Delegation of Decision-Making in Organizations

Margaret A. Meyer
Nuffield College and Department of Economics
Oxford University

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What determines the degree to which decision-making is centralized (concentrated in the hands of top management) vs. delegated (to subordinates) in organizations?

Degree of delegation (decentralization) of decision-making has varied over time and varies across firms and environments:

- Over 20th century, large corporations evolved (Chandler, 62; Williamson, 75) from U-form (“unitary”), in which employees grouped according to function, to M-form (“multi-divisional”), in which employees grouped according to products or processes.
  - With switch to M-form, more delegation to division mgrs; top mgt’s role: reallocation of cash flows via “internal capital market”.

- More recent increases in decent.: greater use of “profit/cost centers” within divisions; greater use of teams, coordinated laterally rather than vertically
  - Cross-sectional evidence in Acemoglu et al, 07: decentralization more likely for firms that are closer to the technological frontier, in more heterogeneous environments, and younger.
Why and when is delegation of decision-making valuable?

- Standard argument in management literature: Decision rights should be delegated to those managers who possess the relevant information.

- But what is the alternative to delegation? Centralized decision-making by top management based only on top management's information, without any attempt to communicate with better-informed subordinates? If so, fairly easy to deduce why/when delegation would be valuable.

- However, we should compare “delegation” with “centralization accompanied by communication”.

“Delegation” vs. “centralization with communication”

Mechanism design perspective:

If

- no limitations or costs of communication;
- no limitations or costs of processing of information;
- top management can commit to how will respond to all possible reports by employees;

then

Generalized Revelation Principle (Myerson, 82): Any non-cooperative equilibrium outcome of an arbitrary organizational structure can be replicated by a centralized two-tier structure, in which each employee is given incentives to communicate truthfully all of his private information directly to top management.
“Delegation” vs. “centralization with communication”

So for delegation of decision-making to dominate centralization with communica-
tion, it must be that one or more of the following conditions apply:

- communication is costly (Melumad et al, JAE, 92, Rand, 95; Rotemberg, JEMS, 99)

- processing of information is costly, so without delegation, top management faces ‘information overload’ (Geanakoplos + Milgrom, JJIE, 91; McAfee + McMillan, JEMS, 95)

- management’s ability to write complete contracts is in some way limited (Aghion + Tirole, JPE, 97; Dessein, RESTud, 2002; Alonso et al, AER, 08)
Centralization vs. delegation to a responsibility center: The effect of communication costs (Melumad, Mookherjee, and Reichelstein, 92, 95):

- Assume no limitations on P’s ability to commit to a mechanism
- $P, A_1, A_2$ risk-neutral
- $A_i$ produces output $a_i$ at cost $a_i\theta_i$; receives payment $x_i$
- $\theta_i$ privately observed by $A_i$ before contracting; $a_i\theta_i$ also private
- $A_1$ and $A_2$ have common, exogenous reservation utility of 0
- $\theta_1, \theta_2$ independent, continuously distributed
- $P$ has benefit function $B(a_1, a_2)$; $P$ chooses structure (mechanism) to minimize total cost of generating a benefit of at least $\bar{B}$, i.e. of producing an output pair $(a_1, a_2)$ such that $B(a_1, a_2) \geq \bar{B}$. 
Centralization vs. delegation to a cost center

Centralization: both $A_1$ and $A_2$ communicate directly to $P$; mechanism specifies production levels $a_1, a_2$ and transfers $x_1, x_2$ for both agents, as functions of both agents' reports $\hat{\theta}_1, \hat{\theta}_2$ about their costs.

Cost Center: $P$ makes $A_1$ a “cost center”, in charge of sub-contracting with $A_2$

- First, $P$ offers $A_1$ menu of compensation contracts; then $A_1$ reports $\hat{\theta}_1$ to $P$, thus “choosing” one contract from menu—contract determines how $A_1$’s compensation $x_1$ will depend on cost $x_2$ incurred in sub-contracting with $A_2$.

- Then $A_1$, knowing his own cost $\theta_1$, sub-contracts with $A_2$—$A_1$ offers $A_2$ a menu of contracts, specifying how the production allocation and the payment from $A_1$ to $A_2$ will depend on $A_2$’s report $\hat{\theta}_2$. $A_2$ then chooses $\hat{\theta}_2$. 


![Centralization Diagram](image)

![Cost Center Diagram](image)
Benchmark with no limitations on communication:

**Proposition:** With no limitations on communication, cost center and centralization perform equally well: outcome under the optimal centralized mechanism can be replicated under an optimally designed cost center.

Example: $B(a_1, a_2) = a_1 + a_2$; $\theta_1, \theta_2$ i.i.d.

**Centralization:** $P$ orders $A_i$ with lower $\theta_i$ to produce $a_i = \bar{B}$, while other agent produces nothing. $P$ pays information rents to both agents.

