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Authority, communication, and internal markets

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Abstract

We revisit the trade-off between keeping authority and granting decision-rights to an informed agent. We introduce transfers, allowing the agent to charge a fee for her services, but she may also offer the principal a side payment. In equilibrium, the principal's contracting decision maximizes the aggregate payoff. In particular, introducing transfers changes the contracting decision from centralization to delegation and improves efficiency if delegation maximizes the aggregate payoff but requires a side payment. We then introduce general delegation mechanisms. We first show that the agent, behaving *ex ante* like a social planner would do, restricts the discretion of her *interim* self in equilibrium. We then derive the optimal delegation set and show that centralization will occur with optimal delegation only if it is informative. Our results contribute to the debate over subsidiaries in multinational corporations, showing how transfers can induce the parties to act in the headquarters' interest.

JEL classification: D23, D83, D61, D82, C72.

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1 Introduction

Decision-makers in organizations typically rely on experts lower in the hierarchy who are much better informed about specific issues. A natural question in this

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context is whether the decision-maker should keep authority or delegate the decision to a specialist with different objectives. In a seminal paper, Dessein (2002) has shown that a decision-maker often delegates authority in order to avoid the loss of information inherent to communication with agents who have different objectives. When objectives differ considerably, however, the decision-maker may keep authority and tolerate noisy communication to avoid the loss of control—a potential source of inefficiencies. This paper revisits this canonical problem with the introduction of transfers, allowing the expert to charge a fee for advising the decision-maker or offer him a side payment in exchange for direct influence.

The organizational economics literature has recently called for a broader and more integrative perspective on governance, one that reflects the variety of arrangements that real-world organizations employ to solve coordination and motivation problems (Gibbons, 2020, 2022). This call resonates with recent findings in the international business literature documenting the widespread use of market-like contracts between units of the same firm (Magelssen et al., 2022). In multinational corporations, value creation critically depends on the interactions between subunits and the relationship each of them has with its local business environments (Meyer et al., 2020). The latter can create conflict of interest with the rest of the organization, such that headquarters align subsidiary behavior using mechanisms that go beyond hierarchical control (Lunnan et al., 2023)—ranging from the allocation of authority to that of financial resources (Sengul et al., 2019; Dellestrand et al., 2020). This paper aims to reflect these alternative forms of governance and analyze their implications for efficiency.[1]

We present a theoretical model in which a principal decides between keeping authority and granting decision-rights to an informed agent. The agent proposes a menu of contracts consisting of a mode of interaction and a transfer, which can go in either direction. We characterize how the contractual arrangement—in terms of decision-making authority and the direction of the transfer—depends on the resulting benefits for each party. We further show how transfers may improve efficiency when objectives differ considerably and discuss our results in the context of headquarters-subsidiaries relationships in multinational corporations.

In our model, a principal (*headquarters*, he) has to take a decision whose payoff depends on the state of the world. An agent (*subsidiary*, she) would like to influence the decision and has better information, but her objectives differ

[1] Frydlinger, Hart, and Vitasek (2019) analyze 'formal relational contracts' as a hybrid form of governance that gained prominence in recent years. Such contracts are designed to manage long-term market relationships in uncertain environments by embedding shared objectives, guiding principles, and dispute-resolution mechanisms within a legally recognized framework.

from those of the principal. Objectives being only one dimension of the conflict of interest between players, a second dimension relates to the importance each assigns to the decision relative to transfers. The relationship between players may involve either the principal retaining decision-making authority and the agent communicating her information (*centralization*), or authority being *delegated* to the agent. The agent proposes a menu of contractual arrangements, each consisting of a mode of interaction and an associated transfer. In particular, she may ask the principal a fee for her services or offer him a side payment. The principal then chooses among the contracts offered by the agent or takes the decision himself.

The main features of our model reflect subsidiary-headquarters relationships in multinational corporations. Subunits in these organizations strive to gain influence by building knowledge-based capabilities, often succeeding even when their initiatives conflict with organizational goals (Meyer et al., 2020). Their ability to do so hinges on the fact that knowledge and expertise—unlike physical or financial assets—cannot be fully controlled by headquarters, since property rights over such intangible resources are hard to define and enforce (Cuervo-Cazurra et al., 2019).[2] The contractual arrangements governing these internal relationships are therefore more flexible than those used in inter-firm settings. On the one hand, headquarters tend to grant a high degree of autonomy to subsidiaries with large knowledge-based capabilities (Ciabuschi et al., 2010). On the other hand, headquarters tend to support knowledge transfers with the allocation of financial resources; in particular, for relationships of high strategic importance, they get directly involved by providing rewards but also compensations to subunits (Sengul et al., 2019; Lunnan et al., 2023).[3] Building on this body of literature, we introduce financial flows as a complement to the allocation of authority.[4]

We first show that the agent never offers the principal a side payment under a contract which does not involve decision-making authority. Under centralization, the principal obtains additional information while keeping control over the decision, so that the agent can ask a fee for her services. Second, whether the agent offers the principal a side payment in order to obtain decision-making authority depends on the conflict of interest. The agent charges a fee for her services if they

[2] *"The legal status of a subsidiary implies that it has no ownership rights over its tangible assets and its control over such assets can only be in the form of discretion—headquarters can always retake control of such assets. [. . .] A subsidiary's bargaining power will generally be based on assets over which property rights are hard to define and enforce. The bulk of such assets are in the form of intangible assets like knowledge"* (Cuervo-Cazurra et al., 2019, p. 493).

[3] *"The multinational corporation's operation of the internal capital market [...] depends not only on potential profitability but also on long-term commitment"* (Lunnan et al., 2023).

[4] See Malenko (2024) for a survey on the economics of authority and internal capital markets.

share similar objectives. In this case, the conflict of interest is second order compared to the informational gain from delegating authority to a well-informed agent, such that the principal benefits net of transfers. If, however, objectives differ substantially, then the agent must compensate the principal for the loss of control, and thus offer him a side payment. She is willing to do so if her net benefit—which is strictly positive because she gains control and is better informed—exceeds the net loss of the principal.

In equilibrium, the agent sets the transfers such that the principal's contracting decision maximizes the aggregate payoff. In particular, he will always contract the agent in equilibrium, as both players benefit from the better informed decision under centralization as compared to the outside option of taking the decision himself.

