < 1$. In the following, we discuss the optimal incentive contract and the multitasking problem for both types of managers. More specifically, given managerial abilities, we analyze the impact of task interdependence and the distortion created by the performance measure on the owner family's expected utility. We further discuss the impact of the manager's personal interest in the total value generated for the owner family.

Initially, consider the optimal incentive pay γ_i^* stated in Lemma 1. It is straightforward to see that, for given θ_i , the optimal bonus is lowest as α approaches 1. Intuitively, a well-aligned performance measure is very effective in terms of incentivizing the manager in both tasks. This allows for setting a smaller bonus at the optimum so as to keep the rent paid to the manager and hence the owner family's wage costs low. A few further observations regarding the optimal incentive pay across managers and depending on θ_i should be noted.

Corollary 2 *Under an imperfect performance measure, with $\theta_F = 0$, the optimal incentive pay is higher-powered for the family manager; i.e., $\gamma_F^*(\cdot, \theta_F = 0) > \gamma_N^*$. With $\theta_F > 0$, the family manager's optimal incentive pay is decreasing in θ_F . For sufficiently large θ_F , the optimal incentive pay is higher-powered for the non-family manager; i.e., $\gamma_F^*(\cdot, \theta_F) < \gamma_N^*$.*

The first result of the corollary may seem surprising at first since an imperfect performance measure less effectively captures (and thus incentivizes) precisely the task in which the family manager is more skilled in. In fact, a bonus based on the distorted measure P_i less strongly rewards effort in task 2 than effort in task 1. As verified below, compared to a perfect measure, both managers' effort levels will consequently be distorted towards task 1 when $\alpha < 1$. Moreover, due to the non-family manager's ability advantage in task 1, this effort distortion will be relatively stronger for

this manager type. As a result, the owner family will set the non-family manager's bonus lower to restrain him from (too) strongly neglecting task 2. By contrast, paying a large bonus to the family manager incentivizes this manager to allocate some more attention to economic goals.

Intuitively, the second result of the corollary follows from the family manager's increased personal valuation of the family firm which generates intrinsic work motivation, thereby allowing for a lower bonus. This implies that the managers' incentive payments converge as θ_F increases and eventually, as stated in the last result of the corollary, the non-family manager's bonus exceeds that of the family manager.¹⁴ In fact, previous literature on incentive payment in family firms shows that family CEOs oftentimes receive lower compensation than non-family CEOs (McConaughy, 2000; Gómez-Mejía et al., 2003). Finally, the family manager's optimal bonus shrinks to zero for $\theta_F = \frac{1}{2}$, where his strong attachment to the family firm and the associated personal utility from raising firm value bring about sufficient intrinsic motivation.¹⁵ Clearly, this is an extreme case of a family manager who strongly commits himself to the family firm and fully shares the owner family's values and goals.

In the following, we analyze the impact of the measurement problem on the relative attention that managers pay to the different tasks. For the sake of exposition, in the next two corollaries, we focus on the case where $\theta_F = 0$ so that the manager types are only distinguished by their relative abilities to perform the tasks. This is, however, innocuous because the impact of θ_F on the owner family's value function π_F^* is strictly positive, as studied in Proposition 2 at the end of this subsection.

Corollary 3 *Under an imperfect performance measure, both managers' efforts are distorted towards task 1. That is, $e_{i,1}^*(\cdot, \alpha < 1) > e_{i,1}^*(\cdot, \alpha = 1)$ while $e_{i,2}^*(\cdot, \alpha < 1) < e_{i,2}^*(\cdot, \alpha = 1)$. For both family and*

non-family managers, this effort distortion gets more severe as s increases.

Unlike under a perfect performance measure, a manager's effort exerted in task 1 affects the imperfect performance measure more strongly than the effort exerted in task 2. Consequently, for both manager types, it becomes relatively more rewarding to pay more attention to task 1. This effort distortion is amplified as tasks become less complementary or stronger substitutes because performing both tasks concurrently becomes then costlier.

The foregoing results imply that, under an imperfect performance measure, the non-family manager's ability-driven focus on task 1 will be reinforced as compared to a perfect measure (see Corollary 1) while the family manager's focus on task 2 will be counteracted. For both manager types, this increases the difference in individual efforts allocated to task 1 and 2. In the next corollary, we elaborate on this effort difference, $e_{i,1}^*(\cdot, \alpha) - e_{i,2}^*(\cdot, \alpha)$, as a measure of the strength of effort distortion resulting from the imperfection of the performance measure. These insights regarding the managers' relative attention across tasks will prove useful to grasp the intuition behind our main findings concerning the owner family's hiring decision in the next section.

Corollary 4

- i) *For both managers $i \in \{F, N\}$, the effort difference across tasks, $e_{i,1}^*(\cdot, \alpha) - e_{i,2}^*(\cdot, \alpha)$, is decreasing in α .*
- ii) *The non-family manager focuses more on task 1 than task 2, i.e., $e_{N,1}^* - e_{N,2}^* > 0$ for any given α and s .*
- iii) *The family manager may focus more on either task. (a) He focuses more on task 2 than task 1, i.e., $e_{F,1}^* - e_{F,2}^* < 0$, if tasks are sufficiently strong complements, his expertise in task 2 is sufficiently large ($a_{F,2} + s < 0$), or α is sufficiently large. (b) Otherwise he also focuses more on task 1 than task 2, i.e., $e_{F,1}^* - e_{F,2}^* > 0$.*

The result of Corollary 4 (i) is straightforward, in accordance with the previous discussion regarding the impact of α on the manager's effort allocation. Clearly, the effort distortion (and thus the effort difference across tasks) is mitigated for both manager types when

¹⁴Despite a possibly lower bonus, the family manager may however earn a larger rent than the non-family manager due to the additional expected utility generated by the personal attachment to the family firm (see Eq. (A.8) in Appendix A.1 and the ensuing explanation).

¹⁵Notice that such a family manager still earns a positive rent (see Eq. (A.8) in Appendix A.1).

α increases, because exerting effort in task 2 then more strongly affects the manager's expected reward.

Corollary 4 (ii) and (iii) discuss the managers' relative attention to the tasks, depending on their respective abilities and the type and degree of task interdependence. Specifically, Corollary 4 (ii) shows that the non-family manager pays relatively more attention to task 1 also under an imperfect measure. Intuitively, not only is the non-family manager more skilled in this task but moreover is working on task 1 more effective in raising his expected bonus than working on task 2. Accordingly, the non-family manager's focus on task 1 is even more pronounced than under a perfect measure (Corollary 3).

By contrast, the family manager's relative attention depends on the strength of the measurement problem and the task interdependence, as shown in Corollary 4 (iii). In particular, by Corollary 4 (iii)a, the family manager — because of his ability advantage in task 2 — pays relatively more attention to this task when α is sufficiently large. Clearly, this includes the case of a perfect performance measure ($\alpha = 1$), presented in Corollary 1. However, by Corollary 4 (i), the family manager's attention will be increasingly distorted towards task 1 as α decreases and the performance measure becomes more imperfect. It is straightforward that the extent of this distortion is counteracted by the manager's ability advantage in task 2. Similarly, the effort distortion is lower when tasks are highly complementary because working on task 2 then strongly facilitates also performing task 1 (see Corollary 3). That is, for sufficiently small $a_{F,2}$ and s , the family manager pays more attention to task 2 than task 1 even if performance measure only imperfectly captures task 2. However, eventually the foregoing effects of expertise and task complementarity are outweighed by the distortion created by the performance measure as α becomes sufficiently small. By Corollary 4 (iii)b, the family manager will then also devote more attention to task 1, despite his relatively low ability. Clearly, this is more likely to be the case when the manager's ability advantage in task 2 is small or when performing both tasks concurrently becomes more costly, that is, when tasks are weak complements or even substitutes. Altogether, under an imperfect performance measure, the non-family manager puts more effort into task 1 for any s and α while the family manager focuses on task 2 for low s and large α but switches his main attention also to task 1 once s is large or α is small enough.

Note that the foregoing findings confirm the introductory quotation by Chrisman et al. (2012). Our results imply that, due to their specific skill distribution, “non-family managers resist the adoption of non-economic goals” in general and, in particular, because performance measures are typically imperfect. Clearly, the family managers' personal care for the family firm reinforces this result. As a novel insight, our model further shows that the foregoing problem gets more severe as tasks become more exclusive. Then, even family managers are less inclined to strongly focus on the non-economic tasks. However, the model also verifies that family managers are generally less likely to neglect the non-economic task than non-family managers. In fact, the former often devote their main attention to this part of the job. These insights will be decisive for the subsequent analysis of the optimal hiring decision because the managers' effort allocation directly impacts the owner family's utility. The next proposition summarizes how the owner family's expected utility is affected by the (mis)alignment of the performance measure, the task interdependence, and the family manager's personal care for owner family's expected utility.