**Cost Center:** The potential problem is that $A_1$, in sub-contracting with $A_2$, will bias the production allocation towards himself because of the need to pay rents to $A_2$ to elicit $A_2$'s information. But $P$, because he can observe payment $x_2$ from $A_1$ to $A_2$, can eliminate this bias, by subsidizing $A_1$'s purchases of output from $A_2$. As a result, $P$ can induce $A_1$ to choose same allocation as results under centralization ($A_i$ with lower $\theta_i$ produces $\bar{B}$), and $P$ incurs same cost.
How do limitations on communication affect comparison of centralization vs. delegation?

**Modeling of limited communication:** Assume agents can transmit only a coarse summary of private information—though $\theta_i$ is a continuous variable, each agent can make only a finite number of possible reports. Here, assume only 2 possible reports.

- Delegation now brings a **flexibility gain**, since under delegation to cost center, $A_1$ chooses subcontract with $A_2$ based on precise value of $\theta_1$, not on a coarse summary of it.

- Note that $A_1$ is **not** assumed to be better than $P$ at understanding $A_2$'s infor.

**Prop.:** *With limited communication, cost center strictly dominates centralization.*
Implication of Melumad et al’s analyses: Delegation to a cost center can be more efficient than centralized decision-making, when the cost center’s financial performance can be monitored and when the private information of the manager of the cost center is difficult to fully transmit to top management.

- If assume that under centralization, $P$ bases decisions only on public information (e.g., Acemoglu et al, 07), then of course it is easier to derive the conclusion that decentralization can be advantageous.

For firms that are closer to the technological frontier, in more heterogeneous environments, and (?!) younger, private information of managers likely to be more substantial and complex $\implies$ decentralization accompanied by financial monitoring relatively more attractive.
Centralization vs. delegation: The effect of limited commitment

If top management’s ability to commit to how will respond to reports by subordinates is limited, then the Generalized Revelation Principle does not hold.

Many recent papers assume that although top management cannot commit to precise rules specifying decisions (actions and payments) as functions of reports, top mgt can commit to delegate decision rights. Then ask: When is such “formal delegation” of decision rights advantageous? Answers provided:

- Aghion and Tirole (JPE, 97): when it is crucial to provide subordinates with incentives to generate ideas and/or acquire information.

- Dessein (RESTud, 02): when subordinate has private infor. about the efficient decision and principal cannot commit to a mechanism to elicit the infor.

- Alonso et al (AER, 08): in an envir. like Dessein (02) but with 2 agents (division mgrs) each privately informed about conditions in own division, as long as i) division mgrs not very biased towards their own division’s performance or ii) coordination of decisions across divisions is not very important.
Centralization vs. delegation when only decision rights are contractible (Alonso, Dessein, and Matouschek, AER, 08):

- Players: HQ and managers, $M_1$, and $M_2$, of ex ante symmetric divisions
- Decisions: production decisions $d_1$ and $d_2$
- Profit of division $i$, $\pi_i = -(d_i - \theta_i)^2 - \delta(d_i - d_j)^2$, where $\delta \in [0, \infty)$ is common knowledge, $\theta_i$ is privately observed by $M_i$, and $(\theta_1, \theta_2)$ are i.i.d., $\sim U[-s, s]$
- $M_i$ maximizes $\lambda \pi_i + (1 - \lambda) \pi_j$, where $\lambda \in [\frac{1}{2}, 1]$
- Key parameters: $\delta$ measures importance of coordination (to all players); $\lambda$ measures bias of each manager towards own division (managers’ incentive schemes treated as exogenous)
- HQ chooses allocation of decision rights over $d_1, d_2$ to max. $\pi_1 + \pi_2$; decision-making is preceded by one round of simultaneous cheap talk.
  - NB: parties can commit only to who makes each decision, not to mechanisms specifying decisions and transfers as functions of reports.
Possible allocations of decision rights

Centralization (C): Each \( M_i \) simultaneously makes a cheap-talk report about \( \theta_i \) to HQ, and then HQ chooses both \( d_1 \) and \( d_2 \).

Decentralization (D): Each \( M_i \) simultaneously makes a cheap-talk report about \( \theta_i \) to \( M_j \), and then each \( M_i \) chooses \( d_i \).

(NB: Rantakari (08) allows one manager to choose both \( d_1 \) and \( d_2 \).)

- Benefits of C from HQ’s perspective:
  1. decision-making is unbiased (with D, managers underweight coordination)
  2. equilibrium quality of communication is better (less coarse)

- Benefit of D from HQ’s perspective: flexibility gain since each \( M_i \) bases choice of \( d_i \) on precise value of own \( \theta_i \)

- Contrast Melumad et al model: There, in D, transfers to \( A_1 \) can eliminate that agent’s bias. And coarseness of communication is exogenous and equal in C and D. So only flexibility gain matters for the comparison btw. C and D.
Equilibrium quality of communication under C and D

Under both C and D, each $M_i$ has incentive to exaggerate magnitude of $\theta_i$. Stronger incentives to exaggerate $\implies$ coarser communication in eqm.