We next investigate the role of markets and efficiency. Therefore, suppose for the moment that transfers were not feasible. Generalizing Dessein's results, the principal then would choose delegation over centralization if it provides a larger net benefit than the latter. Objectives being relatively aligned in this case, the principal prefers the loss of control from delegating authority over the loss of information due to noisy communication. Now, allowing for transfers, we find that delegation becomes more attractive for the principal because then the agent can compensate him for the loss of control. The equilibrium contractual arrangement changes from centralization to delegation if the latter maximizes the aggregate payoff but requires a side payment. Thus, allowing for transfers increases efficiency when objectives differ considerably.

We then extend the model to general delegation mechanisms à la Alonso and Matouschek (2008, henceforth AM). A delegation contract then consists of a delegation set in addition to the transfer. A delegation set describes the decisions the agent is permitted to take under the contract. The agent posts a menu of contractual arrangements, each consisting of a mode of interaction, an associated transfer, and a delegation set in case of delegation. The principal then chooses a contract offered by the agent or takes the decision himself.

We first observe that the agent, setting the transfer, will internalize the effect of the choice of delegation set on the principal and therefore choose it to maximize the aggregate payoff. We then establish that, conditional on choosing the equilibrium transfer, the agent's contracting problem is equivalent to that of a principal with bliss point equal to the weighted average of the players' bliss points in AM. The weight of each player depends on the relative importance he or she assigns to the decision relative to money. The agent in our model behaves *ex ante* like a social planner would do, and may therefore restrict the discretion of her *interim* self, who would otherwise implement her own bliss point.

Applying the analysis of AM, it follows that the optimal delegation set is characterized by an upper bound regarding which decisions the agent is permitted to take if objectives are sufficiently aligned, and it consists solely of the ex ante socially optimal decision otherwise. In equilibrium, the implemented contractual arrangement will maximize the aggregate payoff. In particular, in behaving like a social planner would do, the agent prefers the ex ante socially optimal decision over uninformative communication (which would yield the principal's ex ante optimal decision). Thus, centralization will occur with optimal delegation only if it is informative. In the standard uniform-quadratic setting, where communication is not particularly effective (cf. Dessein, 2002), it does not occur altogether with optimal delegation.

Our results contribute to the discussion over headquarters-subsidiary relations in multinational corporations, showing how introducing inter-unit transfers can improve efficiency and induce the parties to act in the headquarters' interest. In particular, the centralization arrangement can be seen as the headquarters hiring specialists from a subsidiary as advisors for a specific project, and compensating the subsidiary via monetary transfers—akin to transfer prices for advisory services (cf. Persson, 2006). As per the delegation arrangements, they imply some degree of subsidiary control over the decision, reminiscent of mandates headquarters can grant to their subsidiaries (Ciabuschi et al., 2010; Meyer et al., 2020).[5] The direction of financial resources will follow the effects of delegation on other parts of the organization, captured in our model by the principal's net benefits associated with it. More specifically, if the delegation benefits the rest of the organization, the headquarters is willing to grant more resources to the subsidiary—e.g., in the form of financial slack or more generous capital budgets. If, conversely, the delegation harms the rest of the organization, the subsidiary is willing to commit some of its resources to compensate the losers.

The equilibrium transfers under delegation resemble the classification of headquarters' resource allocation strategies from the management and corporate finance literatures (e.g., Gertner and Scharfstein, 2013; Sengul et al., 2019; Dellestrand et al., 2020). On the one hand, *winner-picking* strategies support the strongest performing subsidiaries by allocating relatively more resources to them than low-

[5] *"An important role of headquarters is to distribute decision-making rights to those units that are capable of developing and transferring valuable knowledge. In other words, a subsidiary with a 'world mandate' has the autonomy to develop, transfer, and launch products within its mandate."* (Ciabuschi et al., 2010, p. 475)

performing ones, with the aim of providing incentives to select projects that maximize value for the whole organization. On the other hand, *cross-subsidization* strategies support the weakest performing subunits at the cost of under-supporting stronger ones, reflecting the thinking where synergies take precedence over short-term capital efficiency.[6] Our model then provides a novel rationale for strategic resource allocation as a complement of decision-making authority, one that is rooted in organizational efficiency.

Related literature. This paper belongs to a large literature on strategic communication of soft information initiated by Crawford and Sobel (1982), which was extended to the possibility of delegation of (real) authority by Aghion and Tirole (1997). As discussed above, Dessein (2002) shows that the principal prefers delegation over communication if objectives are sufficiently aligned. Argenziano et al. (2016) and Ivanov (2010) find that the reverse may hold if the sender is imperfectly informed.[7] Deimen and Szalay (2019) arrive at a similar conclusion when the sender has to decide on the amount of information she observes about each of two states. Our paper builds on Dessein (2002), introducing transfers and allowing the principal to decide without advice. It also shares some features with our recent work on competition between experts in a policy-advising market (Foerster and Habermacher, 2025). Therein, we focus on competition between multiple experts, the implications for lobbying and the debate over money in politics, and abstract from explicitly modeling the decision-making procedure associated with each hiring decision.

Our paper also relates to the literature on the organizational design of multi-divisional firms (cf. Malenko, 2024). Dessein and Santos (2006) argue that authority should be allocated based on whether decision-making requires local initiative or firm-wide coordination, highlighting the trade-off between adaptability and coherence. Alonso et al. (2008) show that when decisions are interdependent and communication is limited, centralization improves coordination by internalizing externalities across units.[8] Rantakari (2008) focuses on the value of flexible au-

[6]Dellestrand et al. (2020) refer to case studies illustrating each strategy. Winner-picking is common to many firms in the consumer electronic industry (e.g., Philips Corp.), while cross-subsidization can be found in some major firms in the construction equipment industry (e.g., Caterpillar, Komatsu, and Volvo CE).

[7]See also Fischer and Stocken (2001) and Foerster (2023), who show that communication may benefit from a worse-informed sender.