Proposition 2 *Under an imperfect performance measure, the owner family's expected utility is decreasing in s , increasing in α , and strictly increasing in θ_F .*

Proposition 2 verifies that, similar to the case of a perfect measure, an increase in a manager's effort cost resulting from more exclusive tasks implies a reduction of the owner family's expected utility. Moreover, as discussed above, when the performance measure becomes more aligned with the owner family's value, the effort distortion caused by the incentive contract is less severe. The owner family can then provide more efficient incentives by better directing the manager's efforts towards both tasks, thereby more effectively mitigating the moral-hazard problem and raising the owner family's utility. The foregoing implies that, ceteris paribus, the owner family is always better off under a perfect performance measure. Finally, the last result of Proposition 2 verifies that the equivalent finding from Proposition 1 extends to imperfect performance measures. Accordingly, for any α , a larger parameter θ_F reduces the moral-hazard conflict between the owner family and the family manager

and thereby raises the family manager's performance relative to that of the non-family manager.

4 The optimal hiring decision

In this section, we analyze under which conditions the owner family should optimally hire either a family manager or a non-family manager instead. In our model, the owner family hires the manager whose running of the firm provides her with a larger expected utility. Therefore, we consider the owner family's value function when hiring manager $i \in \{F, N\}$, under the optimal contract, $\pi_i(w_i^*, \gamma_i^*, e_{i,1}^*, e_{i,2}^*) = \pi_i^*(a_{i,1}, a_{i,2}, s, \alpha)$, given in Eq. (A.7) in Appendix A.1. Recall that, by Propositions 1 and 2, the impact of the family manager's intrinsic care for the family, θ_F , on the owner family's value function is strictly positive. To emphasize that our main result is independent of such intrinsic care, we restrict the following analysis of the optimal hiring decision as well as the graphical representation thereof to the case $\theta_F = 0$. That is, in this section, we assume that the family manager is personally as concerned (or unconcerned) with the family firm as is the non-family manager. Obviously, allowing for $\theta_F > 0$, would shift the relative performance advantage even further towards the family manager.

According to our results thus far, the relative performance of the two manager types will be determined by the interplay of the alignment of the performance measure with the owner family's value, reflected by α , the degree and type of task interdependence, measured by s , as well as the managers' relative and absolute abilities. The next proposition reports our main and (surprising) finding according to which hiring a family manager can often be optimal even if this manager has lower average skills than the non-family manager, thereby shedding light on the relative prominence of this manager type in practice.

Proposition 3 *Let $\theta_F = 0$. Moreover, suppose that the family manager has lower average skills than the non-family manager, i.e., $a_{F,1} + a_{F,2} > a_{N,1} + a_{N,2}$. Then, for α large enough, the family manager is preferred to the non-family manager for any given s if the former is sufficiently skilled in the non-economic task.*

Intuitively, the result highlights that the family manager's non-economic, family-related expertise, together with his inclination to *not* neglect the associated aspects of everyday business may very well outweigh a non-family manager's overall strong skills.

Put differently, even when the family manager is not other-regarding towards his family (i.e., $\theta_F = 0$) and has lower average skills, the owner family might still opt for hiring him to run the firm. In this case, the family manager's relatively higher ability to achieve the family's non-economic goals allows him to perform both tasks more appropriately for the family (firm), which equally values both goals. By contrast, the non-family manager, in this case, would be too focused on the economic aspects of the managerial job to secure himself a large incentive payout. Obviously, allowing for $\theta_F > 0$ would make the case for the family manager even stronger. Moreover, an immediate corollary of the foregoing proposition is that, for the same value of α , a family manager with *higher* average skills than the non-family manager would be unambiguously preferred by the owner family because her expected utility is strictly increasing in the manager's abilities.

While the proof of our main result can be found in Appendix A.1, in the following, we provide a more general graphical illustration of the owner family's optimal hiring decision using numerical examples. Therefore, we plot the owner family's value function for both manager types, π_F^* , π_N^* , as functions of s and for different values of α . In all figures, solid (dashed) curves indicate profits when the firm is run by a (non-) family manager. In line with the model, we focus on cases for which the managers' effort is strictly positive in both tasks. We separately consider two possible scenarios, whereby, in the first one, the family manager is more skilled on average ($a_{F,1} + a_{F,2} < a_{N,1} + a_{N,2}$) while the non-family manager is more skilled on average ($a_{F,1} + a_{F,2} > a_{N,1} + a_{N,2}$) in the second scenario. We show that either manager can be preferred by the owner family in *both* cases, depending on the alignment of the performance measure with the owner family's value, α , and the task interdependence, s .

First consider the case where the **family manager** is relatively **more skilled** on average. As an example, assume that $a_{F,1} = a_{N,2} = 7$, $a_{F,2} = 4$, and $a_{N,1} = 5$. In this example, regarding their respectively more

productive task, the family manager is at an advantage since his ability of performing the non-economic task is larger than the non-family manager's ability of doing the economic task ($a_{F,2} < a_{N,1}$). Figure 1a to c present the owner family's associated value functions depending on s and for three different values of α .

Figure 1a shows the case of a strongly misaligned performance measure ($\alpha = 0.1$), where the profit curves intersect and, accordingly, the owner family's optimal hiring decision depends on the value of s . More precisely, the family manager outperforms the non-family manager if the managerial tasks are sufficiently strong complements. Notably, this is the case in spite of the only negligible impact task 2 has on the performance measure. Intuitively, the family manager is hired due to his greater average skills level when performing one task strongly facilitates the other one, thereby mitigating the distorting effect of the strongly misaligned performance measure. However, as tasks become more exclusive, both managers' efforts are more strongly distorted towards task 1 (Corollary 3). In the figure, the value function decreases in s however

faster for the family manager in the relevant range. Intuitively, when α is small, the family manager's overall performance suffers more strongly from the increased distortion that exists for large values of s . As a result, both value functions converge and eventually intersect at some $s < 0$. For any s above this level, the non-family manager will thus be preferred over the family manager although he has lower average abilities.

A comparison of panels (a), (b), and (c) of Fig. 1 highlights the effect of performance-measure alignment on the optimal hiring decision. In particular, as α increases, the range of task interdependence for which the family manager outperforms the non-family manager is increasing too. For an intermediate value of α in panel (b), the family manager is preferred when tasks are complements or weak substitutes. When α is sufficiently large in panel (c), the family manager eventually outperforms the non-family manager regardless of task interdependence. Accordingly, as the performance measure becomes more aligned with the owner family's value, the family manager