- All communication eqa are interval eqa, with size of intervals $\uparrow$ in $|\theta_i|$. Because there is a state ($\theta_i = 0$) where preferences of $M_i$ (sender) and $HQ/M_j$ (receiver) are perfectly aligned, there is no upper limit on number, $N$, of intervals that can arise in eqm. Alonso et al always focus on most informative eqm, where $N \to \infty$. NB: this eqm does not correspond to full revelation.

- Under C, from $M_i$’s perspective, $HQ$ puts too much weight on coordin. and too little on adaptation of $d_i$ to $\theta_i$.

- Under D, from $M_i$’s perspective, $M_j$ puts too little weight on coordin. and too much on adaptation of $d_j$ to $\theta_j$.

- HQ: $-(d_1 - \theta_1)^2 - (d_2 - \theta_2)^2 - 2\delta(d_1 - d_2)^2$

- M1: $-\lambda(d_1 - \theta_1)^2 - (1 - \lambda)(d_2 - \theta_2)^2 - \delta(d_1 - d_2)^2$

- M2: $-(1 - \lambda)(d_1 - \theta_1)^2 - \lambda(d_2 - \theta_2)^2 - \delta(d_1 - d_2)^2$
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- Under D, from $M_i$’s perspective, $M_j$ puts too little weight on coordin. and too much on adaptation of $d_j$ to $\theta_j$.

Quality of eqm communication is worse under D than under C, because preferences of $M_1$ and $M_2$ (who communicate under D) differ more than do preferences of $M_i$ and HQ (who communicate under C).

- As $\delta \uparrow$, incentives to exaggerate $|\theta_i| \uparrow$ under C but $\downarrow$ under D.

- Eqm commun. becomes equally good under D and C as $\lambda \to \frac{1}{2}$ or $\delta \to \infty$. 
Overall performance of centralization vs. decentralization, from HQ’s perspective:

For centralization to be preferred, coordination must be sufficiently important (\( \delta \) sufficiently large) and division managers must be sufficiently biased towards their own divisions (\( \lambda \) sufficiently large).

- If \( \lambda \leq \bar{\lambda} \), then even as \( \delta \) gets very large, C never dominates D.
If top mgt can delegate decision rights and also restrict the set of decisions from which subordinates are allowed to choose, what restrictions should it impose?

- Szalay (REStud, 05): Suppose crucial to provide $A$ with incentives to acquire information. Then desirable for $P$ to force $A$ to choose between extreme options (i.e. not allow intermediate choices), even if $P$'s and $A$'s preferences over decisions, for given infor., are fully aligned.

- Armstrong and Vickers (Etrica, 10): Suppose attributes of projects are two-dimensional, $P$ and $A$ value different attributes, $\theta_p$ and $\theta_a$, resp., and only $A$ can observe how many projects are available and their attributes. Suppose $P$ can commit to a rule specifying whether a project proposed by $A$ will be accepted, as a function of $(\theta_p, \theta_a)$. Optimal rule specifies that the larger is $\theta_a$, the larger is to minimum acceptable level of $\theta_p$. 
Is “formal delegation” of decision-making authority feasible/credible?

- Milgrom and Roberts (90, 92) and Meyer, Milgrom, and Roberts (JEMS, 92) argue that top management always has discretionary authority to intervene in the activities of subunits or subordinates.
  - Subordinates know this and will engage in “influence activities” to alter top mgt’s decisions.
  - A credible commitment not to intervene may require making a subunit a legally independent entity.

- Similarly, Baker, Gibbons, and Murphy (JLEO, 99) argue: “decision rights in organizations are not contractible; the boss can always overturn a subordinate’s decision, so formal authority resides only at the top.”
  - They ask whether/when a promise to delegate authority can be credible?
Baker et al (JLEO, 99): Can self-enforcing contracts support informal delegation of decision rights by a boss ($P$) to a subordinate ($A$)?

- In each period of $\infty$-horizon relationship, $A$ privately chooses effort on finding a good project. $A$’s and $P$’s preferences over projects are not perfectly aligned.

- Each period, $A$ can propose to $P$ a project he has found. $P$ can observe whether or not the project is in the firm’s interest and then decide whether to accept $A$’s recommendation.

- $P$’s short-run incentive is to reject projects not in the firm’s interest, but if he is expected to do this, $A$’s incentives to find projects will be weaker.

- When will eqm behavior involve $P$ “rubber stamping” $A$’s proposals, i.e. when will $A$ possess “informal authority” in eqm?

- Key conclusions of Baker et al (99): If future value of relationship is large, subordinate can possess informal authority. But even if informal delegation of authority would be efficient, it is not necessarily achievable, because boss may have incentives to renege on the informal agreement.