[8]In later work, Alonso et al. (2015) emphasize how authority structures affect the firm's ability to adapt to local shocks while maintaining strategic alignment, showing that flatter organizations are more responsive but risk misalignment.

thority when firms face uncertainty and communication is costly, and shows that dynamic shocks can reverse standard delegation results. Habermacher (2025) studies authority under informational interdependence and shows that specialization shapes incentives to acquire and share information across units. In contrast to these contributions, we study how the availability of transfers complements the allocation of decision rights, allowing agents to compensate principals for the loss of control and induce governance structures that maximize organizational surplus.

Some papers have combined the use of transfers with informative persuasion, as we do. One of the early treatments is Austen-Smith (1998), who studies agents' incentives to pay for the principal's attention. Because communication is strategic, like-minded agents will be granted access more often and their information will be more influential; see also Cotton (2012) for a closely related approach. Krishna and Morgan (2008) study a canonical cheap-talk environment in which the receiver can commit to transfers conditional on the sender's message. They show that, although feasible, contracts inducing full revelation are never optimal.

Finally, the extension to optimal delegation builds on AM, who study the design of optimal delegation contracts by a principal who faces an informed agent. A key difference from our framework is that in the literature on optimal delegation the principal chooses the contract as to maximize his own expected utility (see also Melumad and Shibano, 1991; Amador and Bagwell, 2013). In our model, the agent sets the transfer and, thus, internalizes the effect that choosing the delegation set has on the principal; i.e., she behaves ex ante as a social planner would do.

To our knowledge, we are the first to study how transfers affect the allocation and the degree of authority under conflicting objectives and asymmetric information in organizations, allowing for both fees and side payments in exchange for direct influence. Our framework shows how informed agents can gain decision rights by compensating a principal for the loss of control, leading to efficient delegation even in the presence of preference misalignment. This mechanism relates with recent evidence on the workings of internal capital markets showing that capital allocation often depends on the perceived expertise and credibility of division managers, and that internal transfers reflect both informational advantages and political dynamics (Graham et al., 2015). Relatedly, Hoang et al. (2024) show that capital budget allocation is shaped by agency concerns and soft information, with internal capital markets used to reward well-performing units and discipline others. These findings point to the role of internal transfers as an implicit governance mechanism, which aligns closely with the logic of our model.

The rest of the paper proceeds as follows. In Section 2 we set up the model.

Section 3 characterizes equilibria. In Section 4 we investigate the role of markets and efficiency. Section 5 studies optimal delegation mechanisms. In Section 6 we conclude and discuss some of our modelling assumptions.

2 Model and notation

We consider an economy populated by a principal and an agent. The unknown *state (of the world)* $\theta \in \Theta = [0, 1]$ is distributed according to a commonly known distribution F on Θ with continuous and strictly positive density f. The *principal* P (he) has to take a *decision* $y \in \mathbb{R}$ and can contract an *agent* A (she) in order to provide advice. P can contract A and either keep authority over y (henceforth *centralization*), or commit to delegate it to A (henceforth *delegation*).

In the first stage, A posts a menu of transfers $t = (t_C, t_D) \in \mathbb{R}^2$ for the contract under Centralization and under Delegation, respectively. We interpret a positive transfer as a price or fee and a negative transfer as a side payment in order to obtain influence on the decision. In the second stage, P decides whether to choose one of the contractual arrangements, centralization at transfer t_C or delegation at transfer t_D, or to take the decision himself based on prior information only, $a \in \{C, D, P\}$.

If A has been contracted, she observes the state θ and, then, sends a *cheap-talk message* $m \in \mathbb{R}$ to P (who did not observe the state) under centralization, $a = C$, and takes the decision y herself under delegation, $a = D$. In the last stage, P takes the decision y if he did not delegate authority to A.

The payoff function of P is

$$u_P(t, a, y, \theta) = v_P(y, \theta) - 1_{\{a \neq P\}} t, \tag{1}$$

where $1_{\{a \neq P\}} = 1$ if A is being contracted and $1_{\{a \neq P\}} = 0$ otherwise. The first term of (1) represents P's utility from the decision y. The second term of (1) represents P's expenses from the chosen contractual arrangement. Note that P's payoff function is quasilinear in money. Similarly, the payoff function of A is

$$u_A(t, a, y, \theta) = v_A(y, \theta) + 1_{\{a \neq P\}} t.$$

We assume that v_i is twice continuously differentiable in both arguments, strictly concave in y with a unique maximizer in $y_i(\theta)$ for fixed θ, and

$$\frac{\partial^2}{\partial y \partial \theta} v_i(y, \theta) > 0,$$

such that $y_i(\theta)$ is continuous and strictly increasing in θ, for all $i \in \{P, A\}$. Finally, we assume $y_A(\theta) > y_P(\theta)$.

We will frequently consider utility functions where P and A suffer quadratic losses from deviations of the decision from their bliss point and a constant conflict of interest.

Example 1 (Quadratic loss with constant bias)**.** *Suppose that*

$$v_P(y, \theta) = -\gamma_P(\theta - y)^2 \quad \textit{and} \quad v_A(y, \theta) = -\gamma_A(\theta + b - y)^2,$$

such that $\gamma_P > 0$ and $\gamma_A > 0$ measure the importance of the decision relative to money for P and A, respectively, and $b > 0$ is a constant bias *that captures the difference in preference between them. In particular, $y_A(\theta) = \theta + b > y_P(\theta) = \theta$.*

To summarize, the timing of events is as follows:

1. Nature draws the state θ.
2. A posts a menu of transfers $t = (t_C, t_D)$.
3. P decides whether to choose one of the contractual arrangements, or to take the decision himself.

4a. A observes θ and then sends a cheap-talk message m to P if contracted under centralization.

4b. A observes θ and then takes the decision y if contracted under delegation.

5. P takes the decision y if he did not delegate authority to A.
6. Payoffs realize.

The solution concept we use is perfect Bayesian equilibrium.

3 Equilibrium analysis

We proceed backwards and first consider the decision-making stage. Second, we consider P's contracting decision, and finally A's pricing decision.

3.1 Decision-making stage

Suppose first that P has not contracted A. Then he will decide with prior information only, i.e., implement $y_P^* = \text{argmax}_y\, E[v_P(y, \theta)]$.