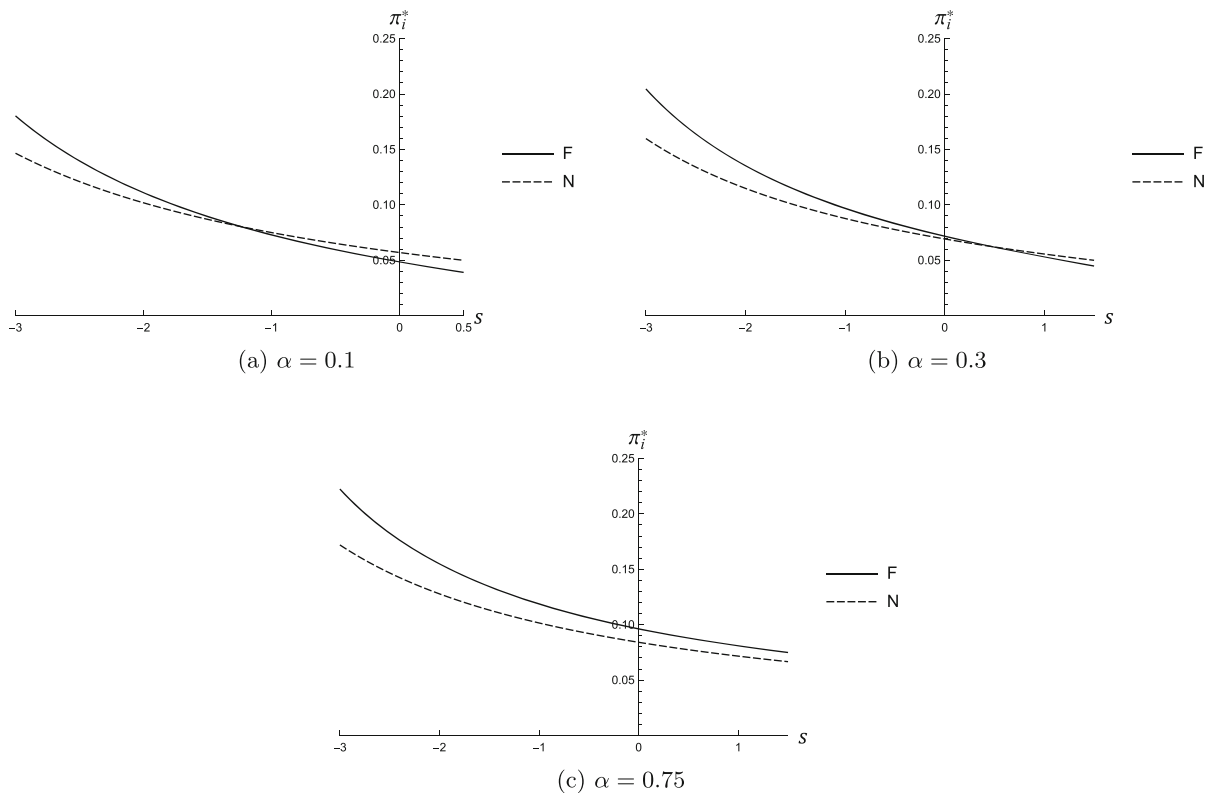


Fig. 1 Value functions $\pi_i^*(a_{i,1}, a_{i,2}, \theta_i, s, \alpha) : \pi_N^*(5, 7, 0, s, \alpha)$ and $\pi_F^*(7, 4, 0, s, \alpha)$; F: family manager; N: non-family manager

becomes more likely optimal. Intuitively, improved performance measurement counteracts the managers' effort distortion towards the economic task, which, in the given case, has an overall more beneficial effect on the family manager's performance. The latter's high average abilities on the one hand and his advanced skills in the non-economic task on the other hand allow him to particularly strongly contribute to the owner family's value.

Figure 2 turns to the case of an on-average **more skilled non-family manager**, assuming $a_{N,1} = 3$, $a_{N,2} = 6$, $a_{F,1} = 8$, and $a_{F,2} = 2$. To illustrate Proposition 3, in this example, the family manager's skill distribution is much more uneven than that of the non-family manager, implying that the former possesses particularly excellent skills in the non-economic task.

Figure 2a shows the owner family's value functions for a strongly distortive performance measure ($\alpha = 0.1$). Similar to Fig. 1a, the value functions intersect at a negative s . Accordingly, the family manager outperforms the non-family manager if tasks are sufficiently strong complements while the non-family manager is hired otherwise. Intuitively, if tasks are highly complementary, the family manager's excellence in the non-economic task not only facilitates his performance in the economic task but also compensates for his low ability in general and regarding the latter task in particular.

Figure 2b shows that this effect is amplified as the performance measure becomes more aligned, thereby increasing the range of s for which the family manager becomes the optimal choice. In particular, already for an intermediate value of α in panel (b), the family manager outperforms the non-family manager in spite of his lower overall skills.

Altogether, our findings show that a family manager's particular talent regarding non-economic matters of the family firm can overtrump even very poor skills in economic matters. This becomes more likely, the more aligned the performance measures is with the owner family's value because the family manager's ability advantage then yields more effective incentives.

5 Discussion and contributions

In this section, we discuss our contributions to the family-business, human-resource, and agency literature. We present a summary of our main results, highlight important aspects and factors when it comes to the optimal hiring decision, and present testable predictions as well as practical implications. Finally, we discuss limitations of our study, possible extensions, and avenues for future research.

5.1 Main results and contribution to family business research

Our multitask model shows that ability differences, task interdependence, personal interest in the family's goals, and difficulties in the measurement of achievement in non-economic tasks are interrelated aspects relevant to understanding why either family or non-family managers are the optimal hiring choice in family firms. Our analysis generates several predictions that could be tested in empirical research, as discussed in Section 5.4 on future research below. In particular, the hypotheses derived from our model help to understand better the specific context in which

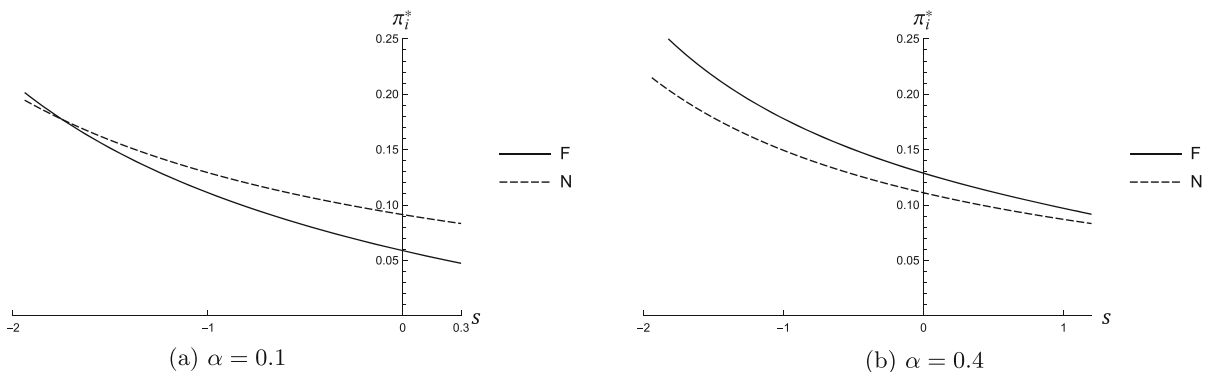


Fig. 2 Value functions $\pi_i^*(a_{i,1}, a_{i,2}, \theta_i, s, \alpha) : \pi_N^*(3, 6, 0, s, \alpha)$ and $\pi_F^*(8, 2, 0, s, \alpha)$; F: family manager; N: non-family manager

family-owned firms (should) hire members of the owner family to run the firm (Bennedsen et al., 2007; Burkart et al., 2003; Pérez-González, 2006).

The following table illustrates the impact of the various factors identified by our model on the managers' overall job performance and thus on their attractiveness for the owner family. The predictions shown for each manager type are based on our model, specifically Assumption 1, and our numerical examples in Figs. 1 and 2. Accordingly, the larger a particular factor's positive (negative) impact on a manager's overall job performance, the more (less) attractive that manager becomes and the higher (lower) are, thus, his/her hiring chances.

It is worth noting that, in line with our analysis in Section 4, the impact of the contextual factors listed in Table 1 does *not* depend of the family manager's (potential) personal care for the family's goals. As we have verified above, family managers can certainly outperform non-family managers even in the absence of this particular characteristic. Yet, if present, it constitutes another advantage for the family manager, thereby raising his/her hiring chances even further, as shown in the first line of Table 1.

The table shows that a larger ability in the non-economic task has a positive impact on the job performance of both managers; however, the effect is stronger for the family manager, thereby implying that the latter's relative hiring chances increase. The opposite is true for rising skills in the economic task. Our model moreover predicts that, *ceteris paribus*, the family manager's overall (and relative) job

performance increases when the applied performance measure sufficiently well captures also non-economic goals. In line with our numerical examples, the family manager is more likely to outperform the non-family manager when economic and non-economic goals are complementary tasks in the manager's job. In fact, by our figures above, such favorable task interdependence tends to have a positive (moderating) effect on the family manager's relative performance and thus on his/her superiority over the non-family manager. Finally, the family manager is more likely to be the optimal hiring choice when his/her skills and talents regarding non-economic tasks are very pronounced. When however the attainment of non-economic goals is difficult to measure and when economic and non-economic goals are rather incompatible, it becomes better for family firms to hire non-family managers, at the expense of the family's non-economic goals. This finding may, at first sight, seem counter-intuitive because family managers are generally less inclined to neglect non-economic goals, which appears to be advantageous when it is particularly these goals that are hard to measure. Notice however that, although family managers tend to focus on non-economic goals more than non-family managers, their overall job performance is often not sufficient enough to outweigh their disadvantage regarding economic goals. This may change though when available performance measures improve and get more aligned with the family's overall goals. Such measures allow for a more effective incentivization of both economic and non-economic goals, thereby enabling the family managers to profitably

Table 1 Impact of different contextual factors on the owner family's value function

	Effect on overall job performance of		Raising the hiring chances of
	Family manager	Non-family manager	
Personal care for the family's goals	++	n.a.	Family manager
Ability in non-economic task increases	++	+	Family manager
Ability in economic task increases	+	++	Non-family manager
Quality of performance measure regarding non-economic goals increases	++	+	Family manager
Economic and non-economic tasks are (strong) complements	++	+	Family manager
Economic and non-economic tasks are (strong) substitutes	--	-	Non-family manager

The (plus or minus) signs indicate in which direction and how strongly the respective factor influences the overall job performance of the respective manager type

exploit their expertise regarding non-economic goals and, in the presence of desirable task interaction, extend that advantage to economic goals.

With these findings, our study contributes to family business research in several ways. Next to contributing to the broader literature about non-family managers (Hiebl and Li, 2020; Tabor et al., 2018), the goals of owner families and family CEOs (Fang et al., 2022; Garcés-Galdeano et al., 2017; Williams Jr et al., 2018; 2019), and the agency costs of family firms (Ang et al., 2000; Chrisman et al., 2004; Schulze et al., 2001), our study describes in detail the hiring (dis)advantages of family versus non-family managers. So far, the literature has assumed that the difficulty to measure non-economic goals and its incompatibility with economic goals are strong reasons to hire family managers (Chrisman et al., 2014; Zhang & Ma, 2009). Our results show that this argument may in fact not be true as their stronger focus on non-economic goals does often not outweigh their ability disadvantage regarding economic goals. Our paper also contributes to the specific literature on how to pay or incentivize family and non-family managers. While the stewardship literature and the classical agency theory argue that family CEOs being stewards do not need to be incentivized (Ang et al., 2000; Corbetta & Salvato, 2004), our model suggests that it is optimal to pay family managers explicit incentives too. In fact, in Corollary 2, we verify that family managers' personal valuation of the family firm may generate intrinsic work incentives that lower their optimal amount of incentive pay, potentially even below the optimal level for non-family managers (Gómez-Mejía et al., 2003; McConaughy, 2000). However, we also show that the optimal incentive pay is nevertheless often strictly higher-powered for family managers when performance measures do not capture non-economic goals well. Intuitively, in such a case, the owner family refrains from paying a (too) high bonus to the non-family manager to prevent him/her from focusing solely on economic goals. By contrast, the family manager tends to focus on non-economic goals anyway, hence reallocating some of this manager type's attention towards economic goals by paying a large bonus is in favor of the owner family. This way, our study helps to explain why pay-for-performance is used in many private, family-owned enterprises (Mazur & Wu, 2016; Michiels et al., 2013; Schulze et al., 2001).

Next to these contributions, our paper also adds to the literature on sustainability in family firms. So far, the discussion has been mostly on how family firms and their characteristics influence the achievement of sustainability goals (Berrone et al., 2010; Sharma & Sharma, 2011). Our study highlights that the relationship goes in both directions and that sustainability goals may also have an influence on the character and structure of family firms. As sustainability goals are often long-term and difficult to measure (Mura et al., 2018), our model predicts that, *ceteris paribus*, non-family managers will often constitute the better hiring choice, in particular when sustainability goals are not quite compatible with purely economic goals. Clearly, this would change the character and reduce the familiness of family-owned firms. In some sense, this is a paradoxical result as family firms run by family managers are often viewed as an organizational form fostering trans-generational entrepreneurship (Jaskiewicz et al., 2015) and the pursuit of long-term objectives (Lumpkin et al., 2010).

5.2 Contribution to human-capital, multitasking and agency literature

Next to contributing to the family-business literature, we also contribute to the broader literature on personnel and organizational economics. In particular, our formal approach is related to Ed Lazear's skill-weights approach to firm-specific human capital, whereby all single skills are general, but firms may require them with different (firm-specific) weights attached (Lazear, 2009). Similarly, in our model, family firms require particular skills regarding economic and non-economic business matters, and manager types are characterized by differing skill distributions regarding the associated tasks. Specifically, family managers' particular expert skills in the non-economic job dimension turn out to dominate even low average abilities across all job dimensions. Moreover, by formally analyzing different dimensions of family-firm management, our paper contributes to the extensive work on the optimal design of incentives in multi-task principal-agent settings.¹⁶ The present paper is, to our knowledge, the first to propose a multitask

¹⁶In addition to the aforementioned papers by Holmström and Milgrom (1991) and Baker (1992, 2002), earlier notable contributions include but are not limited to Feltham and Xie (1994) and Dewatripont et al. (2000).

model specifically tailored to the context of family firms that allows for an investigation of the hiring decision between heterogeneous agents who are family and non-family managers. Related to our work, Block (2011) analyzes optimal incentive contracts for non-family managers in family businesses. A few further studies have employed multitask models similar to ours for investigating different research questions. Buchen and Kragl (2021) analyze productive efficiency under multitasking more generally by comparing the performance of specialist and generalist agents. Similarly, in our model, high-performing family managers can be considered to be specialists regarding the family's non-economic goals. However, different from our work, in Buchen and Kragl (2021), task-specific performance measures are available, thereby ruling out effort distortion and its effects altogether. Kragl and Schöttner (2014) analyze how an imposed minimum wage affects the optimal job design when interrelated tasks can be assigned to one or two homogeneous specialized agents. In our framework, we also impose the assumption of non-negative wages but study the optimal incentive contracts and hiring decision when tasks cannot be separated and agents are heterogeneous. Bénabou and Tirole (2016) assume that the agents' abilities are not observable but one agent is always more productive than the other in both tasks, whereby tasks are substitutes. Conversely, we do not investigate adverse selection and do not limit the analysis to cases where one manager is superior to the other.¹⁷ In a similar model, Mauch and Schöndube (2019) investigate the agents' time allocation between two tasks that can be independent or substitutes. In contrast to both of these studies, we highlight the relevance of task complementarity as another dimension of the productive environment that affects the optimal hiring decision. Finally, our setup is also related to the one used by Dikolli et al. (2009) who study how task interdependence and the interrelation between different performance measures affect incentive contracts for a risk averse agent. By contrast, we focus on the trade-offs arising between task interdependence, an imperfect performance measure, and ability differences among different manager types under limited liability.

¹⁷Notably, introducing an adverse-selection problem with respect to ability types in our model does not affect the main findings. See the concluding section for a discussion.

5.3 Practical implications

The above results about the selection of family managers have implications for the relative economic performance of family-managed versus non-family-managed family-owned firms (Bennedsen et al., 2007; Miller et al., 2013; Pérez-González, 2006; Sraer and Thesmar, 2007) because the hiring of family managers may come along with lower abilities regarding economic tasks. In addition, our model results offer a possible explanation for why family managers often receive lower (incentive) pay than non-family managers in their executive compensation contracts (Gómez-Mejía et al., 2003; McConaughy, 2000). In fact, in our model, this finding directly follows from the family manager's aforementioned personal interest in the family's goals and the concomitant intrinsic work motivation.

Our study has further practical implications for business-owning families. In particular, it may foster the latter's understanding of selecting suitable family or non-family managers and designing efficient incentive contracts in a world where sustainability and sustainability goals become a high priority and increasingly long-term and non-economic goals matter. Finally, our study provides business-owning families with economic reasoning as to why and when it can be optimal to hire managers from their own families, thereby equipping them with arguments to defend wrongful accusations of nepotism often brought forward by other share- and stakeholders.

5.4 Limitations and future research

Our study offers both interesting theoretical and empirical avenues for future research. With respect to the former, our model is based on several assumptions that fit well our research question yet at the same time limit the model's applicability in some interesting dimensions of family business settings more generally. To capture those, our model could be extended in several ways. First, we model how family and non-family managers differ regarding their abilities and personal interests in the goals of the owner family. Yet, there are further factors in which these two manager types may differ and that may impact the optimal hiring decision. For example, we assume that family and non-family managers do not differ in their extent of limited liability. In many family business settings,

it may, however, be plausible to assume that family managers (unlike non-family managers) can be asked to make (short-term) payments to the firm. Such payments would allow for the provision of more efficient incentives to family managers and hence reinforce our result on the relatively better alignment of objectives for this type of manager.¹⁸ Furthermore, we have neglected the monitoring abilities of owner families (Audretsch et al., 2013). In particular, owner families might be able to better assess, predict, and monitor the job behavior of family members versus non-family members. This would mitigate adverse-selection and moral-hazard problems when hiring a family member because of a lower degree of uncertainty regarding optimal incentives and future performance. It is worthwhile to discuss how introducing ex-ante asymmetric information on the managers' abilities would affect our results. Specifically, it can be argued that the owner family can observe and assess the abilities of a family manager better than those of a non-family manager. In such a case, the family firm would have to pay an additional informational rent to non-family managers due to self-selection problems arising during the hiring process when their abilities are unknown. Consequently, hiring non-family managers becomes more costly compared to our model. Moreover, we do not consider risk aversion of managers in our model. However, Gómez-Mejía et al. (2007) suggest that the family (and hence also the family manager) may be willing to make risky decisions that can harm the firm's financial performance in order to preserve its socioemotional wealth (captured by non-economic goals in our model). Hence, it may be interesting to consider how family and non-family managers differ with respect to their risk attitude towards economic and non-economic goals.