Second, suppose that P has contracted A, who is perfectly informed about θ. If P has retained authority, A communicates with him via cheap talk. It follows from Theorem 1 in Crawford and Sobel (1982) that equilibria are characterized by a partition of the state space Θ such that A communicates the partition element that contains the state θ. In particular, the set of actions which are induced in equilibrium is finite, while the decision is unbiased. We restrict attention to the equilibrium in which the largest number of distinct actions are induced. If P has delegated authority to A, the latter implements her bliss point, which yields a biased but informed decision.

Lemma 1. *Suppose that P has contracted A.*

(i) Centralization yields an unbiased but noisy decision, i.e., $y_C^*(\theta) = \text{argmax}_y\, E[v_P(y, \theta)|m]$ whenever θ induces the on-equilibrium message m.

(ii) Delegation yields a biased decision $y_D^*(\theta) = y_A(\theta) \neq y_P(\theta)$.

3.2 Contracting stage

Having determined behavior in the decision-making stage in Section 3.1, we now turn to the contracting decision. It will be useful to fix P's outside option of not choosing a contract as the status quo. Then the ex ante expected *net benefit* (i.e., excluding transfers) of $i \in \{P, A\}$ from contracting decision $a \in \{C, D, P\}$ relative to the outside option is given by

$$V_i^a \equiv E[v_i(y_a^*, \theta)] - E[v_i(y_P^*, \theta)].$$

Some remarks seem in order. First, we can also interpret the net benefit V_i^a as i's expected net utility from contracting decision a after normalizing expected utility from the outside option to zero. In particular, by definition $V_i^P = 0$ for all $i \in \{P, A\}$. Second, the net benefit V_P^a of P from contracting decision $a \in \{C, D\}$ is a measure of the quality of A's advice under contracting decision a relative to his outside option, such that a high net benefit is indicative of similar objectives.

By strict concavity of the players' decision-utilities, both A and P are weakly better off with communication than with not contracting A, as it allows P to decide with better information. Second, by Lemma 1, A benefits twofold from delegation. It allows A to implement her bliss point $y_A(\theta)$, a decision which is both better informed than the decision under centralization and in line with her preferences.

Lemma 2. *(i) A and P obtain a non-negative net benefit from communication, $V_i^C \geq 0$ for $i = A, P$.*

(ii) A obtains a strictly larger net benefit from delegation than from communication, $V_A^D > V_A^C$.

Before we proceed, we illustrate the net benefits in case of quadratic loss preferences with constant bias.

Example 2 (Quadratic loss with constant bias)**.** *Suppose that $v_P(y, \theta) = -\gamma_P(\theta - y)^2$ and $v_A(y, \theta) = -\gamma_A(\theta + b - y)^2$, with $\gamma_P > 0$, $\gamma_A > 0$, and $b > 0$. Let $\sigma_P^2 = Var(\theta)$ and $0 < \sigma_C^2 \leq \sigma_P^2$ denote the expected residual variance under the outside option and centralization, respectively. The net benefits of P and A from centralization and delegation are given by*

$$V_P^C = \gamma_P(\sigma_P^2 - \sigma_C^2) \text{ and } V_A^C = \gamma_A(\sigma_P^2 - \sigma_C^2)$$

and

$$V_P^D = \gamma_P(\sigma_P^2 - b^2) \text{ and } V_A^D = \gamma_A(\sigma_P^2 + b^2),$$

respectively. Indeed, given $\gamma_P > 0$, the net benefit V_P^D of P from delegation is high if b is small, i.e., if objectives are roughly aligned. Under centralization, the same result obtains because roughly aligned objectives imply low residual variance from communication.[9]

Given a menu of transfers $t = (t_C, t_D)$, P will decide whether to choose one of the contractual arrangements according to:

$$\max_{a \in \{C,D,P\}} V_P^a - 1_{\{a \neq P\}} t_a.$$

We henceforth ignore knife-edge cases in which P is indifferent between different contracting decisions.

[9] It follows from Lemma 6 and Theorems 3 and 4 in Crawford and Sobel (1982) that $\sigma_C^2 = \sigma_C^2(b)$ is weakly increasing in b, and the main result in Spector (2000) yields $\lim_{b \to 0} \sigma_{I,C}^2(b) = 0$.

3.3 Price-setting stage

We next determine the equilibrium transfers posted by A. First, A will set the transfer for the equilibrium contracting decision a such that P is indifferent between contracting and not contracting her, $t_a = V_P^a$. Second, being contracted must be incentive compatible for A relative P's outside option, which yields together with Lemma 2:

Lemma 3. *In any equilibrium in which P contracts A under centralization we have $t_C^* = V_P^C \geq 0$, and under delegation we have $t_D^* = V_P^D \geq -V_A^D$.*

First, Lemma 3 shows that, when contracted, A completely extracts P's net benefit, if any, from contracting.[10] Second, A never offers P side payments to be contracted under centralization, since P is weakly better off with centralization as compared to his outside option. Third, A may, however, compensate P for a net loss under delegation since $V_A^D > 0$ (Lemma 2). In the context where P is a policy-maker, we can interpret such a compensation as quid-pro-quo lobbying, cf. Foerster and Habermacher (2025).

Since, by Lemma 3, A completely extracts P's net benefit when being contracted, $a \in \{C, D\}$, her payoff in this case equals the aggregate net benefit $V_P^a + V_A^a$ relative to P's outside option. Thus, A will set transfers such that P's equilibrium contracting decision maximizes the aggregate payoff:

Proposition 1. *Any equilibrium is such that*

(i) P contracts A under centralization at transfer $t_C^* = V_P^C \geq 0$ if centralization maximizes the aggregate payoff, $V_P^C + V_A^C \geq V_P^D + V_A^D$,

(ii) P contracts A under delegation at transfer $t_D^* = V_P^D \geq -V_A^D$ if delegation maximizes the aggregate payoff, $V_P^D + V_A^D > V_P^C + V_A^C$.

All equilibria are payoff-equivalent.