Second, we consider only one family firm owner as the principal. Family firms, however, often have several family or non-family shareholders who impose different weights on the economic and the family's non-economic goals (compare footnote 6). For instance, non-family shareholders may not regard the family's non-economic goals as being as important as family shareholders do. Therefore, their preference for particular managers is hardly affected by family bonds

or family succession considerations. This potential conflict between family and non-family shareholders may make it more difficult to hire family managers and will complicate the selection problem in general. Third, we have analyzed a one-shot model. Further insights could be gained by using a (game-theoretic) dynamic model in the spirit of Mathews and Blumentritt (2015) and Mathews and Blumentritt (2013). Such a dynamic perspective would allow to include the timing aspect of management succession, which is relevant from a practitioner's point of view. With a potential (but currently too young) family candidate in the background, non-family managers face a significant threat of dismissal if not complying with the firm's goals whereas family managers are rather shielded from such severe consequences. This may intensify non-family managers' work incentives in general and their attention to non-economic goals in particular. If, moreover, non-economic goals can be measured better in the long than the short run, the use of suitable long-term measures in incentive contracts would lower the effort distortion and hence improve both manager types' incentives regarding non-economic tasks. Notably, even if no objective measures exist for non-economic goals, self-enforcing (implicit) contracts could provide appropriate incentives in a repeated game if the parties observe some (non-verifiable) outcome for these goals. The efficiency of such contracts then depends on the value and length of the employment relationship, the parties' patience, and outside opportunities. Obviously, the two manager types may also differ regarding the aforementioned criteria.

Another interesting avenue for further research would be empirically testing our theoretical predictions. This would allow detecting the empirical manifestations regarding the effects of task variety and the owner family's valuation of non-economic goals on manager and firm performance. Specifically, analyzing the performance of equivalent companies run under family or non-family management, respectively, could highlight the relevance of family management in differing contexts. While there already exists a large literature on the performance of family-managed firms (Fang et al., 2022; Jaskiewicz et al., 2021), we know less about contextual influences. Our theoretical model and numerical examples suggest that the performance differences should be larger when economic and non-economic goals are highly interdependent.

¹⁸Related to this, notice that allowing θ_F to exceed 0.5 in our model already shows that family managers can find it optimal to invest into the firm (compare the explanation in footnote 12).

Similarly, comparing companies where non-economic goals are highly appreciated with firms who focus on economic performance could highlight in which context family managers are the best hiring choice. Moreover, considering how economic and non-economic goals interact in the context of managerial decision-making would improve our understanding of how this feature affects the relative performance of family and non-family managers in family firms. As discussed above, the alignment of performance measures used for financial incentivization with the owner family’s value affects the optimal manager choice as well. Hence, comparing contexts where non-economic goals can be rather objectively measured (e.g., a stable local workforce) with those where these goals are less tangible (e.g., maintaining family dynasty) may verify this prediction.

In addition, further empirical findings can enrich our model, highlight its applicability, and yield possible wider interpretations. For example, it would be interesting to empirically investigate how non-family managers can compensate (over time) their relative disadvantage with respect to family-centered non-economic goals. Specifically, how can they learn about the relevant non-economic tasks and which are the most important goals and competencies to focus on? In fact, empirical evidence shows that some non-family managers do surprisingly well even in family firms that put large emphasis on family-related non-economic goals (Blumentritt et al., 2014; Hiebl, 2014). In this respect, an interesting case are Japanese firms who adopt sons as new family members who will in the future be entrusted with running the family business. Obviously, such future managers are connected much closer to the family than non-family outsiders, thereby raising their knowledge about family-related goals as well as their abilities and credibility regarding family matters (Mehrotra et al., 2013).

Finally, another exciting avenue for future empirical research concerns the relevance of our findings when distinguishing between different members of the top management team. As a straightforward example, we have discussed the CEO. While we expect similar results to apply with respect to the chief financial officer (Hiebl, 2014), the findings may be less applicable when it comes to the chief-operating or chief-marketing officer, for whom non-economic, long-term goals matter less and more short-term operational goals dominate.

An extreme case on the other side of the spectrum would be the chief officer of corporate social responsibility which some large firms have now introduced (Henry et al., 2019; Wiengarten et al., 2017). Such managers, almost by definition, should primarily care about the long-term sustainability aspects of the firm.

Appendix

The Appendix is structured in accordance with the main text. For each subsection, we provide a reference to the respective section of the main text in parentheses.

A.1 Optimal incentive contracts (Section 3)

Proof of Lemma 1 Manager $i \in \{F, N\}$ chooses efforts $e_{i,1}, e_{i,2}$ to maximize his expected utility in function Eq. (5). The first-order conditions are

$$\gamma_i - a_{i,1}e_{i,1} - se_{i,2} + \theta_i(1 - \gamma_i) = 0, \tag{A.1}$$

$$\gamma_i\alpha - a_{i,2}e_{i,2} - se_{i,1} + \theta_i(1 - \alpha\gamma_i) = 0. \tag{A.2}$$

From Eqs. (A.1) and (A.2), we solve for the manager’s effort levels as functions of $a_{i,1}, a_{i,2}, s, \theta_i,$ and γ_i . By the above conditions, the fixed wage does not affect the manager’s effort choice. Since it however negatively affects the owner family’s objective function in Eq. (4), we obtain $w_i^* = 0$ at the optimum, as stated in Eq. (6). Substituting the manager’s efforts obtained from Eqs. (A.1) and (A.2) into the owner family’s objective function in Eq. (4), and calculating the first-order condition, yields

$$\begin{aligned} \frac{d\pi_i}{d\gamma_i} = 0 &\iff \\ (1 - \theta_i)(1 - 2\gamma_i^*) &\frac{(a_{i,2} - \alpha s)}{a_{i,1}a_{i,2} - s^2} \\ + (1 - \theta_i)(1 - 2\gamma_i^*\alpha) &\frac{(a_{i,1}\alpha - s)}{a_{i,1}a_{i,2} - s^2} \\ - \theta_i \frac{(a_{i,2} - s)}{a_{i,1}a_{i,2} - s^2} - \alpha\theta_i &\frac{(a_{i,1} - s)}{a_{i,1}a_{i,2} - s^2} = 0. \end{aligned} \tag{A.3}$$

Solving the last expression for γ_i^* , we obtain

$$\gamma_i^* = \frac{1 - 2\theta_i}{1 - \theta_i} \times \frac{(a_{i,2} - \alpha s) + (a_{i,1}\alpha - s)}{2[(a_{i,2} - \alpha s) + \alpha(a_{i,1}\alpha - s)]}, \tag{A.4}$$

which is the optimal bonus presented in Eq. (7). \square

Optimal efforts

Given γ_i^* , solving Eqs. (A.1) and (A.2) yields the manager’s optimal effort in task 1 and task 2, respectively:

$$e_{i,1}^*(\cdot) = \gamma_i^*(1 - \theta_i) \frac{(a_{i,2} - \alpha s)}{a_{i,1}a_{i,2} - s^2} + \theta_i \frac{(a_{i,2} - s)}{a_{i,1}a_{i,2} - s^2}, \tag{A.5}$$

$$e_{i,2}^*(\cdot) = \gamma_i^*(1 - \theta_i) \frac{(a_{i,1}\alpha - s)}{a_{i,1}a_{i,2} - s^2} + \theta_i \frac{(a_{i,1} - s)}{a_{i,1}a_{i,2} - s^2} \tag{A.6}$$

$$\pi_i^*(\cdot) = \frac{4\theta_i(1 - \theta_i)(1 - \alpha)^2 (a_{i,1}a_{i,2} - s^2) + [(a_{i,2} - s) + \alpha (a_{i,1} - s)]^2}{4(1 - \theta_i) (a_{i,1}a_{i,2} - s^2) [(a_{i,2} - \alpha s) + \alpha (a_{i,1}\alpha - s)]} \tag{A.7}$$

Informational rent

Given the optimal incentive contract $\langle \gamma_i^*, w_i^* \rangle$ and the optimal effort levels $e_{i,1}^*(\cdot)$ and $e_{i,2}^*(\cdot)$, the following result verifies that the manager always obtains a positive expected utility and hence earns a rent:

$$U_i^*(\cdot) = \frac{[(a_{i,2} - s) + \alpha(a_{i,1} - s)]^2}{8(a_{i,1}a_{i,2} - s^2)[(a_{i,2} - \alpha s) + \alpha(a_{i,1}\alpha - s)]} + \frac{\theta_i^2 (1 - \alpha)^2}{2 [(a_{i,2} - \alpha s) + \alpha(a_{i,1}\alpha - s)]}. \tag{A.8}$$

Observe that the second summand of Eq. (A.8) is zero for the non-family manager and hence, ceteris paribus, constitutes the “additional” rent which the family manager obtains due to his intrinsic valuation of the owner’s utility.¹⁹

Remark: As stated in the main text, we focus on positive effort levels throughout. To ensure an interior solution, we parametrize s such that $s^2 < a_{i,1}a_{i,2}$ so that the manager’s effort-cost function is convex everywhere. Because by Assumption 1 we have $a_{N,1} < a_{N,2}$ and $a_{F,2} < a_{F,1}$, it follows that $s < a_{N,2}$ and $s < a_{F,1}$. It is obvious that then it also holds

¹⁹Under the optimal contract $\langle \gamma_i^*, w_i^* \rangle$, either manager’s rent may be relatively larger. For instance, it can be shown that if the managers’ abilities are symmetric (i.e., $a_{F,1} = a_{N,2}$ and $a_{F,2} = a_{N,1}$) and $\theta_F = 0$, the non-family manager obtains a higher rent under an imperfect performance measure, i.e., $U_N^*(\cdot, \alpha) > U_F^*(\cdot, \alpha)$; if however, $\theta_F \in (0, \frac{1}{2}]$, it holds that $U_N^*(\cdot, \alpha) < U_F^*(\cdot, \alpha)$ if θ_F is sufficiently large.

Profit at the optimum

Substituting w_i^*, γ_i^* , and $e_{i,1}^*(\cdot)$ and $e_{i,2}^*(\cdot)$ from Eqs. (A.5) and (A.6) into the owner family’s objective function Eq. (4) yields the value function under the optimal contract, $\pi_i^* = \pi_i(w_i^*, \gamma_i^*, e_{i,1}^*, e_{i,2}^*; \alpha)$:

that $a_{N,2} > \alpha s$ for any given $\alpha \in (0, 1]$. For the non-family manager, we have $\theta_N = 0$. Hence, from Eq. (A.5), effort $e_{N,1}^*(\cdot)$ is strictly positive because $a_{N,2} > \alpha s$ and $s^2 < a_{N,1}a_{N,2}$. From Eq. (A.6), effort $e_{N,2}^*(\cdot) > 0$ if $s < a_{N,1}\alpha < a_{N,1}$. Altogether, to allow for comparisons between the solutions for all performance measures (i.e., for all $\alpha \in (0, 1]$), we implement the strongest assumptions guaranteeing positive efforts and hence assume throughout:

Assumption 2 $a_{i,1}\alpha > s$ and $a_{i,2} > s$

A.2 Incentive contracts based on a perfect performance measure: benchmark (Section 3.1)

Set $\theta_i = 0$. Substituting $\alpha = 1$ into Eqs. (A.4), (A.5), (A.6) and (A.7) yields:

$$\gamma_i^*(\cdot, \alpha = 1) = \frac{1}{2}, \tag{A.9}$$

$$e_{i,1}^*(\cdot, \alpha = 1) = \frac{a_{i,2} - s}{2(a_{i,1}a_{i,2} - s^2)}, \tag{A.10}$$

$$e_{i,2}^*(\cdot, \alpha = 1) = \frac{a_{i,1} - s}{2(a_{i,1}a_{i,2} - s^2)}, \tag{A.11}$$

$$\pi_i^*(\cdot, \alpha = 1) = \frac{(a_{i,2} - s) + (a_{i,1} - s)}{4(a_{i,1}a_{i,2} - s^2)}. \tag{A.12}$$

Proof of Corollary 1 We provide only the proof for the family manager. The proof for the non-family manager is analogous. Comparing Eqs. (A.10) and (A.11) shows that, for the family manager, it holds that $e_{F,1}^*(\cdot, \alpha = 1) < e_{F,2}^*(\cdot, \alpha = 1)$, given that $a_{F,2} <$

$a_{F,1}$. The difference between the family manager's effort exerted in task 2 and task 1 is given by:

$$\Psi \equiv e_{F,2}^*(\cdot, \alpha = 1) - e_{F,1}^*(\cdot, \alpha = 1) = \frac{a_{F,1} - a_{F,2}}{2(a_{F,1}a_{F,2} - s^2)}. \tag{A.13}$$

Differentiating Eq. (A.13) twice w.r.t. s yields:

$$\frac{\partial^2 \Psi}{\partial s^2} = \frac{(a_{F,1} - a_{F,2})(a_{F,1}a_{F,2} + 3s^2)}{(a_{F,1}a_{F,2} - s^2)^3} > 0, \tag{A.14}$$

which proves that Ψ is a strictly convex function in s . It is straightforward that Ψ reaches the minimum for $s = 0$. \square

Differentiating yields:

$$\begin{aligned} \frac{\partial \pi_F^*(\cdot, \alpha)}{\partial \theta_F} &= \frac{\partial [e_{F,1}^*(\cdot, \alpha) + e_{F,2}^*(\cdot, \alpha)]}{\partial \theta_F} - \frac{\partial \{\gamma_F^*(\cdot, \alpha)[e_{F,1}^*(\cdot, \alpha) + \alpha e_{F,2}^*(\cdot, \alpha)]\}}{\partial \theta_F} \\ &= \frac{(1 - \alpha)^2}{[(a_{F,2} - \alpha s) + \alpha(a_{F,1}\alpha - s)]} + \frac{[(a_{F,2} - \alpha s) + (a_{F,1}\alpha - s)]^2}{4(a_{F,1}a_{F,2} - s^2)(1 - \theta_F)^2[(a_{F,2} - \alpha s) + \alpha(a_{F,1}\alpha - s)]} > 0 \end{aligned} \tag{A.17}$$

The sign follows from Assumption 2 by which $a_{F,2} > \alpha s$ and $a_{F,1}\alpha > s$ as well as from the condition $a_{F,1}a_{F,2} - s^2 > 0$. \square

$$\frac{(1 - \alpha)[-(a_{F,1} - a_{N,1})s\alpha^2 + a_{N,2}(a_{F,1}\alpha - s) - a_{F,2}(a_{N,1}\alpha - s)]}{2[(a_{F,2} - \alpha s) + \alpha(a_{F,1}\alpha - s)][(a_{N,2} - \alpha s) + \alpha(a_{N,1}\alpha - s)]} > 0 \tag{A.18}$$

For $s \leq 0$, inequality Eq. (A.18) is clearly satisfied by Assumption 2 and Assumption 1 (iii),(iv), implying that $a_{i,2} - \alpha s > 0$, $a_{i,1}\alpha - s > 0$, $a_{F,1} - a_{N,1} > 0$, and $a_{N,2} - a_{F,2} > 0$. To see that it holds also for $s > 0$, consider only the square bracket of the numerator

Proof of Proposition 1 Differentiating Eq. (A.12) w.r.t. s yields:

$$\frac{\partial \pi_i^*(\cdot, \alpha = 1)}{\partial s} = \frac{(a_{i,2} - s)(a_{i,1} - s)}{2(a_{i,1}a_{i,2} - s^2)^2(\theta_i - 1)} < 0, \tag{A.15}$$

where the last sign follows from $a_{i,1} > s$ and $a_{i,2} > s$ by Assumption 2.

As stated in the main text, the last part of the proposition also holds for $\alpha < 1$. Hence, we provide the following proof for any given $\alpha \in (0, 1]$. The owner family's expected utility at the optimum can be written as follows:

$$\begin{aligned} \pi_F^*(\cdot, \alpha) &= e_{F,1}^*(\cdot, \alpha) + e_{F,2}^*(\cdot, \alpha) \\ &\quad - \gamma_F^*(\cdot, \alpha)[e_{F,1}^*(\cdot, \alpha) + \alpha e_{F,2}^*(\cdot, \alpha)] \end{aligned} \tag{A.16}$$

A.3 Incentive contracts based on an imperfect performance measure (Section 3.2)