The proofs of Proposition 1 and subsequent results are relegated to Appendix A. Proposition 1 establishes that A is contracted under centralization or delegation if the respective mode of interaction maximizes the aggregate payoff. Note that although P never exercises his outside option of not contracting A, the latter is still important because it limits the transfer which A can set. The following example illustrates our result. It shows that A compensates P for a loss in order to get

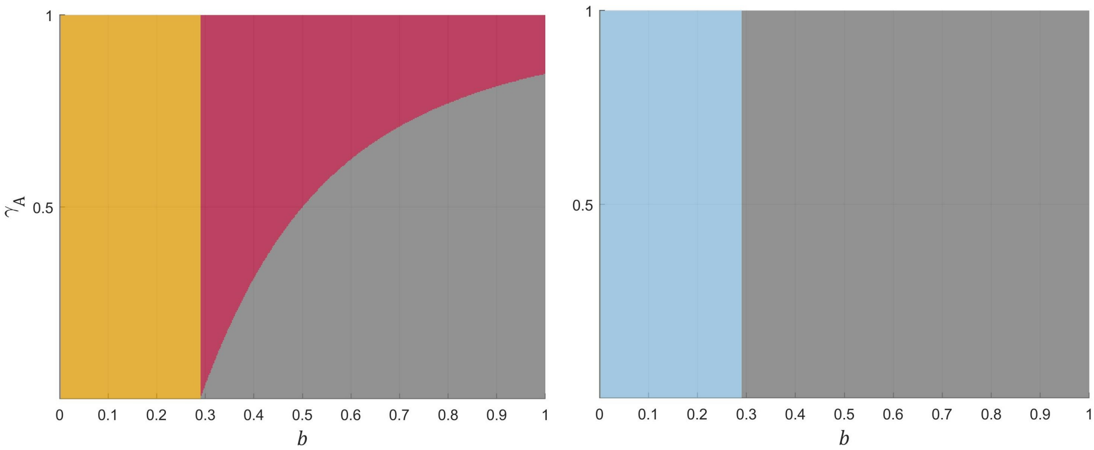
[10] Note that A can completely extract P's net benefit because she sets the menu of transfers. We discuss alternatives to this approach in Section 6.

the decision delegated when objectives differ substantially *and* A cares sufficiently about the decision.

Example 3 (Quadratic loss with constant bias). *Suppose that* $v_P(y,\theta) = -\gamma_P(\theta - y)^2$ *and* $v_A(y,\theta) = -\gamma_A(\theta + b - y)^2$*, with* $\gamma_P > 0$*,* $\gamma_A > 0$*, and* $b > 0$*. A gets the decision delegated at a positive price if the residual variance under centralization is large relative to the loss of control under delegation,* $\sigma^2_C(b) \geq b^2$*; otherwise, A pays side payments to P to get the decision delegated if she cares sufficiently about the decision,*

$$\gamma_A > \gamma_P \frac{(b^2 - \sigma^2_C(b))}{b^2 + \sigma^2_C(b)};$$

P contracts A under centralization otherwise. Figure 1(a) illustrates the equilibrium contracting decision depending on γ_A and b, for $F = \mathcal{U}(0,1)$ and $\gamma_P = 1$. In this case, $\sigma^2_C(b) > b^2$ *whenever* $\sigma^2_C(b) < \sigma^2_P$*, i.e., delegation is optimal whenever centralization is informative. Thus, similar to Dessein (2002), centralization occurs when it is not informative (see Figure 1(b)), but in our model with transfers it only does so when in addition A is not willing to compensate P for the loss of control.*



(a) Equilibrium in Proposition 1.

(b) Equilibrium in Dessein (2002).

No information   Delegation $t^*_D > 0$ Delegation $t^*_D < 0$ Delegation (no transfers)

Figure 1: Equilibrium organizational structures depending on γ_A and b in our model (left) and in Dessein (2002) (right) for $F = \mathcal{U}(0,1)$ and $\gamma_P = 1$.

4 The role of markets and efficiency

We next investigate the role of markets in our model. Suppose for the moment that transfers were not feasible. Dessein (2002)'s results show that in this case P would, roughly speaking, choose delegation over centralization as long as the conflict of interest is not too large relative to A's informational advantage. In our more general setup, we obtain $V_P^D > V_P^C$.

Now, allowing for transfers, we find that delegation becomes more attractive for P because A can compensate him for the loss of control. Since $V_A^D > V_A^C$ by Lemma 2 (ii), Proposition 1 yields the following result:

Corollary 1. *Introducing transfers changes the equilibrium contracting decision from centralization to delegation if*

$$V_P^D + V_A^D - V_A^C > V_P^C > V_P^D, \tag{2}$$

and does not change the equilibrium contracting decision otherwise.

Furthermore, the aggregate payoff being maximized in the equilibrium with transfers also means that transfers improve social welfare (in terms of total ex ante expected payoffs).

Corollary 2. *Introducing transfers (strictly) increases social welfare in equilibrium (if* (2) *holds).*

The following example illustrates our result in the setting of quadratic loss preferences with constant bias, which captures the intuitions from Dessein (2002).

Example 4 (Quadratic loss with constant bias)**.** *Suppose that $v_P(y,\theta) = -\gamma_P(\theta - y)^2$ and $v_A(y,\theta) = -\gamma_A(\theta + b - y)^2$, with $\gamma_P > 0$, $\gamma_A > 0$, and $b > 0$. Introducing transfers changes the equilibrium contracting decision from centralization to delegation and increases efficiency if*

$$b^2 > \sigma_C^2(b) \text{ and } \gamma_A > \gamma_P \frac{(b^2 - \sigma_C^2(b))}{b^2 + \sigma_C^2(b)}.$$

Transfers improve efficiency when objectives differ substantially, such that absent transfers P would centralize the decision, and *A cares sufficiently about the decision, such that she is willing to compensate P for the loss of control. The welfare gains are represented in Figure 1 by the red area in panel (a) where, absent transfers, P would retain control of the decision and decide without information, as illustrated in panel (b).*

5 Optimal delegation

Given the prevalence of delegation over cheap-talk communication to seek advice in the presence of transfers, we now analyze the optimal delegation mechanism in this context. Specifically, we extend the baseline model by allowing A to design the delegation contract, which consists of a delegation set and the associated transfer.

Assume that

$$v_P(y,\theta) = -\gamma_P(y_P(\theta) - y)^2 \quad \text{and} \quad v_A(y,\theta) = -\gamma_I(y_A(\theta) - y)^2,$$

such that $\gamma_P > 0$ and $\gamma_A > 0$ measure the importance of the decision relative to money for P and A, respectively, and both agents suffer quadratic losses from deviations of the decision from their bliss points $y_P(\theta)$ and $y_A(\theta)$, respectively. Recall that the bliss points are continuous and strictly increasing and such that $y_A(\theta) > y_P(\theta)$. As we will see, these preferences will allow us to apply the analysis in AM.

In the first stage, A posts a transfer $t_C \in \mathbb{R}$ for centralization and a *delegation contract* (Y, t_D), which consists of a delegation set $Y \in \Upsilon = \{Y' \subseteq [y_A(0), y_A(1)] \mid Y' \text{ compact}\}$ and a transfer $t_D \in \mathbb{R}$ for the job under delegation. The delegation set Y describes the set of actions y which A is permitted to take upon being contracted under delegation, i.e., a commitment to choosing $y \in Y$. Note that the baseline model assumes unrestricted delegation, i.e., $Y = [y_A(0), y_A(1)]$. In the second stage, P decides whether to choose one of the contractual arrangements, centralization at transfer t_C or the delegation contract (Y, t_D), or to take the decision himself based on prior information only, $a \in \{C, D(Y), P\}$.

5.1 Equilibrium analysis

We proceed backwards and first consider the decision-making stage and then P's contracting decision. Finally, we consider A's choice of transfers and determine the optimal delegation set.

Recall from Section 3.1 that P will implement $y_P^* = \operatorname{argmax}_y E[v_P(y,\theta)] = E[y_P(\theta)]$ if he has not contracted A. Centralization yields an unbiased but noisy decision (Lemma 1 (i)). If A is being contracted under a delegation contract, then she will maximize her expected utility given the associated delegation set Y.

Lemma 4. *Suppose that P has contracted A under delegation with associated* *delegation set $Y \in \Upsilon$. Then A implements*

$$y^*_{D(Y)}(\theta) = \operatorname*{argmax}_{y \in Y} v_A(y, \theta). \tag{3}$$

We now turn to the contracting decision. The ex-ante expected net benefit of $i \in \{P, A\}$ from delegation with associated delegation set Y, $a = D(Y)$, relative to the outside option is given by

$$V_i^{D(Y)} \equiv E[v_i(y^*_{D(Y)}, \theta)] - E[v_i(y^*_P, \theta)].$$

Given a transfer t_C for centralization and a delegation contract (Y, t_D), P will decide whether to choose one of the contractual arrangements according to:

$$\max_{a \in \{C, D(Y), P\}} V_P^a - 1_{\{a \neq P\}} t_a.$$

Finally, we turn to A's choice of transfers and delegation set. As in the baseline model, A uses the transfer to set P indifferent between contracting her or not (Lemma 3), i.e., given the delegation set Y we obtain $t^*_a = V_P^a$ for $a \in \{C, D(Y)\}$. A's gross benefit (i.e., incl. transfers) under contracting decision $a \in \{C, D(Y)\}$ then is equal to the aggregate net benefit $V_P^a + V_A^a$.

A will thus choose the delegation set Y as to maximize $V_P^{D(Y)} + V_A^{D(Y)}$. Note that this is a key difference to AM, where P chooses Y as to maximize his own expected utility. As we will show, we can nevertheless apply the analysis in AM. In a first step, we establish that delegation always yields a strictly larger aggregate payoff than the outside option. Let $v_\Sigma(y, \theta) \equiv v_P(y, \theta) + v_A(y, \theta)$ denote the aggregate net utility from decision y in state θ and note that $v_\Sigma(y, \theta)$ is strictly concave in y with unique maximizer

$$y_\Sigma(\theta) \equiv \frac{\gamma_P y_P(\theta) + \gamma_A y_A(\theta)}{\gamma_P + \gamma_A}$$

for fixed θ. Hence, $y^*_\Sigma \equiv \operatorname{argmax}_y E[v_\Sigma(y, \theta)] > y^*_P$, which yields the desired result.

Lemma 5. $V_P^{D(\{y^*_\Sigma\})} + V_A^{D(\{y^*_\Sigma\})} > 0$.

In a second step, we establish that A's preferences in choosing Y can be rewritten as a quadratic loss function with bliss point $y_\Sigma(\theta)$,

$$\tilde{v}_\Sigma(y, \theta) \equiv -(y_\Sigma(\theta) - y)^2.$$

Lemma 6. *For any delegation sets $Y, Y' \in \Upsilon$,*

$$E[v_\Sigma(y^*_{D(Y)}, \theta)] \geq E[v_\Sigma(y^*_{D(Y')}, \theta)] \text{ if and only if } E[\tilde{v}_\Sigma(y^*_{D(Y)}, \theta)] \geq E[\tilde{v}_\Sigma(y^*_{D(Y')}, \theta)].$$

Taken together, Lemma 5 and 6 establish that, conditional on choosing the equilibrium transfer $t^*_{D(Y)} = V_P^{D(Y)}$, A's contracting problem is equivalent to that of a principal with bliss point $y_\Sigma(\theta)$ and outside option y^*_Σ in AM, i.e.,

$$\max_{Y \in \Upsilon} E[\tilde{v}_\Sigma(y^*_{D(Y)}, \theta)], \tag{4}$$

where $y^*_{D(Y)}$ is given by (3). Instead of P restricting A's discretion, however, A in our model internalizes the effect of her choice on P *ex ante* due to transfers—i.e., behaves like a social planner would do—, and may therefore restrict the discretion of her *interim* self, who would otherwise implement her own bliss point. Note that it follows immediately from Theorem 1 in Holmström (1984) that the contracting problem (4) has a solution.

We next introduce some of AM's notation and interpret it in our context. Fix any state θ. The *backward bias*

$$T(\theta) \equiv F(\theta)\,(y_A(\theta) - E[y_\Sigma(z) \mid z \leq \theta])$$

measures the difference between A's preferred decision in state θ and the socially preferred decision conditional on the state being smaller than θ, weighted by the probability $F(\theta)$ that the state is indeed smaller than θ. Similarly, the *forward bias*

$$S(\theta) \equiv (1 - F(\theta))\,(y_A(\theta) - E[y_\Sigma(z) \mid z \geq \theta])$$

measures the difference between A's preferred decision in state θ and the socially preferred decision conditional on the state being bigger than θ, weighted by the probability $(1 - F(\theta))$ that the state is indeed bigger than θ.