Proof of Corollary 2 Computing the difference $\gamma_F^*(\cdot, \theta_F = 0) - \gamma_N^*(\cdot)$:

in the right-hand side of Eq. (A.18). Since efforts are positive, we must have $a_{N,2} > \alpha s$ and therefore:

$$\begin{aligned} &-(a_{F,1} - a_{N,1})s\alpha^2 + a_{N,2}(a_{F,1}\alpha - s) - a_{F,2}(a_{N,1}\alpha - s) \\ &> -(a_{F,1} - a_{N,1})a_{N,2}\alpha + a_{N,2}(a_{F,1}\alpha - s) - a_{F,2}(a_{N,1}\alpha - s) \\ &= (a_{N,2} - a_{F,2})(a_{N,1}\alpha - s) > 0, \end{aligned} \tag{A.19}$$

where the last inequality is true because, by Assumption 2 and Assumption 1 (iii), it holds that $a_{N,1}\alpha - s > 0$ and $a_{N,2} - a_{F,2} > 0$. Last, it is straightforward from Eq. (A.4) that $\frac{\partial \gamma_F^*}{\partial \theta_F} < 0$, and it is equal to zero for $\theta_F = 1/2$. From the foregoing immediately follows that, for θ_F sufficiently large, we have $\gamma_F^*(\cdot; \theta_F) < \gamma_N^*$. \square

Proof of Corollary 3 Set $\theta_i = 0$. The difference in managers i ' optimal efforts in both tasks with $\alpha < 1$ compared to $\alpha = 1$ is given by:

$$e_{i,1}^*(\cdot, \alpha < 1) - e_{i,1}^*(\cdot, \alpha = 1) = -\frac{(\alpha - 1)\alpha}{2[\alpha(a_{i,1}\alpha - s) + (a_{i,2} - \alpha s)]} > 0, \quad (\text{A.20})$$

$$e_{i,2}^*(\cdot, \alpha < 1) - e_{i,2}^*(\cdot, \alpha = 1) = \frac{\alpha - 1}{2[\alpha(a_{i,1}\alpha - s) + (a_{i,2} - \alpha s)]} < 0 \quad (\text{A.21})$$

Differentiating $[e_{i,1}^*(\cdot, \alpha < 1) - e_{i,1}^*(\cdot, \alpha = 1)]$ w.r.t. s yields:

$$\frac{\partial (e_{i,1}^*(\cdot, \alpha < 1) - e_{i,1}^*(\cdot, \alpha = 1))}{\partial s} = -\frac{(\alpha - 1)\alpha^2}{[\alpha(a_{i,1}\alpha - s) + (a_{i,2} - \alpha s)]^2} > 0 \quad (\text{A.22})$$

Differentiating $[e_{i,2}^*(\cdot, \alpha = 1) - e_{i,2}^*(\cdot, \alpha < 1)]$ w.r.t. s yields:

$$\frac{\partial (e_{i,2}^*(\cdot, \alpha = 1) - e_{i,2}^*(\cdot, \alpha < 1))}{\partial s} = -\frac{(\alpha - 1)\alpha}{[\alpha(a_{i,1}\alpha - s) + (a_{i,2} - \alpha s)]^2} > 0 \quad (\text{A.23})$$

\square

Proof of Corollary 4 Set $\theta_i = 0$. Using Eqs. (A.5) and (A.6), we calculate the difference between the manager i 's efforts exerted in task 1 and task 2:

$$e_{i,1}^*(\cdot, \alpha) - e_{i,2}^*(\cdot, \alpha) = \frac{[(a_{i,2} - \alpha s) + (a_{i,1}\alpha - s)][(a_{i,2} - \alpha s) - (a_{i,1}\alpha - s)]}{2[(a_{i,2} - \alpha s) + \alpha(a_{i,1}\alpha - s)](a_{i,1}a_{i,2} - s^2)} \quad (\text{A.24})$$

i) For both managers $i \in \{F, N\}$, differentiating Eq. (A.24) w.r.t. α , yields:

$$\frac{\partial (e_{i,1}^*(\cdot, \alpha) - e_{i,2}^*(\cdot, \alpha))}{\partial \alpha} = \frac{-(a_{i,1}\alpha - s) - \alpha(a_{i,2} - \alpha s)}{[(a_{i,2} - \alpha s) + \alpha(a_{i,1}\alpha - s)]^2} < 0, \quad (\text{A.25})$$

given that $a_{i,2} - \alpha s > 0$ and $a_{i,1}\alpha - s > 0$ by Assumption 2.

To prove results (ii) and (iii), observe that, given that $a_{i,2} - \alpha s > 0$ and $a_{i,1}\alpha - s > 0$ as stated in Assumption 2, and $a_{i,1}a_{i,2} - s^2 > 0$, the sign of Eq. (A.24) depends on the expression $[(a_{i,2} - \alpha s) - (a_{i,1}\alpha - s)]$ in the numerator.

ii) For the non-family manager, by Assumption 1(i), it holds that $(a_{N,2} - \alpha s) - (a_{N,1}\alpha - s) > (a_{N,2} + s)(1 - \alpha) > 0$. Hence, it follows that $e_{N,1}^*(\cdot, \alpha) - e_{N,2}^*(\cdot, \alpha) > 0$.

iii) For the family manager, we first consider the case $e_{F,1}^*(\cdot, \alpha) - e_{F,2}^*(\cdot, \alpha) > 0$ in Eq. (A.24) and solve that inequality for α . Rearranging $(a_{F,2} - \alpha s) - (a_{F,1}\alpha - s) > 0$, we have $(a_{F,1} + s)\alpha < a_{F,2} + s$. Note that $a_{F,1} + s > 0$ for the family manager, since $s^2 < a_{F,1}a_{F,2} < (a_{F,1})^2$. Therefore, $(a_{F,2} - \alpha s) - (a_{F,1}\alpha - s) > 0$ is true for $a_{F,2} + s > 0$ and $\alpha < \frac{a_{F,2} + s}{a_{F,1} + s}$. As for the opposite case, by the foregoing, for $e_{F,1}^*(\cdot, \alpha) - e_{F,2}^*(\cdot, \alpha) < 0$, we must have $(a_{F,1} + s)\alpha > a_{F,2} + s$. It is obvious that, if $a_{F,2} + s < 0$, the inequality holds for any given α . If $a_{F,2} + s > 0$, it holds for $\alpha > \frac{a_{F,2} + s}{a_{F,1} + s}$. \square

Proof of Proposition 2 We first prove $\frac{\partial \pi_i^*(\cdot, \alpha < 1)}{\partial \alpha} \geq 0$. Differentiating $\pi_i^*(\cdot, \alpha < 1)$ as given in Eq. (A.7) w.r.t. α yields:

$$\frac{\partial \pi_i^*(\cdot, \alpha < 1)}{\partial \alpha} = \frac{(1 - \alpha)(1 - 2\theta_i)^2[(a_{i,2} - s) + \alpha(a_{i,1} - s)]}{2(1 - \theta_i)[(a_{i,2} - \alpha s) + \alpha(a_{i,1}\alpha - s)]^2} \geq 0, \quad (\text{A.26})$$

given that $a_{i,2} > s$, $a_{i,1} > s$, $0 \leq \theta_i \leq \frac{1}{2}$, and $0 < \alpha < 1$.

To prove $\frac{\partial \pi_i^*(\cdot, \alpha < 1)}{\partial s} < 0$, we first verify the claim for $\theta_i = 0$. Notice that, using Eqs. (A.4), (A.5), and (A.6) and the expression $\pi_i^* = (e_{i,1}^* + e_{i,2}^*) - \gamma_i^*(e_{i,1}^* + \alpha e_{i,2}^*)$, we can rewrite the owner's optimal utility as follows:

$$\begin{aligned} \pi_i^*(\cdot; \theta = 0, \alpha) &= \frac{e_{i,1}^*(\cdot; \theta_i = 0, \alpha) + e_{i,2}^*(\cdot; \theta_i = 0, \alpha)}{2} \quad \forall \alpha \in (0, 1] \end{aligned} \tag{A.27}$$

$$\begin{aligned} \frac{\partial \pi_i^*(\cdot; \theta_i = 0, \alpha < 1)}{\partial s} &= \frac{1}{2} \frac{\gamma_i^*(\cdot; \theta_i = 0, \alpha < 1)}{\partial s} \frac{(a_{i,2} - s\alpha) + (a_{i,1}\alpha - s)}{a_{i,1}a_{i,2} - s^2} \\ &\quad - \frac{1}{2} \gamma_i^*(\cdot; \theta_i = 0, \alpha < 1) \frac{a_{i,2}[(a_{i,1} - s) + (a_{i,1}\alpha - s)] - s[\alpha(a_{i,1} - s) + (a_{i,1}\alpha - s)]}{(a_{i,1}a_{i,2} - s^2)^2} < 0, \end{aligned} \tag{A.30}$$

where the inequalities follows from Assumption 2.