Remark 1. *Since $y_A(\theta) > y_\Sigma(\theta)$, the backward bias is positive, $T(\theta) > 0$ for all $\theta \in \Theta$.*

Combining Remark 1 with Proposition 1 and 6 in AM yields conditions for interval delegation and commitment to the ex ante socially preferred decision to be optimal.

Proposition 2. *In any equilibrium in which P contracts A under delegation, the delegation set Y^* solves (4). In particular,*

(i) $Y^* = [y_A(0), y_A(\bar{\theta})]$ *if and only if there exists* $\bar{\theta} \in (0,1)$ *such that* $S(\bar{\theta}) = 0$, $S(\theta) \geq 0$ *for* $\theta > \bar{\theta}$, *and* $S(\theta)$ *is concave for all* $\theta \in [0, \bar{\theta}]$.

(ii) $Y^* = \{y^*_\Sigma\}$ *if and only if* $S(\theta) \geq 0$ *for all* $\theta \in \Theta$.

Note that the first condition in part (i) of Proposition 2 essentially requires objectives of the agent's interim and ex-ante self being sufficiently aligned (cf. AM). In this case, allowing her interim self discretion up to an upper bound $y_A(\bar{\theta})$ is optimal. Otherwise, it is optimal to only allow the ex ante socially optimal decision. The following example illustrates the result.

Example 5 (Constant bias and uniform distribution). *Suppose that* $y_A(\theta) = \theta + b > y_P(\theta) = \theta$ *and* $F = \mathcal{U}(0,1)$. *In this case* $S(\theta)$ *is concave, such that in any equilibrium in which P contracts A under delegation,*

(i) $Y^* = \left[b, 1 + \frac{\gamma_A - \gamma_P}{\gamma_A + \gamma_P} b\right]$ *if* $b < \frac{1}{2} \frac{(\gamma_A + \gamma_P)}{\gamma_P}$,

(ii) $Y^* = \left\{\frac{1}{2} + \frac{\gamma_A}{\gamma_A + \gamma_P} b\right\}$ *else.*

Note that $\gamma_A = 0$ *leads to the canonical result in Melumad and Shibano (1991) (Proposition 3, see also Alonso and Matouschek, 2008), where* $y_A(\bar{\theta}) = 1 - b$ *if* $b < \frac{1}{2}$ *and* $Y^* = \left\{\frac{1}{2}\right\}$ *otherwise. Allowing for transfers then makes the optimal delegation set dependent on the relative importance of the decision preferences among players; i.e., if* $\gamma_P > \gamma_A$, *the delegation set will be smaller than without transfers, and it will be larger otherwise. Besides, the set of biases for which interval delegation is optimal in (i) is strictly larger than without transfers. In summary, effective delegation of authority will be more prevalent and the amount of discretion allowed to the agent better tailored to its aggregate effects in the presence of transfers than without them.*

Finally, using Proposition 2, we can generalize the equilibrium characterization in Proposition 1.

Proposition 3. *Any equilibrium is such that*

(i) P *contracts* A *under centralization at transfer* $t^*_C = V^C_P \geq 0$ *if centralization maximizes the aggregate payoff,* $V^C_P + V^C_A \geq V^{D(Y^*)}_P + V^{D(Y^*)}_A$,

(ii) P *contracts* A *under delegation at transfer* $t^*_D = V^{D(Y^*)}_P \geq -V^{D(Y^*)}_A$ *if delegation maximizes the aggregate payoff,* $V^{D(Y^*)}_P + V^{D(Y^*)}_A > V^C_P + V^C_A$,

where the delegation set Y^* is any solution to (4). All equilibria are payoff-equivalent.

One notable consequence of being able to optimally choose the delegation mechanism is higher transfers: Since A obtains a smaller net benefit with optimal delegation as compared to unrestricted delegation, it follows that P must obtain a larger net benefit, and thus that the transfer t_D^* is larger.

Lemma 5 implies that, different from our baseline model (cf. Example 3), centralization requires communication to be informative, as otherwise choosing the delegation set $Y = \{y_\Sigma^*\}$ —i.e., commitment to the ex ante socially preferred decision— yields a larger aggregate net benefit.

Corollary 3. *P contracts A under centralization in equilibrium only if $V_P^C + V_A^C > 0$.*

The following example illustrates the results. Recall from Example 3 that centralization occurs in the uniform-quadratic setting only if it is uninformative. Corollary 3 then implies that it does not occur altogether with optimal delegation.

Example 6 (Constant bias and uniform distribution)**.** *Suppose that $y_A(\theta) = \theta + b > y_P(\theta) = \theta$ and $F = \mathcal{U}(0,1)$. Any equilibrium is such that P contracts A under delegation at transfer*

$$t_D^* = \gamma_P \left(\frac{1}{12} - \left(1 - \frac{4\gamma_P^2(3\gamma_A + \gamma_P)}{3(\gamma_A + \gamma_P)^3} b \right) b^2 \right) \tag{5}$$

if $b < \frac{\gamma_A+\gamma_P}{2\gamma_P}$. Otherwise, P contracts A under delegation at transfer $t_D^* = -\gamma_P \left(\frac{\gamma_A}{\gamma_A+\gamma_P} b\right)^2 < 0$. Surprisingly, (5) is strictly increasing in b on $\left(\frac{(\gamma_A+\gamma_P)^3}{2\gamma_P^2(3\gamma_A+\gamma_P)}, \frac{\gamma_A+\gamma_P}{2\gamma_P}\right)$ if $\gamma_P > \gamma_A$, as P gains from reducing A's discretion despite that the bias increases.

6 Discussion and conclusion

In this paper, we have revisited the trade-off between keeping authority and granting decision-rights to an informed agent. The introduction of transfers allows the agent to either charge a fee for her services or offer the principal a side payment. Our results show that introducing transfers changes the contracting decision from centralization to delegation and improves efficiency if delegation maximizes the aggregate payoff but requires a side payment. We then introduced general delegation mechanisms and showed that the agent restricts the discretion of her *interim* self in equilibrium. Furthermore, centralization will occur with optimal delegation only if it is informative. Notably, Kolotilin and Zapechelnyuk (2025) show in a recent paper that under standard assumptions the delegation problem is equivalent to the persuasion problem in which the principal can restrict the agent's information instead of her discretion. Applied to our context, their result implies that the agent would be willing to restrict the information of her interim self if possible.