Suppose instead $a_{i,2} - a_{i,1}\alpha^2 < 0$. We have:

$$\frac{\partial \pi_i^*(\cdot; \theta_i = 0, \alpha < 1)}{\partial s \partial \alpha} = \frac{(1 - \alpha) \{ (a_{i,1}\alpha^2 - a_{i,2})(1 - \alpha) + 2\alpha [(a_{i,2} - s\alpha) + (a_{i,1}\alpha - s)] \}}{2 [(a_{i,2} - s\alpha) + \alpha(a_{i,1}\alpha - s)]^3} > 0 \tag{A.31}$$

Then, it is sufficient to show that $\frac{\partial \pi_i^*(\cdot; \theta_i = 0)}{\partial s} < 0$ for $\alpha = 1$ as follows:

$$\lim_{\alpha \rightarrow 1} \frac{\partial \pi_i^*(\cdot; \theta_i = 0)}{\partial s} = - \frac{(a_{i,2} - s)(a_{i,1} - s)}{2(a_{i,1}a_{i,2} - s^2)^2} < 0. \tag{A.32}$$

It remains to prove that also for $\theta_i > 0$ it holds that $\frac{\partial \pi_i^*(\cdot; \theta_i > 0, \alpha < 1)}{\partial s} < 0$. We keep the notation with θ_i although, recall, only θ_F can take positive values. Notice, first, that

$$\gamma_i^*(\cdot; \theta_i > 0, \alpha < 1) = \frac{1 - 2\theta_i}{1 - \theta_i} \gamma_i^*(\cdot; \theta_i = 0, \alpha < 1). \tag{A.33}$$

Second, recall that

$$\begin{aligned} \pi_i(\cdot; \theta_i > 0, \alpha < 1) &= [e_{i,1}(\cdot; \theta_i > 0, \alpha < 1) \\ &\quad + e_{i,2}(\cdot; \theta_i > 0, \alpha < 1)] \\ &\quad - \gamma_i(\cdot; \theta_i > 0, \alpha < 1) \\ &\quad \times [e_{i,1}(\cdot; \theta_i > 0, \alpha < 1) \\ &\quad + \alpha e_{i,2}(\cdot; \theta_i > 0, \alpha < 1)]. \end{aligned} \tag{A.34}$$

Using the expressions for the efforts at the optimum, we have:

$$\begin{aligned} \pi_i^*(\cdot; \theta_i = 0, \alpha < 1) &= \frac{1}{2} \gamma_i^*(\cdot; \theta_i = 0, \alpha < 1) \frac{(a_{i,2} - s\alpha) + (a_{i,1}\alpha - s)}{a_{i,1}a_{i,2} - s^2} \end{aligned} \tag{A.28}$$

It is immediate to see that

$$\frac{\partial \gamma_i^*(\cdot; \theta_i = 0, \alpha < 1)}{\partial s} = - \frac{(1 - \alpha)(a_{i,2} - a_{i,1}\alpha^2)}{2[a_{i,2} - s\alpha + \alpha(a_{i,1}\alpha - s)]^2}. \tag{A.29}$$

Hence, $\text{sign} \left[\frac{\partial \gamma_i^*}{\partial s} \right] = -\text{sign} [a_{i,2} - a_{i,1}\alpha^2]$. Suppose, $a_{i,2} - a_{i,1}\alpha^2 > 0$ and therefore $\frac{\partial \gamma_i^*}{\partial s} < 0$. Differentiating,

with $e_{i,1}(\cdot; \theta_i > 0, \alpha < 1)$ and $e_{i,2}(\cdot; \theta_i > 0, \alpha < 1)$ that solve the first-order conditions Eqs. (A.1) and (A.2). To simplify the notation, let:

$$\begin{aligned} x &\equiv \frac{a_{i,2} - s\alpha}{a_{i,1}a_{i,2} - s^2} + \frac{a_{i,1}\alpha - s}{a_{i,1}a_{i,2} - s^2} \\ &= \frac{a_{i,2} - s}{a_{i,1}a_{i,2} - s^2} + \alpha \frac{a_{i,1} - s}{a_{i,1}a_{i,2} - s^2}, \end{aligned} \tag{A.35}$$

$$y \equiv \frac{a_{i,2} - s\alpha}{a_{i,1}a_{i,2} - s^2} + \alpha \frac{a_{i,1}\alpha - s}{a_{i,1}a_{i,2} - s^2}, \tag{A.36}$$

$$z \equiv \frac{a_{i,2} - s}{a_{i,1}a_{i,2} - s^2} + \frac{a_{i,1} - s}{a_{i,1}a_{i,2} - s^2} \tag{A.37}$$

Applying the envelope theorem to Eq. (A.34) and simplifying, we obtain:

$$\begin{aligned} \frac{\partial \pi_i^*(\cdot; \theta_i > 0, \alpha < 1)}{\partial s} &= \frac{(1 - 2\theta)^2}{1 - \theta} \gamma_i^*(\cdot; \theta_i = 0, \alpha < 1) \\ &\quad \times \left(\frac{\partial x}{\partial s} - \gamma_i^*(\cdot; \theta_i = 0, \alpha < 1) \frac{\partial y}{\partial s} \right) + \theta \frac{\partial z}{\partial s} \end{aligned} \tag{A.38}$$

Notice that

$$\frac{\partial \pi_i^*(\cdot; \theta_i = 0, \alpha < 1)}{\partial s} = \gamma_i^*(\cdot; \theta_i = 0, \alpha < 1) \left(\frac{\partial x}{\partial s} - \gamma_i^*(\cdot; \theta_i = 0, \alpha < 1) \frac{\partial y}{\partial s} \right), \tag{A.39}$$

which we have shown to be negative. Therefore, it remains to prove $\frac{\partial z}{\partial s} < 0$. The derivative is

$$\frac{\partial z}{\partial s} = -2 \frac{(a_{i,1} - s)(a_{i,2} - s)}{a_{i,1}a_{i,2} - s^2}, \tag{A.40}$$

which is negative by Assumption 2.

Last, recall that the result $\frac{\partial \pi_F^*(\cdot, \alpha)}{\partial \theta_F} > 0$ for any given $\alpha \in (0, 1]$ has already been shown in the proof of Proposition 1. \square

A.4 The optimal hiring decision (Section 4)

Proof of Proposition 3 We have to prove that there exists an α relatively large such that a less skilled family manager is preferred to a more skilled non-family manager. We first prove the claim for $\alpha = 1$ where the difference of the owner family’s expected utility between hiring a family and a non-family manager is as follows:

$$\pi_F^*(\cdot, \alpha = 1) - \pi_N^*(\cdot, \alpha = 1) = \frac{a_{F,2} + a_{F,1} - 2s}{4(a_{F,1}a_{F,2} - s^2)} - \frac{a_{N,2} + a_{N,1} - 2s}{4(a_{N,1}a_{N,2} - s^2)} \tag{A.41}$$

We want to show that $\pi_F^*(\cdot, \alpha = 1) > \pi_N^*(\cdot, \alpha = 1)$, provided that $a_{F,2}$ is sufficiently small. Then, from Eq. (A.41), it follows by the assumption $a_{F,1} + a_{F,2} \geq a_{N,1} + a_{N,2}$ that the numerator of $\pi_F^*(\cdot, \alpha = 1)$ is at least as large as the numerator of $\pi_N^*(\cdot, \alpha = 1)$. When, in addition $a_{F,2}$ is sufficiently small, it follows that $\pi_F^*(\cdot, \alpha = 1) > \pi_N^*(\cdot, \alpha = 1)$ for all s .

Consider now the case $\alpha < 1$. By continuity, there must exist an α such that $\pi_F^*(\cdot, \alpha < 1) > \pi_N^*(\cdot, \alpha < 1)$ holds. Therefore, it remains to prove that, under the given assumptions, it holds $\frac{\partial \pi_F^*(\cdot, \alpha < 1)}{\partial \alpha} > \frac{\partial \pi_N^*(\cdot, \alpha < 1)}{\partial \alpha}$. As for this, observe that:

$$\begin{aligned} \frac{\partial \pi_i^*(\cdot, \alpha < 1)}{\partial \alpha} &= \frac{(1 - \alpha) [a_{i,2} - s\alpha + a_{i,1}\alpha - s]}{2(a_{i,2} + \alpha(a_{i,1}\alpha - 2s))^2} \\ &= \frac{(1 - \alpha)}{(a_{i,2} + \alpha(a_{i,1}\alpha - 2s))^2} \gamma_i^*(\cdot, \alpha < 1) \end{aligned}$$

Recall that we proved $\gamma_F^*(\cdot, \alpha < 1) > \gamma_N^*(\cdot, \alpha < 1)$. Therefore, for $a_{F,2}$ small enough, we have $\frac{\partial \pi_F^*(\cdot, \alpha < 1)}{\partial \alpha} > \frac{\partial \pi_N^*(\cdot, \alpha < 1)}{\partial \alpha}$. \square

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