Our results contribute to the debate over subsidiaries in multinational corporations, showing how transfers can induce the parties to act in the headquarters' interest. One of the big questions in the international business literature is how subsidiaries achieve *dual embeddedness*—i.e., building strong ties with local networks to tap into leading-edge knowledge and, at the same time, be integrated into the corporate network to transmit it effectively (Meyer et al., 2020). Our results imply that an efficient internal capital market will motivate subsidiaries to develop knowledge-based capabilities that maximize aggregate value: be it by focusing on the needs of a critical local market, or developing intangible assets that support sister units' activities and, thus, contribute broadly to the parent company. Critical to this argument is our assumption that the effects of delegation on other business units are common-knowledge, which underscores the importance that information about the business network has for headquarters' efficient management of relationships between subsidiaries.

Relatedly, the literature on internal capital markets highlights that cross-subsidization can lead to inefficiencies driven by influence activities, particularly under conditions of asymmetric information (Gertner and Scharfstein, 2013; Sengul et al., 2019; Malenko, 2024). Divisional managers may distort internal capital allocation through lobbying or misrepresentation, reducing the overall efficiency of resource use. In the context of our model, such inefficiencies could extend beyond capital allocation and affect the allocation of authority itself. Our framework abstracts from these dynamics by assuming that transfers reflect informational advantage and surplus creation, but incorporating strategic influence over authority allocation would be a valuable direction for future research.

Modelling assumptions. We have assumed that A first commits to transfers and P then decides whether to contract her. This allows A to completely extract P's net benefit, if any, relative to his outside option. Although we believe that this approach is rather natural, let us briefly discuss an alternative approach. Consider the baseline model and suppose that, instead, P commits to a menu of transfers and A then decides whether to accept. In this case, P can completely extract

A's net benefit from the contractual arrangement, but the equilibrium contracting decision in terms of the allocation of authority remains unchanged. The same result would obtain if the transfer was determined through Nash bargaining.

Second, we have abstracted from alternative ways in which P may obtain information. First, communication previous to the contracting decision is never optimal for A, as it will reduce her informational rents and thus lead to lower transfers. Second, P may also acquire information in case he did not contract A. This would reduce A's informational advantage relative to the outside option of taking the decision without advice, strengthening P's bargaining position. Similarly, he could acquire information after contracting A under centralization, which would result in a communication game with two-sided information à la Moreno de Barreda (2013). This may make contracting A under centralization relatively more attractive for P (when the decrease in residual variance dominates the extra costs of information acquisition) but would not change our results qualitatively.

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A Appendix: Proofs

Proof of Proposition 1. We first consider expert A and contracting decision $a \in \{C, D\}$. Recall from Lemma 3 that the equilibrium transfer satisfies $t_a = V_P^a$, such that P is indifferent between contracting decision a and his outside option. Incentive compatibility for A requires that she is at least as well off when being contracted than when not being contracted:

$$t_a + V_A^a \geq 0 \Leftrightarrow V_P^a + V_A^a \geq 0. \tag{6}$$

Furthermore, A prefers being contracted under a to being contracted under $a' \in \{C, D\}$, $a' \neq a$, at transfer $t_{a'} = V_P^{a'}$ if

$$t_a + V_A^a \geq t_{a'} + V_A^{a'} \Leftrightarrow V_P^a + V_A^a \geq V_P^{a'} + V_A^{a'}. \tag{7}$$

Similarly, P prefers to contract A under a to contracting A under $a' \in \{C, D\}$, $a' \neq a$, at transfer $\hat{t}_{a'}$ if

$$-t_a + V_P^a \geq -\hat{t}_{a'} + V_P^{a'} \Leftrightarrow \hat{t}_{a'} \geq V_P^{a'}. \tag{8}$$

Thus, P contracts A under a if (6) and (7) hold, i.e., $V_P^a + V_A^a = \max_{a'} V_P^{a'} + V_A^{a'}$, with transfers $t_a^* = V_P^a$ and $t_{a'}^*$ such that (8) holds. Since $V_P^C + V_A^C \geq 0$ by Lemma 2, it is always optimal for P to contract A. Finally, note that there are multiple equilibria for each choice of P but that all equilibrium price menus yield the same payoffs. Furthermore, whenever A is indifferent between two equilibria that differ in P's choice, then so is P. $\square$

Proof of Lemma 6. For any actions $y_1, y_2 \in \mathbb{R}$, we have

$$\begin{aligned}
&v_\Sigma(y_1, \theta) - v_\Sigma(y_2, \theta) \\
=& -\gamma_P(y_P(\theta) - y_1)^2 - \gamma_A(y_A(\theta) - y_1)^2 + \gamma_P(y_P(\theta) - y_2)^2 + \gamma_A(y_A(\theta) - y_2)^2 \\
=&(\gamma_P + \gamma_A)\left(y_2^2 - y_1^2\right) + 2y_1\left(\gamma_P y_P(\theta) + \gamma_A y_A(\theta)\right) - 2y_2\left(\gamma_P y_P(\theta) + \gamma_A y_A(\theta)\right) \\
=&(\gamma_P + \gamma_A)\left(y_2^2 - y_1^2 + 2y_1 y_\Sigma(\theta) - 2y_2 y_\Sigma(\theta)\right) \\
=&(\gamma_P + \gamma_A)\left(\tilde{v}_\Sigma(y_1, \theta) - \tilde{v}_\Sigma(y_2, \theta)\right).
\end{aligned}$$

Thus, for any delegation sets $Y, Y' \in \Upsilon$,

$$\begin{aligned}
E[v_\Sigma(y^*_{D(Y)}, \theta)] \geq E[v_\Sigma(y^*_{D(Y')}, \theta)] \Leftrightarrow& (\gamma_P + \gamma_A)E[\left(\tilde{v}_\Sigma(y^*_{D(Y)}, \theta) - \tilde{v}_\Sigma(y^*_{D(Y')}, \theta)\right)] \geq 0 \\
\Leftrightarrow& E[\tilde{v}_\Sigma(y^*_{D(Y)}, \theta)] \geq E[\tilde{v}_\Sigma(y^*_{D(Y')}, \theta)].
\end{aligned}$$

$\square$